

VERBENA MONTICOLA Moldenke, sp. nov.

Herba robusta, ramis ramulisque atrogriseis vel atrobrunneis perspicue tetragonis minute puberulis, angulis acutis, nodis annulatis, internodiis regulariter brevibus 1.5--2 cm. longis; foliis decussato-oppositis trifidis sessilibus 1--1.5 cm. longis 4--8 mm. latis, laciniis regulariter 1--1.5 mm. latis utrinque strigillois; inflorescentiis spicatis terminalibus 1.5--4 cm. longis dense multifloris.

Robust subliguous herb; stems, branches, and branchlets dark-gray to dark-brown, conspicuously tetragonal, minutely puberulent, the angles rather sharply acute, the nodes mostly annulate, the internodes even on older parts rather uniformly short, 1.5--2 cm. long; leaves decussate-opposite, sessile, 1--1.5 cm. long, 4--8 mm. wide, deeply trifid at the midpoint, strigillose on both surfaces, the segments (including the basal petiole-like one) uniformly 1--1.5 mm. wide, oblong, 1-veined, the vein impressed above, the terminal segments acute; inflorescence solitary, terminal, or sometimes paired, rather long-pedunculate, very densely many-flowered, 1.5--4 cm. long, spicate; peduncles slender, 2--3 cm. long, whitish-puberulent or pilosulous; bractlets lanceolate, 8--9 mm. long, sharply acute at the apex, mostly decidedly recurved, strigillose especially on the margins; calyx strigillose, about 6 mm. long, the rim 5-apiculate; corolla hypocrateriform, violet, its tube slightly surpassing the calyx.

The type of this species was collected by A. Lopez M. (no. 8079) at the border of a railroad embankment at km. 156, Jalca de la Ramada, Carretera Huamachuco, prov. Huamachuco, La Libertad, Peru, at an altitude of 3500 meters, on December 18, 1973, and is deposited in the Britton Herbarium at the New York Botanical Garden.

ADDITIONAL NOTES ON THE ERIOCAULACEAE. XLIX

Harold N. Moldenke

ERIOCAULACEAE Lindl.

Additional bibliography: J. Hutchinson, *Fam. Flow. Pl.*, ed. 3, 32, 657, 710--712, 916, 920, 923, 930, 939, 940, 944, 949, 951, 956, 957, 962, 964, & 967, fig. 364 & 364a. 1973; Anon., *Biol. Abstr.* 58 (2): B.A.S.I.C. B.12. 1974; Dory, Perring, & Rob, *English Names Wild Fls.* 28 & 101. 1974; Hocking, *Excerpt. Bot. A.* 23: 314. 1974; Moldenke, *Biol. Abstr.* 58: 680. 1974; Moldenke, *Phytologia* 29: 76--113. 1974; A. L. Moldenke, *Phytologia* 29: 171--172. 1974; Rousseau, *Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:]* 120, 382, 470, 480, 493, 509, 550, 625, 705, & 762. 1974.

ERIOCAULON DEPRESSUM R. Br.

Additional bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 153 & 204. 1949; Moldenke, *Phytologia* 24: 355. 1972.

ERIOCAULON DIANAE Fyson

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51 (1): 169 & 170 [135 & 136] (1929) and 50 (1): 232. 1930; Fedde in Just, *Bot. Jahresber.* 51 (2): 295. 1933; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 126, 128, & 204. 1949; Vankatareddi, *Bull. Bot. Surv. India* 12: 220. 1970; Moldenke, *Phytologia* 25: 125 (1973), 26: 23 & 25 (1973), and 28: 444. 1974.

Vankatareddi (1970) describes this species as "Fairly common along stream", flowering from July to November, and cites his nos. 87777, 99009, 99101, 99104, 97923, & 99377 and Gammie 15903. The G. Thomson s.n. [Maisor, Carnatic], cited below, is a mixture with E. truncatum Hamilt.

Additional citations: INDIA: Kerala: Santapau 13286 (E--1624141), 13319 (E--1624128), 13320 (E--1624127), 13321 (E--1624126), 13324 (E--1624123). Mysore: G. Thomson s.n. [Maisor, Carnatic] (Pd).

ERIOCAULON DIANAE var. LONGIBRACTEATUM Fyson

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in Just, *Bot. Jahresber.* 51 (2): 295. 1933; Moldenke, *Geogr. Distrib. Verbenac.*, [ed. 2], 126 & 204. 1949; Moldenke, *Phytologia* 26: 23 & 25. 1973.

ERIOCAULON DIANAE var. RICHARDIANUM Fyson

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in Just, *Bot. Jahresber.* 51 (2): 295. 1933; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 126 & 204. 1949; Moldenke, *Phytologia* 24: 356. 1972.

ERIOCAULON DICLINE Maxim.

Additional bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 134 & 204. 1949; Moldenke, *Phytologia* 24: 356. 1972.

ERIOCAULON DICTYOPHYLLUM Körn.

Additional bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 76 & 204. 1949; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1156, map 1775, & *Ind.* 12. 1972; Moldenke, *Phytologia* 26: 182. 1973.

Additional citations: BRAZIL: Mato Grosso: Ratter, Santos, Souza, & Ferreira R. 1724 (Ca--1376879, E--2050108).

ERIOCAULON DICTYOPHYLLUM f. VIVIPARUM Moldenke

Additional bibliography: Hocking, *Excerpt. Bot. A.* 21: 30. 1972; Moldenke, *Phytologia* 26: 182. 1973.

Additional citations: BRAZIL: Mato Grosso: Santos & Souza R. 1758 (Ca—1376880, E—2050107).

ERIOCAULON DISEPALUM Ridl.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 138 & 204. 1949; Moldenke, Phytologia 26: 182. 1973.

ERIOCAULON DREGEI Hochst.

Additional bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 502. 1894; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 245. 1901; Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 122 & 204. 1949; Moldenke, Phytologia 24: 357 (1972) and 29: 113. 1974.

ERIOCAULON DUTHIEI Hook. f.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 126 & 204. 1949; Moldenke, Phytologia 26: 23. 1973.

ERIOCAULON ECHINULATUM Mart.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 129, 132, 136, 141, & 204. 1949; Moldenke, Phytologia 26: 23. 1973.

Additional illustrations: Fyson, Journ. Indian Bot. 2: pl. 37. 1921.

Additional citations: CHINA: Kwangtung: Sampson 13453 (Pd, Pd).

ERIOCAULON EDWARDII Fyson

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 126 & 204. 1949; Moldenke, Phytologia 24: 358. 1972.

ERIOCAULON ELEGANTULUM Engl.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 235, 236, & 253—255. 1901; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 114, 117, 118, 120, & 204. 1949; Moldenke, Phytologia 26: 458. 1973.

Brown (1901) cites Dennhardt s.n. and Schweinfurth 3-223 from "British East Africa", Hildebrandt 1056 from Zanzibar, and Holst 3181 from Tanganyika. He comments that "E. elegantulum..... closely resembles E. Hanningtonii, N. E. Br. and E. zambesiense, Ruhland, in general appearance, but the short blackish (not pal-lid) involucrel-bracts, which are best seen in the very young heads, readily distinguish it from those species."

Additional citations: TANZANIA: Tanganyika: Schlieben 2348 (E—

1707112).

ERIOCAULON ELENORAE Fyson

Additional synonymy: Eriocaulon eleonorae Fyson apud Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 126 & 204. 1949; Moldenke, Phytologia 26: 23 (1973) and 29: 100. 1974.

Santapau 13316, cited below, is a mixture with E. cinereum R. Br.

Additional citations: INDIA: Kerala: Santapau 13316, in part (E--1624131), 13317 (E--1624130), 13318 (E--1624129).

ERIOCAULON ELICHRYSOIDES Bong.

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 204. 1949; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & Ind. 12. 1972; Moldenke, Phytologia 24: 458 & 471 (1972) and 26: 475 & 476. 1973.

ERIOCAULON ESCAPE Hansen

Additional & emended bibliography: B. Hansen, Dansk Bot. Arkiv 27: [31]—33, fig. 1 & 2 a—c. 1969; A. Hansen, Excerpt. Bot. A. 19: 245. 1972; Moldenke, Phytologia 24: 458—459 (1972) and 25: 232. 1973.

Emended illustrations: B. Hansen, Dansk Bot. Arkiv 27: 32 & 33, fig. 1 & 2 a—c. 1969.

ERIOCAULON FENESTRATUM Bojer

Additional bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 502. 1894; Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 123 & 204. 1949; Moldenke, Phytologia 24: 459. 1972.

ERIOCAULON FLUVIATILE Trimen

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 303 & 304. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 130 & 204. 1949; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 26: 24 (1973) and 29: 85, 93, 102, & 106. 1974.

Alston (1931) asserts that this taxon and E. barbeyanum Ruhl. may be conspecific.

Collectors have found E. fluviatile growing submerged on sand in streams, in still water, and "abundant in running streams".

The Hu collection cited below, from High Island (Hongkong), is placed here tentatively since it is far out of range. The collector describes it as a "mass-forming herb on rock in swift water, large amount of roots woven into a mat on the rock holding

sand for minerals", found it in flower and fruit in November, and identified it as E. setaceum L.

In Sri Lanka, this past winter, my wife and I found this plant quite common in stagnant pools and very abundant on the dry margins of completely dried-up pools, the entire plants then uniformly dark-brown or almost black. We found several colonies in cold fresh spring water, the plants there almost entirely submerged, the leaves beautiful shiny green, and the inflorescence heads at or just slightly below the surface of the water. All these localities were at about 7000 feet altitude and the plants were in flower and fruit in January. We misidentified the species as E. collinum Hook. f. at the time.

Material has been misidentified and distributed in some herbaria as E. collinum Hook. f., E. dalzellii Körn., and E. rivulare Dalz.

Citations: SRI LANKA: Collector undetermined s.n. [Labugama, Jan. 1885] (Pd, Pd), s.n. [Linigala, Hewessee] (Pd); Ferguson s.n. [Labugama] (Pd); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28279 (Ac, Gz, Kh, Ld, Pd), 28281 (Ac, Ld, Pd, Z), 28292 (Ac, Gz, Ld, Pd); Thwaites C.P. 3057 (Pd—type, Pd—isotype).
CHINESE COASTAL ISLANDS: High: S. Y. Hu 8737 (W—2697239, Z).

ERIOCAULON FULVUM N. E. Br.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233 & 248—249. 1901; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 111—113 & 204. 1949; Moldenke, Phytologia 26: 458—459. 1973.

Brown (1901) cites only the type specimen, Barter s.n., from Northern Nigeria and comments that this is "A very distinct species, easily recognised by its slightly glossy buff-coloured heads."

ERIOCAULON GIBBOSUM Körn.

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 204. 1949; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & Ind. 12. 1972; Moldenke, Phytologia 26: 24. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 63 I. 1863 (N, Z).

ERIOCAULON GIBBOSUM var. MATTOGROSSENSE Ruhl.

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 204. 1949; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & Ind. 12. 1972; Moldenke, Phytologia 24: 460. 1972.

ERIOCAULON GILGIANUM Ruhl.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233, 234, 236, 256, & 257. 1901; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 118 & 204. 1949; Moldenke, Phytolo-

gia 26: 25. 1973.

Brown (1901) keeps E. ciliisepalum Rendle separate from E. gilgianum and cites for it Johnston s.n. and Welwitsch 2445 & 2445b from Angola, where it was collected on spongy slopes and in damp fields in which maize had been cultivated. He comments that "Johnston's specimens are stouter, and have more numerous flowers in the head than any of those collected by Welwitsch, but I find no difference in the structure of the flowers and bracts." For E. gilgianum he cites only Antunes 168, also from Angola, but apparently did not see any material of it since he says that this is "Stated to be the smallest of the African species and one of the smallest species in the genus, having an especially slender appearance on account of the capillary leaves. I have not seen it." Later workers have united the two taxa.

ERIOCAULON GOMPHRENOIDES Kunth

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 204. 1949; Moldenke, Phytologia 26: 25. 1973.

Reitz & Klein describe this plant as an "erva, flôr branca" and found it growing at 1400 meters altitude, flowering in December.

Additional citations: BRAZIL: Santa Catarina: Reitz & Klein 7683 (Ll).

ERIOCAULON GREGATUM Körn.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 126, 132, & 204. 1949; Moldenke, Phytologia 24: 461. 1972.

The Hooker & Thomson collection, cited below, includes a specimen with one proliferating flower-head.

Additional citations: INDIA: Assam: Hooker & Thomson s.n. [Mont. Khasia, 4000 ped.] (Pd).

ERIOCAULON GRISEUM Körn.

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 204. 1949; Moldenke, Phytologia 24: 461. 1972.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 60 III. 1863 (N, Z).

ERIOCAULON HAMILTONIANUM Mart.

Additional bibliography: Mart., Erioc. Selbst. Pflanzenfam. 41, pl. 1 (II), fig. 7 & 8. 1833; Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Moldenke, Phytologia 24: 462 (1972) and 25: 239. 1973.

Additional illustrations: Mart., Erioc. Selbst. Pflanzenfam. pl. 1 (II), fig. 7 & 8. 1833.

Additional citations: MOUNTED ILLUSTRATIONS: Mart., Nov. Act.

Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17 (1): pl. 1, fig. 2. 1835 (Mu).

ERIOCAULON HAMILTONIANUM var. MINIMUM Fyson

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Moldenke, Phytologia 24: 462. 1972.

ERIOCAULON HAMILTONIANUM var. MINOR Fyson

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 24: 462. 1972.

ERIOCAULON HENRYANUM Ruhl.

Additional bibliography: Limpr. in Fedde, Repert. Beih. 12: 314. 1922; Wangerin in Just, Bot. Jahresber. 51 (1): 171 [137]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 132 & 204. 1949; Sharma, Nucleus 15: Append. 10. 1972; Moldenke, Phytologia 26: 25. 1973.

Sharma (1972) reports the chromosome count for this species as "c. 56 (57, 58)".

ERIOCAULON HETEROCHITON Körn.

Additional bibliography: Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 123 & 204. 1949; Moldenke, Phytologia 24: 463. 1972.

Perrier de la Bâthie (1934) collected this species in wet places to 1000 meters altitude in Madagascar.

ERIOCAULON HETEROLEPIS Steud.

Additional bibliography: Backer, Handb. Fl. Java 3: 7. 1924; Backer, Onkruidfl. 1: Handb. Suiker.-Cult. 7: 178 & 844, pl. 188. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 126 & 204. 1949; Moldenke, Phytologia 26: 23 & 25. 1973.

ERIOCAULON HETEROLEPIS var. NIGRICANS Körn.

Additional bibliography: Backer, Handb. Fl. Java 3: 7. 1924; Backer, Onkruidfl. 1: Handb. Suiker.-Cult. 7: 178 & 844, pl. 188. 1928; Moldenke, Phytologia 24: 463. 1972.

Illustrations: Backer, Onkruidfl. 1: Handb. Suiker.-Cult. 7: pl. 188. 1928.

ERIOCAULON HEUDELII N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 232 & 258. 1901; Moldenke, Phytologia 26: 459. 1973.

Brown (1901) cites only the cotype collections, Heudelot 677 & 678, "without precise locality", from Senegambia.

ERIOCAULON HILDEBRANDTII Körn.

Additional bibliography: Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Phytologia 24: 464. 1972.

ERIOCAULON HONDOENSE Satake

Additional bibliography: Moldenke, *Phytologia* 26: 25--26, 30, & 39. 1973.

Additional citations: JAPAN: Honshu: Togashi MT.6849 [Fl. Jap. Exsicc. 67] (Ws).

ERIOCAULON HOOKERIANUM Stapf

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 53 (2): 261. 1925; Moldenke, *Phytologia* 26: 26. 1973.

ERIOCAULON HUMBOLDTII Kunth

Additional bibliography: Moldenke, *Phytologia* 26: 182. 1973.

Hatschbach reports finding this plant in the "brejo" of Mato Grosso.

Additional citations: BRAZIL: Mato Grosso: Hawley, Souza, & Ferreira 10400 (E-2048848); Hatschbach 32341 (Ld); Santos, Souza, & Bertolda R.1689 (N).

ERIOCAULON INFAUSTUM N. E. Br.

Additional & emended bibliography: N. E. Br. in *Thiselt.-Dyer, Fl. Trop. Afr.* 8: 232 & 253--254. 1901; Moldenke, *Phytologia* 24: 466. 1972.

Brown (1901) cites only the original type collection, Scott s. n., from rice fields in Quilimane, Mozambique, but he notes that "This is probably the same as a plant collected in Zanzibar by Bojer (88), which is quoted by Koernicke in *Linnaea* xxvii. 646; in Durand & Schinz, *Conspect. Fl. Afr. v.* 503; in *Engl. Pfl. Ost-Afr.*, C.133; and by Ruhland in *Engl. Jahrb.* xxvii. 81, under E. trilobum, Ham."

ERIOCAULON INFIRMUM Steud.

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in Just, *Bot. Jahresber.* 51 (2): 296. 1933; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 126 & 204. 1949; Sharma, *Nucleus* 15: Append. 10. 1972; Moldenke, *Phytologia* 26: 25 & 26. 1973.

Sharma (1972) reports the chromosome count for this species as 30.

ERIOCAULON INFIRMUM var. KURZII (Fyson) Moldenke

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in Just, *Bot. Jahresber.* 51 (2): 296. 1933; Moldenke, *Phytologia* 24: 466. 1972.

ERIOCAULON INTERMEDIUM Körn.

Emended synonymy: Eriocaulon setaceum Hook. f. ex Alston in *Trimen, Handb. Fl. Ceylon* 6: 304, in syn. 1931 [not E. setaceum Auct. ex Backer & Bakh., 1968, nor Benth., 1893, nor Crantz, 1959, nor Heyne, 1832, nor L., 1753, nor Lour., 1790, nor Rottl., 1960, nor Steen., 1960, nor Wight, 1832, nor Willd., 1959].

Additional & emended bibliography: Thwaites, *Enum. Pl. Zeyl.* 2:

341. 1839; Hook. f. in Trimen, Fl. Ceylon 5: 2. 1900; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 303 & 304. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Fl. Zeyl. 206. 1968; Satake, Journ. Jap. Bot. 46: 372 [20]. 1971; Moldenke, Phytologia 26: 26 (1973) and 29: 85. 1974.

The Thwaites C.P. 791, in part, distributed as and previously cited by me as E. intermedium, seems actually to be E. setaceum L. On the other hand, some material of E. intermedium has been misidentified and distributed in some herbaria as E. capillus-naiadis Hook. f. These three taxa certainly need critical revision.

Alston (1931) cites Fyson's work (1921) as "1923". The E. setaceum accredited to "Auct. ex Backer & Bakh." and to Van Steenis in the synonymy cited above is a synonym of E. equisetoides Van Royen, while that credited to Bentham is E. bifistulosum Van Heurck & Muell.-Arg., that credited to Rottböll and to Willdenow is E. cinereum R. Br., that credited to Heyne is E. sexangulare L., that credited to Wight is E. quinquangulare L., and the E. setaceum of Loureiro is Fimbristylis setacea Benth.; E. setaceum L. is a valid species, with E. setaceum Crantz in its synonymy.

Additional citations: INDIA: Gujarat: Nain 1080 (Ac).

ERIOCAULON JAVENSE Moldenke

Additional bibliography: Moldenke, Phytologia 26: 26. 1973; Hocking, Excerpt. Bot. A.23: 290. 1974.

ERIOCAULON JOHNSTONII Ruhl.

Additional bibliography: Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Phytologia 24: 467. 1972.

Perrier de la Bâthie (1934) records this species from "Marais: Côte orientale. — E. -- Madag. et Maurice." I have seen no material of it from Madagascar. All that I have seen has been from Mauritius.

ERIOCAULON KINLOCHII Moldenke

Additional bibliography: Moldenke, Phytologia 24: 468 (1972) and 25: 227. 1973.

ERIOCAULON KLOTZSCHII Moldenke

Additional bibliography: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 66 & 204. 1949; Moldenke, Phytologia 24: 468. 1972.

ERIOCAULON KOERNICKEI Britten

Additional bibliography: Moldenke, Phytologia 24: 468--469 (1972) and 25: 152. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 60 II. 1863 (N, Z).

ERIOCAULON KÖRNICKIANUM Van Heurck & Muell.-Arg.

Additional bibliography: Moldenke, Phytologia 26: 459. 1973.

Additional citations: ARKANSAS: Logan Co.: R. Kral 24579 (W--2470357). OKLAHOMA: Pushtamaha Co.: E. J. Palmer 8320 (W--1531435).

ERIOCAULON LANCEOLATUM Miq.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 24: 269 (1972) and 28: 444. 1974.

Additional citations: INDIA: Kerala: Stocks, Law, &c. s.n. [Malabar, Concan] (Pd).

ERIOCAULON LANCEOLATUM var. PILOSUM Moldenke

Additional bibliography: Moldenke, Phytologia 24: 469-470 (1972) and 28: 444. 1974.

Additional citations: INDIA: Kerala: Santapau 13361 (E--1624111).

ERIOCAULON LATIFOLIUM J. E. Sm.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 235 & 243. 1901; Moldenke, Phytologia 26: 459--460. 1973.

Brown (1901) cites Barter s.n., Don s.n., and Vogel s.n. from Sierra Leone, collected in rivulets, and comments that "In the original description the sepals of the male flowers are stated to be connate into a 3-lobed tube, but in all the flowers I have dissected they are free."

ERIOCAULON LEUCOMELAS Steud.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 306. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 875 [thesis]. 1973; Moldenke, Phytologia 26: 27--28 (1973) and 28: 444. 1974.

Alston (1931) suggests that this species and E. collinum Hook. f. are conspecific, with E. leucomelas having nomenclatural priority.

Additional citations: INDIA: Kerala: Santapau 13099 (E--1624153), 13168 (E--1624145).

ERIOCAULON LIGULAEFOLIUM Alston in Trimen, Handb. Fl. Ceylon 6: 304. 1931.

Bibliography: Alston in Trimen, Handb. Fl. Ceylon 6: 304. 1931; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 28: 445 (1974) and 29: 86. 1974.

Alston (1931) asserts that this taxon differs from E. thwaitesii Körn. in having its leaves 1/6 inch wide at the base (rather

than 1/3 inch) and the petals oblanceolate (rather than linear). He designates no type, but obviously has based his description on Ceylonese specimens. The name does not occur on any herbarium sheets that I have seen in the Peradeniya herbarium, nor has my friend, Magdon Jayasuriya, been able to locate any specimen so named by Alston at Peradeniya.

ERIOCAULON LIGULATUM (Vell.) L. P. Sm.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & 1157, map 1775, & Ind. 12. 1972; Moldenke, Phytologia 26: 460 & 476 (1973) and 28: 438. 1974.

Reitz and his associates describe this plant as an "erva" from "banhado do campo" or "campo úmido", with white flowers, and found it growing at altitudes of 2 to 1300 meters, flowering in September and October.

The Irwin, Harley, & Onishi 29319, cited below, has been distributed to at least some herbaria by the New York Botanical Garden as "Syngonanthus densifolius var. majus Moldenke Det. H. Moldenke, 1972", but this was doubtless due to an error in transcription since I reported the number in writing to the New York Botanical Garden authorities as Eriocaulon ligulatum when it was submitted to me for determination.

For some reason unknown to me, the United States National Herbarium photograph of one of the Berlin herbarium sheets of Sellow B.1290 C.263 has been distributed to other herbaria with a printed label reading "Sellow B-1290 292". The original specimens represented by this photograph and by the ten other photographs cited by me are all deposited in the herbarium of the Botanisches Museum in Berlin and have been seen and annotated by me.

Additional citations: BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 29319 (N); Sellow B.1290 (S--photo, Z--photo), B.1290 C.263 (S--photo, S--photo, Z--photo, Z--photo). Paraná: Hatschbach 22267 (W--2706985), 24920 (S). Rio Grande do Sul: Rambo 52183 (Rd--5673), 54575 (Rd--12280). Santa Catarina: Klein 4336 (Ld); Reitz & Klein 10120 (Ld), 13403 (Ld), 13478 (Ld), 13580 (Ac), 13618 (Ld), 13744 (Ld), 13772 (Ac); Smith & Klein 8242 (S). Santa Catarina Island: Klein & Eresolin 7592 (Ac). São Paulo: L. Riedel 2388 (S--photo, Z--photo). MOUNTED ILLUSTRATIONS: notes and drawings by Körnicke (S--photo, Z--photo).

ERIOCAULON LINEARE Small

Additional bibliography: Kral, Rhodora 75: 382--383. 1973; Moldenke, Phytologia 26: 183 (1973), 27: 444 (1974), 28: 428 (1974), and 29: 103, 104, & 111. 1974.

Recent collectors have found this plant in flower and fruit in June, August, and September. Henderson encountered it on the sandy margins of a small lake.

Kral (1973) cites Kral 36821 & 39494 from Baldwin County and Kral 43124 from Houston County, Alabama, and found it growing in

the peaty edges of a Hypericum pond, in wet sands and shallows of a lake shore, sandy beaches, and "abundant on wet sandy pond shores or submerged in shallows". He notes that "This species, while already reported for Alabama by Harper, is rare there. It is part of a group of species that frequents sandy shores of sinkhole lakes and ponds, in contrast to its nearest relative taxonomically, E. texense, which frequents acid pineland bogs from Texas to Georgia and which has usually died back by the time E. lineare comes into bloom and seed."

The scapes on R. M. Harper 830 are 6-angled. Harper 1608 is a mixture with Syngonanthus flavidulus (Michx.) Ruhl. Material of E. lineare has been misidentified and distributed in some herbaria as Lachnocaulon glabrum Körn. and very often as E. pellucidum Michx. On the other hand, the Small, DeWinkeler, & Rane 9815, distributed as E. lineare, is actually E. compressum Lam., Braun s.n. [July 26, 1938] is E. decangulare f. parviceps Moldenke, and R. M. Harper 85 is the type collection of E. lineare var. gigas Moldenke.

Additional citations: GEORGIA: Baker Co.: R. Kral 27079 (W--2673952); Thorne 4370 (W--2005928). Bulloch Co.: R. M. Harper 830 (W--400279--isotype). Lowndes Co.: R. M. Harper 1608, in part (W--431916). Sumter Co.: R. M. Harper 1395 (W--431698). FLORIDA: Bay Co.: R. Kral 15671 (W--2470350). Gulf Co.: Biltmore Herb. 3865 (W--955020), 3865a (W--335191). Leon Co.: R. M. Harper 223 (W--504585); N. C. Henderson 64-237 (Bl--199070); Kral & Godfrey 15575 (W--2470298), 15585 (W--2470351); Pelton s.n. [July 14, 1961] (W--2385072). Wakulla Co.: R. Kral 23024 (W--2470344). Walton Co.: R. M. Harper 47 (W--513528); R. Kral 17748 (W--2470349). ALABAMA: Baldwin Co.: R. M. Harper 22 (W--2365897). Covington Co.: R. Kral 36821 (W--2673938), 39494 (W--2673934). Houston Co.: R. Kral 43404 (W--2673936).

ERIOCAULON LINEARE var. GIGAS Moldenke, *Phytologia* 27: 444. 1974.

Bibliography: Moldenke, *Phytologia* 27: 444 (1974) and 28: 428. 1974.

The type collection of this variety was inaccurately cited by me previously as typical E. lineare Small.

Citations: FLORIDA: Santa Rosa Co.: R. M. Harper 85 (N--type, W--514644--isotype).

ERIOCAULON LINEARIFOLIUM Körn.

Additional bibliography: Moldenke, *Phytologia* 26: 28. 1973.

Additional citations: BRAZIL: Bahia: Anderson, Stieber, & Kirkbride 36810 (N). Mato Grosso: Hatschbach & Guimarães 24560 (S).

ERIOCAULON LIVIDUM F. Muell.

Additional bibliography: Beard, *West Austr. Pl.*, ed. 2, 25.

1970; Moldenke, Phytologia 24: 473. 1972.

ERIOCAULON LONGICUSPE Hook. f.

Additional synonymy: Eriocaulon cristatum var. bracteis floralibus denticulatis et longiuscule cuspidato-acuminatis Thwaites, Enum. Pl. Zeyl., pr. 1, 341. 1864. Eriocaulon cristatum var. Thwaites ex Hook. f. in Trimen, Handb. Fl. Ceylon 5: 3-4, in syn. 1900.

Additional bibliography: Thwaites, Enum. Pl. Ceylon, pr. 1, 341. 1864; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 303. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 206. 1968; Moldenke, Phytologia 24: 473 (1972), 26: 19 (1973), 28: 456 (1974), and 29: 85, 92, 98, & 105. 1974.

Gunawardena (1968) asserts that the specific epithet applied to this taxon refers to the "long black cusp" on the bracteoles. Wheeler encountered the plant in "sunny mucky wet meadows" at 4700 feet altitude, flowering and fruiting in July.

The Thwaites variety, cited in the synonymy above, was first placed here by Hooker (1900). I erroneously placed it under E. ceylanicum Körn. in earlier installments of this series of notes. The Jayasuriya & Sumithraarachchi 1567, distributed as E. longicuspe, is actually E. atratum var. major Thwaites.

Additional citations: SRI LANKA: G. Gardner s.n. [Thwaites C. P. 789] (Pd); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28301 (W); L. C. Wheeler 12176 (Pd).

ERIOCAULON LONGIPETALUM Rendle

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 232 & 236-237. 1901; Moldenke, Phytologia 24: 473. 1972.

Brown (1901) cites only the type collection of this species and states that the type locality is an area 3800 to 5500 feet in altitude.

ERIOCAULON LUZULAEFOLIUM Mart.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135] (1929) and 50 (1): 231. 1930; Alston in Trimen, Handb. Fl. Ceylon 6: 306. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 26: 20 & 28-29 (1973) and 29: 101 & 102. 1974.

Thwaites (1839) places E. trilobum Hamilt. in the synonymy of E. luzulaefolium, but I regard it as a synonym of E. sollyanum Royle. He cites C.P. 796 for E. luzulaefolium, but I regard that and the Craig 6, also distributed as E. luzulaefolium, as E. colinum Hook. f., while the Collector undetermined s.n. [Dolosbagie, April 1882] is actually E. quinquangulare L.

Eriocaulon luzulaefolium is recorded for Sri Lanka (based on a

Gardner collection) by Hooker in Trimen's Flora and by Ruhland (1903), but Fyson states that "The Ceylon plant, C.P. 796, so named, has none of the characteristic truncate appearance of the head on a saucer-shaped involucre and is E. collinum." This is true of C.P. 796, but some of the specimens filed as E. collinum in some herbaria certainly do have the truncate appearance he ascribes to E. luzulaefolium.

Additional citations: INDIA: Assam: Jenkins s.n. [Assam] (Pd).

ERIOCAULON MACROBOLAX Mart.

Additional bibliography: Moldenke, Phytologia 24: 474. 1972.

Someone (Martius? Körnicke?) has written on one of the labels of a Martius collection in the Munich herbarium "Cfr. Dupatyia ligulata Vell. Fl. Flum. 1. t. 86" and it is indeed very possible that E. macrobolax is conspecific with E. ligulatum (Vell.) L. B. Sm. The sheaths are completely truncate at their apex in all the Martius collections cited below.

Additional citations: BRAZIL: Minas Gerais: Martius s.n. [in udis deserti versus fluv. Rio S. Franc. vergentibus et in Serra de S. Antonio Minas; Macbride photos 18688] (Mu--type), s.n. [in udis fluvii Rio de São Francisco: Caiteté] (Mu, Mu, Z).

ERIOCAULON MACROPHYLLUM Ruhl.

Additional bibliography: Backer, Handb. Fl. Java 3: 6. 1924; Moldenke, Phytologia 24: 474 (1972) and 29: 94. 1974.

Backer (1924) is of the opinion that E. macrophyllum is conspecific with, and the name a synonym of, E. blumei Körn.

ERIOCAULON MAGNIFICUM Ruhl.

Additional bibliography: Hocking, Excerpt. Bot. A.18: 444. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & Ind. 12. 1972; Moldenke, Phytologia 26: 23, 28, 29, & 35 (1973) and 28: 438. 1974.

The original specimen represented by the photograph cited below, Ule 1689, is deposited in the herbarium of the Staatsinstitut für Allgemeine Botanik in Hamburg and has been seen and annotated by me.

Klein & Bresolin describe the plant as an "erva, flôr branca" and have collected it in "banhado", at 10 meters altitude, flowering in July.

Additional citations: BRAZIL: Santa Catarina: Ule 1689 (Z-- photo of isotype). Santa Catarina Island: Klein & Bresolin 6086 (Ld).

ERIOCAULON MAGNIFICUM var. GOYAZENSE Moldenke

Additional bibliography: Moldenke, Phytologia 24: 475. 1972.

Additional citations: BRAZIL: Goiás: Héringer & Lima 11717 (N-- isotype).

ERIOCAULON MAGNUM Abbiatti

Additional bibliography: Moldenke, *Phytologia* 26: 460. 1973.

Additional citations: PARAGUAY: Hassler 9428 (Ca--929581).

ERIOCAULON MANNII N. E. Br.

Additional & emended bibliography: N. E. Br. in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 8: 234 & 241. 1901; Moldenke, *Phytologia* 24: 476. 1972.

Brown (1901) cites only Mann 1689, the type collection, which he says is from "Lower Guinea. Gaboon: Sierra del Crystal."

ERIOCAULON MARGARETAE Fyson

Additional bibliography: Fedde & Schust. in *Just, Bot. Jahresber.* 53 (1): 60 [42]. 1928; Venkatareddi, *Bull. Bot. Surv. India* 12: 220. 1970; Moldenke, *Phytologia* 24: 476. 1972; R. R. Rao, *Stud. Flow. Pl. Mysore Dist.* 2: 875 [thesis]. 1973.

Venkatareddi (1970) refers to this plant as "Occasional", flowering in October and November, and cites his no. 101030.

ERIOCAULON MEGAPOTAMICUM Malme

Additional bibliography: Moldenke, *Phytologia* 25: 126. 1973.

This species has been collected in flower and fruit from January to March.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo 45243 (Rd--12296), 46190 (Rd--12297), 54863 (Rd--12293).

ERIOCAULON MELANOCEPHALUM Kunth

Additional bibliography: N. E. Br. in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 8: 240. 1901; Perrier de la Bâthie, *Cat. Pl. Madag.* 21. 1934; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1156--1157 & *Ind.* 12. 1972; Moldenke, *Phytologia* 26: 460 (1973) and 28: 456. 1974.

Additional citations: BRAZIL: Goiás: Irwin, Anderson, Stieber, & Lee 34424 (N). Mato Grosso: Richards 6496a (N), 6496/6496a (N).

MOUNTED ILLUSTRATIONS: Körn. in *Mart., Fl. Bras.* 3 (1): pl. 63. 1863 (N, Z).

ERIOCAULON MELANOCEPHALUM ssp. USTERIANUM Beauverd

Additional synonymy: Eriocaulon melanocephalum var. usterianum Beauverd ex Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1157. 1972.

Additional bibliography: Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1157 & *Ind.* 12. 1972; Moldenke, *Phytologia* 24: 477 (1972) and 28: 456. 1974.

ERIOCAULON MELANOLEPIS Alv. Silv.

Additional bibliography: Fedde & Schust. in *Just, Bot. Jahresber.* 53 (1): 60 [42]. 1928; Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Moldenke, *Phytologia* 26: 29 (1973) and 29: 94. 1974.

ERIOCAULON MESANTHEMOIDES Ruhl.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233, 235, & 244—245. 1901; Moldenke, Phytologia 26: 30. 1973.

Brown (1901) cites Goetze 293 and Stuhlmann 9143 from Tanganyika and comments that "In the very imperfect description given by Ruhland the flower-heads are described as somewhat glabrous (glabrusculus), and the involucrel-bracts as greenish-fuscous. I have not seen Stuhlmann's 9143, but in the plant collected by Goetze (from which I have made the above description), the heads are densely white-pubescent, and the involucrel-bracts white. The numerous, narrow, very prominent ribs on the peduncles are quite different from those of any other African species I have examined."

ERIOCAULON MICROCEPHALUM H.B.K.

Additional bibliography: Wikstr., K. Svensk. Vet. Acad. Handl. Stockh., ser. 2, 1: 12. 1820; Wkstr., Tronne Nya Art. Örtsl. Erioc. (repr.) 12. 1821; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 78, fig. 28-B. 1969; Moldenke, Phytologia 26: 461 (1973) and 28: 435. 1974.

Additional illustrations: Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 38-B. 1969.

Martin & Plowman describe this plant as a "prostrate" herb, growing in moist places. Sanchez Sanchez says that it blooms from June to August in the Valley of Mexico.

The Lent 143, distributed as E. microcephalum and so cited by me in 1969, is actually Paepalanthus kupperi Suesseng.

Additional citations: COSTA RICA: San José: Taylor & Taylor 11738 (N). COLOMBIA: Cundinamarca: Martin & Plowman 81 (Oa).

ERIOCAULON MINIMUM Lam.

Additional bibliography: A. Rich., Tent. Fl. Abyss. 2: 347. 1851; Alston in Trimen, Handb. Fl. Ceylon 6: 303 & 306. 1931; Alston, Kandy Fl. 76. 1938; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 24: 477—478 (1972), 26: 19 (1973), and 29: 86, 87, & 100. 1974.

Alston (1931) suggests that E. minimum is conspecific with E. truncatum Hamilt. He found it growing among moss at an altitude of 400 feet and it has been collected in anthesis in December. Material has been distributed in some herbaria as E. truncatum Hamilt.

Citations: SRI LANKA: Alston 1039 (Pd); Collector undetermined s.n. [Dambulla Rock, 20 Dec. 1881] (Pd).

ERIOCAULON MINUTUM Hook. f.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Venkatarreddi, Bull. Bot. Surv. India 12: 220. 1970; Moldenke, Phytologia 24: 478. 1972.

Venkatarreddi (1970) found this plant to be "Frequent", flower-

ing from September to January, and cites his nos. 93425 & 100942. The Collector undetermined s.n. [Dambulla Rock, 20 Dec. 1881], distributed as E. trimeni, is actually E. cinereum R. Br.

ERIOCAULON MIQUELIANUM Körn.

Additional bibliography: Ikuse, Pollen Grains Jap. 46. 1956; Moldenke, Phytologia 26: 30. 1973.

Additional citations: JAPAN: Honshu: Togashi MT.6857 [Fl. Jap. Exsicc. 68] (Ws).

ERIOCAULON MISERUM Körn.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 26: 30. 1973.

ERIOCAULON MITOPHYLUM Hook. f.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 24: 479. 1972.

ERIOCAULON MODESTUM Kunth

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1157 & Ind. 12. 1972; Moldenke, Biol. Abstr. 56: 3000. 1973; Moldenke, Phytologia 26: 27 & 30--31 (1973) and 23: 438. 1974.

Recent collectors have encountered this species on campos and in wet sandy places, flowering in October. Klein & Bresolin describe it as an "erva, flôr creme". The Rambo 56190, distributed as E. modestum, is actually Leiothrix flavescens (Bong.) Ruhl., while Glaziou 22309 is Paepalanthus pubescens Körn.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo 47053 (Rd--12289), 56190 (Rd--12287), 56464 (Rd--12288). Santa Catarina Island: Klein & Bresolin 6277 (Ld). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 62 II. 1863 (N, Z).

ERIOCAULON MODESTUM var. BREVIFOLIUM Moldenke

Additional bibliography: Moldenke, Phytologia 24: 479. 1972. Additional citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 13781 (N--isotype, W--2709895--isotype); Irwin, Harley, & Smith 32175 (N).

ERIOCAULON MODESTUM f. GRANDIFOLIUM Herzog

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1157 & Ind. 12. 1972; Moldenke, Phytologia 24: 479. 1972.

ERIOCAULON MODESTUM f. VIVIPARUM Herzog

Additional bibliography: Moldenke, Biol. Abstr. 56: 3000. 1973; Moldenke, Phytologia 26: 30--31. 1973.

ERIOCAULON MONTANUM Van Royen

Additional bibliography: Moldenke, *Phytologia* 24: 481. 1972.

Kalkman describes this plant as "forming dense mats on slightly damper places; many seedlings between the mature plants; seeds germinating ON the plant; involucre bracts membranous; anthers black; pollen white; styles light-green", and found it growing in fire-induced grass- and fen-fields, at 3540 meters altitude, noting "also collected in FAPA".

Additional citations: NEW GUINEA: Papua: Kalkman 4833 (Ca--M263613).

ERIOCAULON MUTATUM N. E. Br.

Additional & emended bibliography: N. E. Br. in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 8: 232 & 256--257. 1901; Moldenke, *Phytologia* 26: 461. 1973.

Brown (1901) cites only Welwitsch 2448, 2449, & 2450 from Angola.

ERIOCAULON NAKASIMANUM Satake

Additional & emended bibliography: Satake, *Journ. Jap. Bot.* 46: 110 & 111 [13 & 15]. 1971; Moldenke, *Phytologia* 24: 481 & 482. 1972.

ERIOCAULON NANTOENSE Hayata

Additional bibliography: Wangerin in *Just, Bot. Jahresber.* 49 (1): 160. 1927; Fedde in *Just, Bot. Jahresber.* 49 (2): 423. 1932; Moldenke, *Phytologia* 26: 461. 1973.

ERIOCAULON NASUENSE Satake

Additional & emended bibliography: Satake, *Journ. Jap. Bot.* 46: 109--111 [13--15], fig. 1 & 2. 1971; Moldenke, *Phytologia* 26: 31. 1973.

Emended illustrations: Satake, *Journ. Jap. Bot.* 46: 109 & 110 [13 & 14], fig. 1 & 2. 1971.

ERIOCAULON NEESIANUM Körn.

Additional bibliography: Alston in *Trimen, Handb. Fl. Ceylon* 6: 305. 1931; Moldenke, *Phytologia* 24: 482 (1972) and 26: 41. 1973.

Alston (1931) avers that this species was based originally on Thwaites C.P. 790 and "seems scarcely distinct from E. thwaitesii Körn. though it is kept up by Ruhland". I regard C.P. 790 (at least in part) as E. truncatum Hamilt. It must be remembered, however, that Thwaites' "C. P." numbers are in very many cases mixtures of plants collected in often widely separated places, often by different collectors, and very often represent several species. Actually Körnicke's original description does not cite any collector or collector's number. It merely says "Ceylon (Hb. Berol. ex Hb. N. ab E. In Hb. Kegel. sine patria et collectore indicato". The Berlin specimen, which I have seen, is G. Gardner 936.

Alston also claims that this species is mentioned in Fyson, Journ. Indian Bot., page 63, but I can find no such mention on that page either in volumes 2 or 3 in which Fyson wrote on the Eriocaulaceae.

ERIOCAULON NEGLECTUM Ruhl.

Additional bibliography: Moldenke, Phytologia 24: 479 & 482—483. 1972.

The Lützelburg collection, cited below, is a mixture with Paealanthus lamarckii Kunth and Syngonanthus gracilis var. temisimus Ruhl. It was collected on moist campos, flowering in August.

Additional citations: BRAZIL: Amazonas: Lützelburg 20687, in part (Mu).

ERIOCAULON NEPALENSE Prescott

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 26: 461. 1973.

The flower-heads on Nath 4552 are black, while on Nath 4504 they are merely blackish.

Additional citations: INDIA: Assam: Hooker & Thomson s.n. [Mont. Khasia, 0--6000 ped.] (Pd). East Punjab: Nath 4504 (Yh), 4552 (Kh). Kerala: Stocks, Law, &c. s.n. [Malabar, Concan] (Pd).

ERIOCAULON NILAGIRENSE Steud.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 168 [134]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 305. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 295. 1933; Moldenke, Phytologia 24: 461 (1973), 28: 401, 444, & 445 (1974), and 29: 86, 96, & 97. 1974.

Recent collectors have found this plant growing in swampy depressions in wet black patana grasslands along streams with grasses, in wet (running water) situations in small valleys, in wet meadows along small streams, on steep slopes with wet flush and melastome shrubs, in shade along paths, along rivulets in sunny meadows, in open marshy ground, and in the transition zone between wet patana and forest, at altitudes of 1665 to 2700 meters in Sri Lanka, flowering and fruiting there from January to March and May to October. Cramer refers to it as "common" or "fairly common", Koyama as "locally abundant", and Comanor as a "frequent fleshy plant". Cramer speaks of the flowering heads as being "snowy-white", 1.2—1.4 cm. in diameter, and Comanor and Koyama refer to them as "white". Hepper says that the plants are "shortly tufted".

Material has almost uniformly been identified and distributed as E. brownianum Mart., a species with glabrous foliage, sheaths, and scapes, or as E. wightianum Mart. Thwaites C.P. 378 is a mixture with E. brownianum var. latifolium Moldenke.

My wife and I found E. nilagirensis extremely widespread and abundant in many localities on the Horton Plains of Sri Lanka.

The T. Koyama 13642 in the Britton Herbarium, as well as Bembower 429, previously cited by me as typical E. nilagirensis, are actually f. parvifolium Moldenke.

Additional citations: SRI LANKA: Collector undetermined s.n. [Knuckles, 1881] (Pd), s.n. [Naha Eliya, 6.V.96] (Pd); Comanor 980 (Pd); Cramer 3149 (Pd); Gould & Cooray 13760 (Pd); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28269 (Ac, Ca, E, Gz, Kh, Ld, Pd, Tu, Z), 28270 (Ac, Ld, Pd), 28274 (Ac, E, Gz, Kh, Ld, Pd, Tu); Mueller-Dombois & Comanor 67070941 (Pd); A. M. Silva s.n. [Sita Eliya, 21/3/06] (Pd).

ERIOCAULON NILAGIRENSIS f. PARVIFOLIUM Moldenke, Phytologia 28: 401. 1974.

Bibliography: Moldenke, Phytologia 28: 401, 444, & 445. 1974.

This form differs from the typical form of the species in its shorter leaves at time of anthesis, these being in general only 8--18 cm. long.

The type of this form was collected in a ditch in black parana grassland on the Horton Plains along the road from Farr Inn to World's End, at an altitude of 7000 feet, Nuwara-Eliya District, in the Central Province of Sri Lanka. Other collectors have found the form along rivulets in sunny meadows, at the wet edges of narrow streams mixed with Fimbristylis monticola and Carex arnotiana, and on "steep slopes with a wet flush and melastomaceous shrubs", at altitudes of 6300--8100 feet, flowering in January, May, and June. My wife and I found it quite abundant in various habitats in the highlands.

Additional citations: INDIA: Madras: Bembower 429 (Ca--495797, N). SRI LANKA: Cramer 3259 (Pd); G. Gardner 938 (Pd); Hepper 4428 (Pd, W--2720003); Hoogland 11504 (Pd); T. Koyama 13521 (Pd), 13642 (N); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28273 (Ac, Ca, Gz, Kh, Ld, Pd, Tu), 28275 (Pd), 28276 (Ac--isotype, Gz--isotype, Kh--isotype, Ld--isotype, Pd--isotype, Tu--isotype, Z--type), 28278 (Ac, Gz, Kh, Ld, Pd), 28286 (Pd), 28298 (Ac, Gz, Ld, Pd), 28300 (W), 28302 (Pd); J. M. Silva s.n. [Horton Plains, 20/5/1911] (Pd); N. D. Simpson 9427 (Pd); Thwaites C.P. 378, in part [Nuwara Eliya, 1851] (Pd), C.P. 378, in part [Ambagamuwa, 1854] (Pd); Trimen s.n. [Dumbanagala Hill, Sept. 1888] (Pd); L. C. Wheeler 12534 (Pd, W--2716373); J. C. Willis s.n. [Horton Plains, 26/1/06] (Pd).

ERIOCAULON NIPPONICUM Maxim.

Additional & emended bibliography: Ikuse, Pollen Grains Jap. 46. 1956; Satake, Journ. Jap. Bot. 46: 372--373 [20--21]. 1971; Moldenke, Phytologia 26: 32 & 39. 1973.

ERIOCAULON ODORATUM Dalz.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 24: 485. 1972; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 875 [thesis]. 1973; Moldenke, Phytologia 28: 444. 1974.

Material of this species has been misidentified and distributed in some herbaria as E. wightianum Mart.

Additional citations: INDIA: Indore: Siranji s.n. [31.3.69] (Oa). Kerala: Stocks, Law, &c. s.n. [Malabar, Concan] (Pd).

ERIOCAULON ORYZETORUM Mart.

Additional bibliography: Mart., Erioc. Selbst. Pflanzenfam. 29. 1833; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Sharma, Nucleus 15: Append. 10. 1972; Moldenke, Phytologia 26: 32. 1973.

Sharma (1972) reports a chromosome count of "c. 60, 90" for this species.

ERIOCAULON OVOIDEUM Britton & Small

Additional bibliography: Moldenke, Phytologia 24: 286. 1972.

Additional citations: ISLA DE PINOS: Killip 42859 (S).

ERIOCAULON PALUDICOLA Alv. Silv.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 26: 32. 1973.

ERIOCAULON PARAGUAYENSE Körn.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1157 & Ind. 12. 1972; Moldenke, Phytologia 24: 488. 1972.

ERIOCAULON PARKERI B. L. Robinson

Additional & amended bibliography: R. McVaugh, N. Y. State Mus. Bull. 360A: 93. 1958; Sharma, Nucleus 15: Append. 10. 1972; W. Stone, Pl. South. N. J., pr. 2, 323 & 324. 1973; Moldenke, Phytologia 26: 461 (1973) and 28: 427. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 120, 382, 480, 509, 559, 625, & 762. 1974.

Additional citations: QUEBEC: Québec Co.: Raymond, Kucyniak, Marie-Victorin, & Rolland-Germain 55073 (W--1948438). MAINE: Penobscot Co.: Fernald & Long 13166 (W--1328989). Sagadahoc Co.: Fernald & Long 174 (W--986888). MASSACHUSETTS: Plymouth Co.: Fernald & Svenson 860 (W--1885738). CONNECTICUT: New London Co.: R. W. Woodward s.n. [Sept. 2, 1918] (W--1011651). NEW YORK: Iona Island: Muenschler & Curtis 5598 (W--1725373). Rogers Island: Muenschler & Curtis 5600 (W--1725374). PENNSYLVANIA: Lancaster Co.: Heller & Halbach s.n. [September 12, 1891] (W--45303, W--406592).

MARYLAND: Baltimore Co.: Hermann 9797 (W--1732730). Cecil Co.: Abbott 2432 (W--1285371, W--2160446), s.n. [Aug. 8, 1926] (W--1683397); Leonard & Leonard 5779 (W--1242708, W--2160547). Charles Co.: E. H. Walker 3868 (W--1920882). Harford Co.: Shull 69 (W--640867). Wicomico Co.: Canby s.n. [Sept. 8, 1887] (W--45287); Shreve & Jones 1204 (W--608541). Worcester Co.: E. H. Walker 4220 (W--2005339). DISTRICT OF COLUMBIA: Steele s.n. [Aug. 28, 1896] (W--363621); Ward 113 (W--937192), s.n. [Sept. 10, 1882] (W--152101). VIRGINIA: Alexandria City: Dowell 6451 (W--640425). Fairfax Co.: Blake 8921 (W--1285196); F. W. Pennell 2587 (W--648276); Uhler s.n. [August 6, 1933] (W--2422085). James City Co.: Fernald & Long 10988 (W--1810142). New Kent Co.: Fernald & Long 13576 (W--2003389). County undetermined: L. F. Ward s.n. [Near Custis Spring, Sept. 29, 1878] (W--243902), s.n. [Virginia, 1878] (W--242420). NORTH CAROLINA: Tyrrell Co.: Radford 44454 (Ca--4158293).

ERIOCAULON PARVUM Körn.

Additional & emended bibliography: Ikuse, Pollen Grains Jap. 46. 1956; Satake, Journ. Jap. Bot. 46: 373 [21]. 1971; Moldenke, Phytologia 24: 489. 1972.

ERIOCAULON PELLUCIDUM Michx.

Additional synonymy: Eriocaulon triangulare With. ex Moldenke, Phytologia 28: 457, in syn. 1974. Eriocaulon articulatum Hudson ex Moldenke, Phytologia 28: 456, in syn. 1974.

Additional & emended bibliography: J. Jacks., Fl. Worcester Co., ed. 2, 56. 1894; Twining, Fl. Northeast. Penn. 24. 1917; Wangerin in Just, Bot. Jahresber. 53 (2): 261. 1925; Blewitt, Fl. Waterbury 39. 1926; Rydb., Fl. Prairies & Plains, pr. 1, 198 & 940, fig. 107. 1932; Dole, Fl. Vt., ed. 3, 78. 1937; Erdtman, Introd. Pollen Analys. 56, [57], & 236, pl. 1, fig. 10 & 11. 1943; Scoggan, Natl. Mus. Canada Bull. 115: 146. 1950; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 163 & 523, fig. 94A. 1952; E. G. Voss, Mich. Bot. 4: 17, 22, & 23. 1965; Stuckey, Mich. Bot. 5: 105. 1966; Erdtman, Pollen Morph. & Pl. Tax., ed. 2, pr. 1, 163 & 523, fig. 94A (1966) and ed. 2, pr. 2, 163 & 523, fig. 94A. 1971; Rydb., Fl. Prairies & Plains, pr. 2, 1: 198, fig. 107 (1971) and pr. 2, 2: 940. 1971; Sharma, Nucleus 15: Append. 10. 1972; Thorne, Quart. Rev. Biol. 47: 370. 1972; W. Stone, Pl. South. N. J., pr. 2, 323 & 324, pl. 28, fig. 1. 1973; Moldenke, Phytologia 26: 461--462 (1973), 28: 426, 427, 429, & 457 (1974), and 29: 86, 103, 107, & 110. 1974; Howes, Dict. Useful Pl. 86. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Étud. Nord. 7:] 120, 470, 498, 509, 705, & 762. 1974.

Additional & emended illustrations: Rydb., Fl. Prairies & Plains, pr. 1, 198, fig. 107. 1932; Erdtman, Introd. Pollen Analys. [57], pl. 1, fig. 10 & 11. 1943; Erdtman, Pollen Morph. & Pl. Tax., ed. 1, 163, fig. 94A (1952), ed. 2, pr. 1, 163, fig.

94A (1966), and ed. 2, pr. 2, 163, fig. 94A. 1971; Rydb., Fl. Prairies & Plains, pr. 2, 1: 198, fig. 107. 1971; W. Stone, Pl. South. N. J., pr. 2, pl. 28, fig. 1. 1973.

Erdtman (1943) describes the pollen as "Grains spheroidal; exine folded into long, low ridges separated by narrow grooves, which functionally correspond to the furrows in other grains. The grains are subechinate or warty, provided with a faint reticulate texture. The pollen grains of Aphyllanthes monspeliensis [Aphyllanthaceae] as well as the grains of some species of Berberis [Berberidaceae] and Pinguicula [Lentibulariaceae] show certain resemblances to those of Eriocaulon."

The scapes on W. H. Brown 66 are 6--8-angled. Dole (1937) refers to this species are frequent on the shores of lakes and ponds in Vermont; Stuckey (1966) says that it grows in association with Rorippa islandica var. hispida along moist sandy lake-shores in Cheboygan County, Michigan, and is "abundant, usually more than 10 plants and covering a large portion of the site, usually extending beyond the meter limits" in an area where wind and water erosion has exposed the soil. Voss (1965, 1967, 1972) found it growing on moist sandy or sandy-mucky lake shores with many rushes (Juncus), many St. Johnsworts (Hypericum), Utricularia cornuta, and Littorella americana. The last-mentioned plant exhibits similar leaf-rosettes, but lacks the characteristic septate aspect. In fact, he says, the cross-markings in the roots of this pipewort distinguish it at once "from all other submerged rosette-formers". He found it in Schoolcraft and Vilas Counties, Michigan, and describes the plant as growing "On wet sandy or boggy shores or in shallow water, the heads usually emerged (on scapes at least to 40 cm long in water, only a few cm long on land); especially characteristic of soft-water and acid lakes, where the rosettes of distinctive leaves and cross-hatched roots may form a dense turf even in deep water (3 to 4 feet or more). [It is] The most common and widespread rosette-former of such lakes [in Michigan], although locally outnumbered by Isoetes spp., Littorella uniflora, Juncus pelocarpus f. submersus, Lobelia dortmanna, or other associates."

Scoggan (1950) gives the distribution of this plant as "Shallow water of lakes (Lac Pérot, Matane co.; Lac des Sept Iles, Cha.; Sayabec). (Boreal-) temperate eastern American: Minn. to Mingan Is. and Nfld., southw. to Ind. and N. C.; relic in western Scotland and Ireland."

Recent collectors have found it growing in quiet pools along rivers, in ponds, in shallow water forming floating Sphagnum mats, in shallow water along shores, on "drying mucky" lake shores, on boggy shores, in "shallow pools in bog-barrens", on the margins of ponds among the sandstone and arenaceous slate hills on Newfoundland, on "exsiccated shores", in boggy pond margins, on wet gravelly shores, in flowing water, on sandy and muddy tidal flats, in the swampy edges of freshwater ponds, "common on floating bogs" in Labrador, on sandy and peaty pond

margins, in "mud and water", in swamps and boggy marshes, and in shallow water generally. Hotchkiss & Koehler refer to it as "abundant on soft muddy sand in very shallow water" and "common on soft muck" in Wisconsin and "with Nymphozanthus in 1 1/2 feet of water over sandy bottoms". Other collectors report finding it in water 1 to 6 feet deep -- Vasey collected specimens with scapes 84 cm. long in water 3--6 feet deep. Iltis and his associates found it "in very dense cover of aquatic plants in shallow water over marly muck, with Potamogeton, Myriophyllum tenellum, etc." and "in very extensive swinging sedge mat (no Sphagnum) with Carex spp., Mariscus, Rynchospora alba, Drosera intermedia, Utricularia cornuta, Nuphar, and Nymphaea" in Wisconsin, while Kral, in New Jersey, found it growing on "peaty banks and in shallow water at edge of pond in Chamaecyparis area" [white-cedar swamps].

Besides the months previously recorded by me in these notes, the species has been collected in anthesis in June and the flower heads are uniformly described as "white", the scapes sometimes as "stiffish" [when not under water], and the leaves as dark-green in color.

Swift (1941) gives us a picturesque description of this plant: "Under the pickerel weed and Labrador tea, fly honeysuckle and pitcher plants, grows the delicate, queer little water-bog dweller pipewort, Eriocaulon articulatum, like tiny lead-white golf balls on the end of sticks. They look like little war clubs, three inches to a foot tall. These, the fisher-wives say, are batons, witches' wands, carried by the pirate folk to cast spells over the bog-trotters, being made of the skulls of honest sailor men the pirates made to walk the plank."

Howes (1974) records the common name "duck grass" for this plant -- not to be confused with "duckweed" applied to Lemna. Sharma (1972) reports the chromosome counts of 32 and 48, but in this he actually is reporting the counts for E. pellucidum and its European counterpart, E. aquaticum (J. Hill) Druce.

The Killip 13295, P. C. Standley 15, 12552, 12585, & 12821, and Van Sickle s.n. [Landisville, Aug. 10, 1890], distributed as E. pellucidum, are all actually E. compressum Lam.; Canby s.n. [Pine barrens] and Drushel 8358 are E. decangulare L.; Cory 56611, Coville s.n. [Holmead's Swamp, Sept. 29, 1889], Olds s.n. [Old Powder Mill Swamp, Sept. 1893], and P. C. Standley 11756 are E. decangulare f. parviceps Moldenke; Biltmore Herb. 3865 & 3865a and R. M. Harper 22 & 223 are E. lineare Small; and Canby s.n. [Sept. 8, 1887], Heller & Halbach s.n. [September 12, 1891], Radford 44454, Shreve & Jones 1204, Shull 69, Steele s.n. [Aug. 28, 1896], and L. F. Ward 113, s.n. [Virginia, 1873], s.n. [Near Custis Spring, Sept. 29, 1878], and s.n. [Sept. 10, 1882] are E. parkeri B. L. Robinson

Additional citations: LABRADOR: Gillett & Findlay 5471 (W-2232864). NEWFOUNDLAND: Fernald, Long, & Fogg 1476 (W-2050242);

Fernald & Wiegand 5068 (W--897807); Robinson & Schrenk 112 (W--217138, W--937189), s.n. [12 Aug. 1894] (W--217203, W--937190); Rouleau 2508 (W--2130194), 5947 (W). NOVA SCOTIA: Digby Co.: Fernald & Long 20594 (W--1104229). Guysborough Co.: Fowler s.n. [Aug. 3, 1901] (W--430715, W--605650); C. A. Hamilton 25149 (W--390372). Halifax Co.: Scoggan 13873 (Ca--M150905, N). Lunenburg Co.: Fernald & Long 23574 (W--2050716). Pictou Co.: H. Saint John 1403 (W--644846). Shelburne Co.: Fernald & Long 23567 (W--2050715, W--2050786), 23577 (W--2050717). Yarmouth Co.: Fernald, Bissell, Graves, Long, & Linder 20597 (W--1104230). Cape Sable Island: H. Saint John 1168 (W--1104093). Madame Island: Rousseau 35579 [Natl. Herb. Canada 130088] (W--1654196). Saint Paul Island: Perry & Roscoe 127 (W--1620404). NEW BRUNSWICK: Saint John Co.: Fowler s.n. [July 21, 1875] (W--481776), s.n. [St. Johns, 1881] (W--45299). QUEBEC: Argenteuil Co.: Marie-Victorin, Rolland-Germain, Raymond, & Boivin 56488 (W--1948589); Rolland-Germain s.n. [August 21, 1946] (W--2328130). Carleton Co.: Macoun 4507 (W--284704). Montcalm Co.: C. V. Morton 10971 (W--2329026), 11008 (W--2329052); Rousseau & Goudreault 151 (W--2231771). Saguenay Co.: Cinq-Mars, Rousseau, & Bonneau 63-886 (Ca--M307180). Wolfe Co.: Blais, Deshaies, & Forest 10729 (Ca--1358441). ONTARIO: Algoma Dist.: Taylor, Hosie, Fitzpatrick, Losee, & Leslie 1339 (W--1788944). Frontenac Co.: Garwood, Beschel, & al. 2608 (Ca--1359734). Parry Sound Dist.: Moseley s.n. [Aug. 24, 1909] (W--752662). Renfrew Co.: Umbach s.n. [Bonnie Chere Mts., July 22, 1899] (W--382991). Muskoka Dist.: Seaman s.n. [Port Stanfield, 1-9-1889] (W--787755). Nipissing Dist.: W. R. Watson 6690 (W--1669335). Thunder Bay Dist.: Calder 1749 (W--2131532). Bis Island: E. D. McDonald Jr. 313 (W--1924549). MAINE: Aroostook Co.: Kimball s.n. [Hurd Lake, 9 Aug. 1901] (W--412989). Cumberland Co.: J. Blake 660 (W--2588806); Kendall s.n. [Tinney River, July 11, 1899] (W--343981, W--343982). Franklin Co.: Fellows 6811 (W--785987). Knox Co.: Fellows 5772 (W--982283). Oxford Co.: F. W. Johnson 125 (W--1621618). Penobscot Co.: Fernald 369 (W--278448), s.n. [Orono, 8-18-1890] (W--414496). Piscataquis Co.: Hermann 19124 (W--2413839). Mount Desert Island: McAtee 3201b (W--1467302), 3203 (W--1467305). NEW HAMPSHIRE: Belknap Co.: W. F. Wright 287 (W--671618). Carroll Co.: M. A. Day s.n. [Aug. 15, 1904] (W--647837). Cheshire Co.: Batchelder s.n. [Richmond, Sept. 3, 1916] (W--1071372). Pittsburg Co.: Kendall, Goldsborough, & Doolittle 99 (W--591915). Sullivan Co.: Standley & Kilip 7682 (W--1117038). VERMONT: Caledonia Co.: A. F. Stevens s.n. [Peacham, 1892] (W--309080). Chittenden Co.: S. F. Blake 2572 (W--1204003). Rutland Co.: Drushel 10037 (W--1688971). MASSACHUSETTS: Barnstable Co.: Fernald & Fogg 567 (W--1885739);

Fernald & Long 16512 (W--1223366). Hampden Co.: Pillsbury s.n. [Springfield, 30.8.1878] (W--1119469). Norfolk Co.: S. F. Blake 4408 (W--1204154); Mohr & Faxon s.n. [Sept. 15, 1895] (W--784509). Plymouth Co.: McAtee 1043 (W--588731). Suffolk Co.: Herb. Wellesley Coll. s.n. [Wellesley, July 7, 1893] (W--270814). Worcester Co.: Allard 19510 (W--2008872). Martha's Vineyard: Fogg 2809 (W--1492395); F. C. Seymour 1139 (W--1103886). CONNECTICUT: New Haven Co.: Harger 3000 (W--2509829). Tolland Co.: N. L. Britton s.n. [Mansfield] (W--309075). County undetermined: Averill s.n. [Conn.] (W--45290). NEW YORK: Albany Co.: L. F. Ward 112 (W--937191), s.n. [Albany Lake, Aug. 18, 1879] (W--152103). Cayuga Co.: Coville s.n. [June 30, 1887] (W--295739). Chenango Co.: Coville s.n. [McDonough, July 27, 1886] (W--295740). Essex Co.: Killip 12590 (W--1285485), 12745 (W--1285551). Herkimer Co.: Coville s.n. [Oct. 8, 1890] (W--45293). Nassau Co.: P. Wilson s.n. [Merrick, Sept. 11, 1915] (Kh). Oneida Co.: Haberer 2739 (W--1200260); Rowlee s.n. [Crooks Lake, Sept. 5, 1906] (W--605103). Oswego Co.: Clausen & Hinkey 4383 (W--1814862); Fernald, Wiegand, & Eames 14204 (W--2050894). Saint Lawrence Co.: Muenscher & Clausen 3863 (W--1633536); O. P. Phelps 296 (W--644628). Suffolk Co.: Muenscher & Curtis 6811 (W--1732058). Sullivan Co.: Mearns 133 (W--648010). Warren Co.: D. S. Carpenter s.n. [July 29, 1933] (Ca--1332108); G. W. Clinton s.n. (W--784517); Vasey s.n. [Lake George, Sept. 1882] (W--784518), s.n. [Lake George, 1882] (W--45297), s.n. [Lake George] (W--45291, W--45298). Westchester Co.: Pollard s.n. [near Lake Waccabuc, August 12, 1894] (W--309082). NEW JERSEY: Atlantic Co.: Stanley & Killip 7605 (W--1220018). Cumberland Co.: R. Kral 22590 (Ca--1306581, W--2470380). Hudson Co.: Van Sickle s.n. [Secaucus, July 9, 1894] (W--309081). Ocean Co.: A. Brown s.n. [Manchester, June 5, '76] (W--937193); Gleason, Smith, & Alexander 173 (W--1621765); Hollick s.n. [Tom's River, Aug. 15, 1885] (W--309074); Leonard & Leonard 6432 (W--2160334); Moldenke & Moldenke 28550 (Ac, Ca, E, Gz, Kh, Ld, Tu); A. B. Rich s.n. [Tom's River, May 30, 1887] (W--78755). Passaic Co.: Van Sickle s.n. [Green Pond, Aug. 1, 1894] (W--242227). Sussex Co.: J. K. Small s.n. [Budd's Lake, August 12-14, 1890] (W--298339). County undetermined: W. M. Canby s.n. [Pine barrens] (W--45268); A. Gray s.n. [N. J.] (W--45300). PENNSYLVANIA: Lackawanna Co.: Topping s.n. [Mud Pond, Aug. 1, '97] (W--298142). Luzerne Co.: Heller & Halbach 691 (W--45296). Pike Co.: T. C. Porter s.n. [XII Mile Pond, Aug. 18, 1870] (W--45302). DELAWARE: New Castle Co.: Chickering s.n. [Townsend, July 11, 1873] (W--2588396). MARYLAND: Anne Arundel Co.: Hotchkiss 7301 (W--2005772). Wicomico Co.: J. H. Holmes 165 (W--45292). VIRGINIA: Fairfax Co.: Harger

3001 (W-2509830). NORTH CAROLINA: Craven Co.: W. H. Brown 66 (W-51906). INDIANA: Marshall Co.: H. W. Clark 2 (W-645144). Starke Co.: Evermann 1017 (W-357850). MICHIGAN: Cass Co.: Gates & Pepon 858 (W-648949). Cheboygan Co.: H. C. Beardslee s.n. [July 1890] (W-517578); Cutler s.n. [Aug. 27, 1937] (W-1726536); F. C. Gates 11119 (Gz); Swallen s.n. [Douglas Lake, June, July 1924] (W-1437108), s.n. [Douglas Lake, July 1924] (W-1631153). Marquette Co.: Dachnowski-Stokes s.n. [Aug. 21, 1906] (W-1728327); C. K. Dodge s.n. [Sept. 2, 1916] (W-1073131); Metcalf 2172 (W-1289298). Mason Co.: Chaney 67 (W-752931). Presque Isle Co.: F. J. Hermann 7012 (W-1632757). WISCONSIN: Marquette Co.: Iltis, Bell, Melchert, Patman, & Witt 12548 (Ca-M150064). Oconto Co.: Hotchkiss & Koehler 4327 (W-1432187). Polk Co.: Hotchkiss & Koehler 4489 (W-1434365). Shawano Co.: Hotchkiss & Koehler 4312 (W-1432179). Waupaca Co.: Hotchkiss & Martin 4436 (W-1434338); H. H. Iltis 13379 (Ca-M150065). MINNESOTA: Chisago Co.: B. C. Taylor s.n. [Aug. 1892] (W-45288). Cook Co.: Butters & Buell 474 (W-1580306). Lake Co.: Kubichek 163 (W-1327841); E. P. Metcalf 1518 (W-1327934). Morrison Co.: Sandberg 887 (W-45289). Saint Louis Co.: Moyle 2456 (W-1725248). County undetermined: F. F. Wood s.n. [Lake Seigamagah, July 20, 1891] (W-45289). LOCALITY OF COLLECTION UNDETERMINED: Beauchamp s.n. [July 23, '85] (W-152102). MOUNTED CLIPPINGS: Kunth, Enum. Pl. 3: 540. 1841 (W).

ERIOCAULON PERPLEXUM Satake & Hara

Additional bibliography: Okuyama, Journ. Jap. Bot. 47: 126. 1972; Moldenke, Phytologia 24: 491. 1972.

ERIOCAULON PLUMALE N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233, 251, & 252. 1901; Moldenke, Phytologia 26: 462. 1973.

Brown (1901) cites only the type collection, Heudelot 148, from Senegambia, and comments that "This species is well marked by the very different form of the sepals in the male and female flowers, and by the somewhat plumose appearance of the ultimately oblong heads, due to the protruding odd petal of the male flowers. It is allied to the following species [E. senegalense N. E. Br.], but besides the differences noted thereunder, the much shorter, terete, 5-6-ribbed (not acutely angular) peduncles will at once distinguish it."

ERIOCAULON POLYCEPHALUM Hook. f.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Saxena, Bull. Bot. Surv. India 12: 62. 1970; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke,

Phytologia 26: 32 & 34. 1973.

Saxena (1970) found this species "Occasional in marshy places", flowering in September, and cites Saxena 2972 from Madhya Pradesh, India.

ERIOCAULON PULCHELLUM Körn.

Additional & emended bibliography: Durand & Schinz, *Consp. Fl. Afr.* 5: 503. 1894; N. E. Br. in *Thiselt.-Dyer, Fl. Trop. Afr.* 8: 232 & 237. 1901; Moldenke, *Phytologia* 26: 462. 1973.

Brown (1901) cites only the type collection, Afzelius s.n., from Sierra Leone, and comments that "I cannot, from the description given, distinguish E. pumilum from E. pulchellum; the only differences assigned are, that the bracts of E. pumilum are slightly larger, and the involucre bracts slightly narrower and longer than in E. pulchellum, and are acute instead of obtuse. The two supposed species were mixed in Afzelius' herbarium. I have only seen E. pulchellum, a small and very distinct species."

ERIOCAULON PUMILIO Hook. f.

Additional bibliography: Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Moldenke, *Phytologia* 24: 494. 1972.

ERIOCAULON PYGMAEUM Soland.

Additional bibliography: Beard, *West Austr. Pl.*, ed. 2, 25. 1970; Moldenke, *Phytologia* 24: 494. 1972.

ERIOCAULON QUINTANGULARE L.

Additional synonymy: Eriocaulon quinquangulare L. ex Saxena, *Bull. Bot. Surv. India* 12: 62, sphalm. 1970.

Additional bibliography: Mart., *Erioc. Selbst. Pflanzenfam.* 24 & 29. 1833; Durand & Schinz, *Consp. Fl. Afr.* 5: 503. 1894; N. E. Br. in *Thiselt.-Dyer, Fl. Trop. Afr.* 8: 259. 1901; Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135] (1929) and 50 (1): 231--232. 1930; Alston in *Trimen, Handb. Fl. Ceylon* 6: 304 & 306. 1931; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Abeywickrama, *Ceylon Journ. Sci. Biol.* 2: 140. 1959; Gunawardena, *Gen. & Sp. Pl. Zeyl.* 207. 1968; Beard, *West Austr. Pl.*, ed. 2, 25. 1970; Matthew, *Bull. Bot. Surv. India* 12: 91. 1970; Saxena, *Bull. Bot. Surv. India* 12: 62. 1970; Fonseka & Vinasithamby, *Prov. List Local Names Flow. Pl. Ceylon* 29. 1971; R. R. Rao, *Stud. Flow. Pl. Mysore Dist.* 2: 875--876 [thesis]. 1973; Moldenke, *Phytologia* 26: 183 (1973), 28: 101, 445, 456, & 466 (1974), and 29: 86 & 88. 1974.

Matthew (1970) describes this species as "Herbs larger than E. cinereum but less numerous though more widely distributed", while Saxena (1970) refers to it as "Common in marshy places" in Madhya Pradesh, India, flowering in September, and cites Saxena 3578. Fosberg and his associates found the plant to be "very abundant in open wet sandy soil between patches of woods" in Sri Lanka and describes the flower-heads as "dull whitish". They encountered it

in flower in December. My wife and I found it growing in tremendous almost purestand colonies in moist limestone areas along roadsides in Walpattu National Park, Sri Lanka, the colonies sometimes extending as far as the eye could reach and also extremely abundant in wet sandy ground, the inflorescence-heads decidedly gray in all stages of maturation in January at about 400 feet altitude. Cramer describes it as "Common and abundant along open borders of villu; heady snowy-white, to 6 mm. in diameter, sweet-scented."

Gunawardena (1968) records the vernacular Sinhalese name, "hin-kok-mota", for this species, while Fonseka & Vinasithamby (1971) record "heen-kokmettu".

Thwaites (1839) refers to his var. argenteum (Mart.) Thwaites, for which he cites C.P. 792, as abundant on rice paddy borders. Amaratunga calls the plant "hin komota". Recent collectors have found it growing on rocks, in moist grassy patches, and in drying up paddy fields "rich in annuals", and describe the plant as forming rosettes, the leaves erect, and the flowering inflorescences white, whitish, or gray. They have collected it at altitudes of 30--192 meters, flowering and fruiting from February to May, July, and September to November. Mueller-Dombois says that it was "locally abundant and dominant in moist sand on lake shores", while Koyama speaks of it as "locally abundant in wet sand around tree islands in periodically flooded pond margins" in Sri Lanka. Hepper & Jayasuriya collected it "in [a] peculiar sandy flush with open sparse vegetation of Utricularia and Xyris, calling it a "small tufted herb" with the "leaf-bases bright pink".

The three Cooray collections cited below are all voucher specimens for ecologic observations. Thwaites C.P. 792 is a mixture with E. setaceum var. capillus-naiadis (Hook. f.) Moldenke, while T. Thomson s.n. [Plan. Ganget. Inf.] is a mixture with E. stellulatum Körn.

Durand & Schinz (1894) record E. quinquangulare from Réunion.

Material has been misidentified and distributed in some herbaria as E. luzulaefolium Mart. On the other hand, the Collector undetermined s.n. [Narainhetty], distributed as E. quinquangulare, is actually E. alpestre Hook. f. & Thoms., Collector undetermined s.n. [Dambulla Rock, 20 Dec. 1881] and Cramer 3160 are E. cinereum R. Br., and Mueller-Dombois & Cooray 68012817 and School teacher s.n. [6-4-1905] are E. walkeri Hook. f.

Additional citations: INDIA: State undetermined: T. Thomson s.n. [Plan. Ganget. Inf.] (Pd). SRI LANKA: Alston 1000 (Pd); Alwis s.n. [Tebuwana, Nov. 1920] (Pd); Amaratunga 2139 (Pd); Collector undetermined s.n. [Dolosbagie, April 1882] (Pd), s.n. [Galagedera, Oct. 1882] (Pd), s.n. [Lenadore, Feb. 1893] (Pd), s.n. [Pinnawala, Balangoda] (Pd); Cooray 70020104 R (Pd), 70020245 R (Pd), 70032207 R (Pd); L. H. Cramer 3168 (W-2760754); Fosberg, Mueller-Dombois, Wirawan, Cooray, & Balakrishnan 50710 (W-2676585); G.

Gardner O.C. 931 [Thwaites C.P. 792, in part] (Pd); Hepper & Jayasuriya 4622 (W--2720106); Hepper & Silva 4729 (Pd, W--2720040); T. Koyama 13315 (Pd); Lewis & Silva s.n. [Delgoda, 29.3.1919] (Pd); Moldenke, Moldenke, & Jayasinghe 28322 (Ac, E, Gz, Kh, Ld, Pd, Tu); Moldenke, Moldenke, & Jayasuriya 28217 (Ac, E, Gz, Kh, Ld, Pd, Tu); 28225 (Ac, E, Gz, Kh, Ld, Pd, Tu); Moldenke, Moldenke, & Sumithraarachchi 28199 (Ac, E, Gz, Kh, Ld, Pd, Tu); Mueller-Donbois 67051833 (Pd); Thwaites C.P. 792, in part (Pd); Trimen s. n. [Heneratgoda] (Pd); L. C. Wheeler 12078 (Pd)

ERIOCAULON QUINQUANGULARE var. ELATIUS Moldenke, *Phytologia* 28: 466. 1974.

Bibliography: Moldenke, *Phytologia* 28: 445 & 466. 1974.

Citations: SRI LANKA: Moldenke, Moldenke, Sumithraarachchi, & Waas 28319 (Ac--isotype, Gz--isotype, Kh--isotype, Ld--isotype, Pd--isotype, Z--type).

ERIOCAULON QUINQUANGULARE var. MARTIANUM Wall.

Synonymy: Eriocaulon quinquangulare f. viviparum Moldenke, *Phytologia* 28: 101. 1974.

Additional bibliography: Moldenke, *Phytologia* 24: 495 (1972), 25: 239 (1973), and 28: 101, 445, 446, & 456. 1974.

The f. viviparum, with its proliferating heads, is based on Trimen s.n. from Heneratgoda, Colombo District, Western Province, Sri Lanka, collected in May of 1896 and deposited in the herbarium of the Royal Botanic Garden at Peradeniya. It seems, however, that Wallich's earlier var. martianum was established on a plant with similarly proliferating heads and it is most probable that the two taxa are identical.

Citations: SRI LANKA: Trimen s.n. [Heneratgoda, May 1896] (Pd).

ERIOCAULON RAVENELII Chapm.

Additional bibliography: Moldenke, *Phytologia* 26: 34--35 (1973) and 28: 428. 1974.

Additional citations: FLORIDA: Dade Co.: Small & Carter s.n. [January 14, 1909] (W--1738971). Lee Co.: Francis 64 (W--1036542); Herb. Chapman s.n. [Caloosahatchie] (W--45285); R. Kral 22923 (W--2470425). Levy Co.: R. Kral 22940 (W--2470415). Martin Co.: Godfrey 65625 (W--2604039). County undetermined: Chapman s.n. (W--45286); Herb. Chapman 550 (W--937186), 3866 (W--955019).

ERIOCAULON REITZII Moldenke & Smith

Additional bibliography: Moldenke, *Biol. Abstr.* 56: 3000. 1973; Moldenke, *Phytologia* 26: 29 & 35. 1973.

ERIOCAULON RITCHIEANUM Ruhl.

Additional bibliography: Wangerin in Just, *Bot. Jahresber.* 51

(1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Saxena, Bull. Bot. Surv. India 12: 62. 1970; Bole, Excerpt. Bot. A.20: 83. 1972; Moldenke, Phytologia 24: 496 (1972) and 28: 444. 1974.

Saxena (1970) refers to this species as "Rare" on riverbanks, "partly in water", flowering in November, and cites Indokar 10961 from Madhya Pradesh, India.

ERIOCAULON ROBUSTO-BROWNIANUM Ruhl.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 303 & 305. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Sharma, Nucleus 15: Append. 10. 1972; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 876 [thesis]. 1973; Moldenke, Phytologia 26: 32 & 35 (1973), 28: 445 (1974), and 29: 85. 1974; Hocking, Excerpt. Bot. A.23: 292. 1974.

Recent collectors have found this plant growing in pastures and on rocks along creeks inside rainforests, at altitudes of 1500--3000 feet, flowering and fruiting (in addition to months previously reported by me) in February, the flower-heads described as white. Nain describes the plant as a "robust tufted herb". Sharma (1972) reports the chromosome number as "c 110".

Additional citations: INDIA: Gujarat: Main s.n. [7-9-1971] (Ac, Z). SRI LANKA: Hoogland 11448 (Pd); Thwaites C. P. 220, in part (Pd), 933 (Pd), 3382 (Pd, Pd); Trimen's collector s.n. [Dotalu Oya, 28.IX.85] (Pd).

ERIOCAULON ROBUSTUM Steud.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 & 170 [135 & 136]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 26: 35--36. 1973.

ERIOCAULON ROSEUM Fyson

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 25: 69. 1972.

ERIOCAULON ROSULATUM Körn.

Additional bibliography: Moldenke, Phytologia 25: 69. 1972.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 61 III. 1863 (N, Z).

ERIOCAULON SCARIOSUM J. E. Sm.

Additional bibliography: Sharma, Nucleus 15: Append. 10. 1972; Moldenke, Phytologia 26: 463. 1973.

Sharma (1972) reports the chromosome number for this species as 64.

ERIOCAULON SCHIMPERI Körn.

Additional & emended bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 503. 1894; N. E. Br. in Thiseitl.-Dyer, Fl. Trop. Afr. 8: 235 & 243--244. 1901; Moldenke, Phytologia 26: 463. 1973.

Brown (1901) cites only Schimper 1217, the type, from "in a swamp at Jan Meda, 8500 ft." in Ethiopia.

Additional citations: BURUNDI: Lewalle 2337 (Gz).

ERIOCAULON SCHIPPPII Standl.

Additional bibliography: Rouleau, Taxon Index Vol. 1-20, part 1: 139. 1972; Moldenke, Phytologia 25: 71. 1972.

ERIOCAULON SCHLECHTERI Ruhl.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 232--234 & 255. 1901; Moldenke, Phytologia 25: 71 (1972) and 28: 442 & 443. 1974.

Brown (1901) cites only the type, Schlechter 12093, from "in a swamp at Inhambane", Mozambique, and comments that "The above locality is just south of the Tropic of Capricorn, but doubtless the plant occurs within the Tropical area. I have not seen it." Simon & Williamson describe it as "dominant on [the] wet rocky zone under constant spray", at an altitude of 4200 feet, in Zambia, flowering there in October.

Additional citations: ZAMBIA: Simon & Williamson 1127 (E--2008719).

ERIOCAULON SCHOCHIANUM Hand.-Mazz.

Additional bibliography: Hand.-Mazz. in Engl., Bot. Jahrb. 56: 585. 1921; Fedde & Schust. in Just, Bot. Jahresber. 48 (1): 330. 1927; Wangerin in Just, Bot. Jahresber. 50 (1): 89. 1929; Moldenke, Phytologia 25: 71. 1972.

ERIOCAULON SEDGWICKII Fyson

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Moldenke, Phytologia 25: 72. 1972.

ERIOCAULON SEEMANNII Moldenke

Additional bibliography: Moldenke, Phytologia 26: 36. 1973.

Additional citations: NICARAGUA: Cabo Gracias a Dios: F. C. Seymour 3677 (N).

ERIOCAULON SELLOWIANUM Kunth

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1157, map 1776, & Ind. 12. 1972; Anon., Biol. Abstr. 56 (6): B.A.S.I.C. S.88. 1973; Moldenke, Biol. Abstr. 56: 3007. 1973; Moldenke, Phytologia 26: 463--464 (1973) and 28: 438. 1974.

Anderson found this plant growing on "seeping hillside in area of rocky sandstone hilltop cerrado, seeping hillsides, rocky open cerrado in raised places on hillside, and open mesophytic woods by stream".

The Hatschbach 24546 & 26306 and the Smith & Klein 13632, previously cited by me as typical E. sellowianum, are actually var. paranense (Moldenke) Moldenke & Smith.

Additional citations: BRAZIL: Goiás: W. R. Anderson 6466 (Ld); Irwin & Soderstrom 7643 (S). Mato Grosso: Hatschbach & Koczicki 33255 (Ld); Ratter, Santos, Souza, & Ferreira R.1592 (N). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 61 II. 1863 (N, Z).

ERIOCAULON SELLOWIANUM var. LONGIFOLIUM Moldenke

Additional bibliography: Moldenke, Phytologia 26: 463. 1973.

This variety has been encountered in sandy wet soil on campos. The Dombrowski collection cited below was previously erroneously cited by me as var. paranense (Moldenke) Moldenke & Smith.

Additional citations: BRAZIL: Paraná: Dombrowski 82 [Herb. Inst. Hist. Nat. 6793] (Ld).

ERIOCAULON SELLOWIANUM var. MINOR Moldenke

Additional bibliography: Moldenke, Phytologia 26: 463 (1973) and 28: 438. 1974.

ERIOCAULON SELLOWIANUM var. PARANENSE (Moldenke) Moldenke & Smith

Additional synonymy: Eriocaulon sellowianum var. paranaense (Mold.) Mold. & Smith, in herb.

Additional bibliography: Anon., Biol. Abstr. 56 (6): B.A.S.I.C. S.88. 1973; Moldenke, Biol. Abstr. 56: 3007. 1973; Moldenke, Phytologia 26: 464 (1973) and 28: 438. 1974.

Reitz & Klein describe this plant as an "erva, flôr branca" and encountered it in "benhado do campo". The Smith & Klein 13632, cited below, was previously erroneously cited by me as typical E. sellowianum Kunth. On the other hand, the Dombrowski 82, previously cited as var. paranense, is actually var. longifolium Moldenke.

Additional citations: BRAZIL: Mato Grosso: Hatschbach 24546 (S). Paraná: Hatschbach 26306 (S), 30992 (W--2706692). Santa Catarina: Reitz & Klein 16400 (Ld); Smith & Klein 13632 (Ac).

ERIOCAULON SENEGALENSE N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233 & 251--252. 1901; Moldenke, Phytologia 25: 73. 1972.

Brown (1901) cites only the type collection, Heudelot 680, from Sénégal, and comments that "This is closely allied to E. plumale, N. E. Br., differing in its fewer and much longer peduncles (which are out of all proportion to the small size of the rosette of leaves), in the entirely straw-coloured flowering-bracts and sepals of the female flowers and rather stouter sepals of the male flowers. The outer flowers of the head are all male, with very long stipes between the sepals and the petals, then come several series of female flowers, and the centre occupied with males which have scarcely any stipes, but the stipes may grow out later, as the only head examined was rather young. This and E. plumale are

remarkably distinct from all the other African species in the very great difference in the form of the sepals of the male and female flowers, and in the disparity in the number of sepals and petals, for in all the female flowers I have examined I constantly found 2 sepals and 3 petals present: occasionally, but rather rarely, a third sepal is present in the male flowers."

ERIOCAULON SENILE Honda

Additional & emended bibliography: Ikuse, Pollen Grains Jap. 46. 1956; Satake, Journ. Jap. Bot. 46: 372 [20]. 1971; Moldenke, Phytologia 26: 38. 1973.

ERIOCAULON SETACEUM L.

Additional bibliography: Wikstr., K. Svensk. Vet. Akad. Handl. Stockh., ser. 2, 1: 79. 1820; Wikstr., Trenne Nya Art. Örtsl. Ericoc. (repr.) 14. 1821; J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 278. 1883; Anon., Journ. Linn. Soc. Lond. Bot. 20: 522. 1884; Durand & Schinz, Conspectus Fl. Afr. 5: 503. 1894; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 240. 1901; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 304. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 206. 1968; Beard, West Austr. Pl., ed. 2, 25. 1970; Fonseka & Vinasithamby, Prov. List Local Names Flow. Pl. Ceylon 70. 1971; Satake, Journ. Jap. Bot. 46: 372 [20]. 1971; Moldenke, Phytologia 26: 464 (1973), 28: 101, 445, & 456 (1974), and 29: 85 & 94. 1974.

The vernacular names, "kok-mota", "pedakokmota", and "penda", are recorded for this plant in Ceylon. In Thailand it has been found growing at altitudes as low as 50 m. Thwaites (1839) considered E. intermedium Körn. as a synonym of E. setaceum L., citing his C. P. "791 (794)". Alston (1931) asserts that "E. setaceum Hook. f." [not L.] is a synonym of E. intermedium. The C. P. 791 collection, as seen by me in the herbaria at Peradeniya and Berlin, while labeled as E. intermedium, is actually a mixture of E. setaceum L. and E. setaceum var. capillus-naiadis (Hook. f.) Moldenke. Some authors in the past (e.g., Fyson, 1921, Abeywickrama, 1959, Moldenke, 1970, Fonseka & Vinasithamby, 1971) have regarded E. capillus-naiadis Hook. f. as synonymous with E. setaceum L., but I am now regarding it as a variety of it. In true E. setaceum the flowering-heads are 3--4 mm. in diameter and black, while in var. capillus-naiadis they are grayish-white, grayish, or gray and only 2--3 mm. in diameter. The two taxa have been widely confused in herbaria.

The following names, previously cited by me as synonyms of E. setaceum, must now be deleted from its synonymy and shifted to that of var. capillus-naiadis: Eriocaulon capillus-naiadis Hook. f., E. capillus najadis Hook. f., E. capillus-naidis Hook. f., E. setaceum f. capillus-naiadis Haines, and E. setaceum f. capillis-naiadis Haines.

The S. Y. Hu 8737, distributed as E. setaceum, is actually E. fluviatile Trimen, while S. Y. Hu 8111 is E. truncatum Hamilt.

Additional citations: INDIA: Assam: Hooker & Thomson s.n. [Mont. Khasia, 6000 ped.] (Pd). SRI LANKA: Collector undetermined s.n. [near Pelawatte, March 1887] (Pd); Thwaites C.P. 791, in part (B, B, Pd); Trimen s.n. [Hewesse, Feb. 1886] (Pd). BURMA: Tenasserim: Helfer 5569 (Pd). THAILAND: Larsen, Larsen, Nielsen, & Sanisuk 32281 (Ac).

ERIOCAULON SETACEUM var. CAPILLUS-NAIADIS (Hook. f.) Moldenke, Phytologia 28: 101. 1974.

Synonymy: Eriocaulon capillus-naiadis Hook. f., Fl. Brit. India 6: 572 & 769. 1893. Eriocaulon capillus najadis Hook. f. apud Ruhl. in Engl., Pflanzenreich 14 (4-30): 89 & 285. 1903. Eriocaulon capillus-naidis Hook. f. apud Fyson, Journ. Indian Bot. 2: 193, in syn. 1921. Eriocaulon setaceum f. capillus-naiadis Haines, Bot. Bihar & Orissa 1067. 1924. Eriocaulon setaceum f. capillis-naiadis Haines ex Moldenke, Résumé Suppl. 17: 11, in syn. 1968. Eriocaulon capillus-naidus Hook. f. ex Moldenke, Fifth Summ. 496, in syn. 1971. Eriocaulon capillus-najadis Hook. f. ex Moldenke, Fifth Summ. 496, in syn. 1971.

Bibliography: Hook. f., Fl. Brit. India 6: 572 & 769. 1893; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 158. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 89 & 285. 1903; Prain, Bengal Pl., ed. 1, 1127. 1903; Fyson, Journ. Indian Bot. 2: 193. 1921; Haines, Bot. Bihar & Orissa 1067. 1924; Alston in Trimen, Handb. Fl. Ceylon 6: 303. 1931; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 158. 1941; Moldenke, Known Geogr. Distrib. Erioc. 33. 1946; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 158. 1959; Moldenke, Résumé 286. 1959; Prain, Bengal Pl., ed. 2, 2: 848. 1963; Gunawardena, Gen. & Sp. Pl. Zeyl. 206. 1968; Moldenke, Résumé Suppl. 17: 11. 1968; Moldenke, Phytologia 19: 234 & 236. 1970; Fonseka & Vinasithamby, Prov. List Local Names Flow. Pl. Ceylon 70. 1971; Moldenke, Fifth Summ. 2: 496. 1971; Moldenke, Phytologia 28: 101, 445, & 456 (1974) and 29: 85. 1974.

Fyson (1921), Abeywickrama (1959), Moldenke (1946, 1970, 1971), and Fonseka & Vinasithamby (1971) have regarded E. capillus-naiadis as a straight synonym of E. setaceum L. After examining specimens in the Peradeniya herbarium, I feel that they are different, albeit only of varietal rank. It is, however, very possible that E. intermedium Körn. is also a synonym of this variety. More study is required before this question can be answered definitely. The variety has its flowering-heads only 2--3 mm. wide and grayish-white, grayish, or gray in color, while in true E. setaceum they are 3--4 mm. wide and black. In fact, Alston describes the "flowers" of var. capillus-naiadis as "white". A notation on the sheet of Collector undetermined s.n. [Hewesse, Feb. 1886] in

the Peradeniya herbarium says "receptacle hairy, 1 petal larger, no glands" for a specimen of what appears to be this variety. It is most probable that the gray, grayish, grayish-white, or white appearance of its heads is due to its hairiness, whereas the black aspect of the true E. setaceum is probably due to its lack of hairs.

Thwaites C.P. 791 is a mixture of E. setaceum and the var. capillus-naiadis, while C.P. 792 is a mixture of the variety with E. quinquangulare L.

Collectors of var. capillus-naiadis state that the lower filiform submerged leaves are green, the flowering-heads only emergent above the water. They have encountered the plant along banks of irrigation canals beside rice paddy fields at sealevel and have found it to be "very common" in 10--20 cm. of water in fallow ricefields, flowering and fruiting in December and January.

Material of this variety has been misidentified and distributed in some herbaria as E. sexangulare L.

Citations: SRI LANKA: Alston 678 (Pd); Amaratunga 450 (Pd); Collector undetermined s.n. [Hewessee, Feb. 1886] (Pd); Cramer 2779 (Pd, W--2718048); W. Ferguson s.n. (Pd); F. R. Fosberg 51799 (Pd); G. Gardner s.n. [Pasdun Korale; Thwaites C.P. 792, in part] (Pd); Thwaites C.P. 791, in part (Pd).

ERIOCAULON SEXANGULARE L.

Additional bibliography: Mart., Erioc. Selbst. Pflanzenfam. 24, 29, & 63. 1833; A. Rich., Tent. Fl. Abyss. 2: 347. 1851; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 259. 1901; Wangerin in Just, Bot. Jahresber. 49 (1): 160 (1927) and 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 304. 1931; Fedde in Just, Bot. Jahresber. 49 (2): 423 (1932) and 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 141. 1959; Lourteig, Taxon 15: 31. 1966; Gunawardena, Gen. & Sp. Pl. Zeyl. 206. 1968; Keng, Ord. & Fam. Malay. Seed Pl. 314. 1969; Rouleau, Taxon Index Vols. 1-20 part 1: 139. 1972; Sharma, Nucleus 15: Append. 10. 1972; Altschul, Drugs & Foods 19. 1973; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 876 [thesis]. 1973; Moldenke, Phytologia 26: 19 & 38--41 (1973), 28: 445, 446, & 457 (1974), and 29: 86 & 87. 1974.

The E. sexangulare Ruhl., previously cited in the synonymy of the present species, belongs, rather, in that of E. stuhlmanni N. E. Br.

Recent collectors describe E. sexangulare as a rosette perennial, the inflorescence heads whitish, grayish-white, ashy-gray, or pale ashy-blue, and have found it on seashores, in swamps, or swampy places with Xyris in paddy marshes, along the bunds of paddy fields, or on open boggy banks of artificial lakes (tanks), in slow-moving permanent water, in wet sand along the edge of streams, "in wet areas by streams", and "common" among short grass in marshy ground, at altitudes from sealevel to 2500 feet, flowering from February to April, June to August, and October to

December, fruiting in August.

Hu, collecting in Hongkong, seems to have encountered a rather low-growing population, the plants in flower only 10--16 cm. tall, although on two labels he speaks of "tall plants" and "large plants". He found it growing in water "in a swamp formed as a spring running into the sea behind a huge rock by beach, with Pandanus behind" and "in midstream on rocks", the "bracts black with white papillae", flowering and fruiting in February, and "rare".

The vernacular name, "kok-mota", is recorded for the species in Sri Lanka in Singhalese. Altschul (1973) cites H. H. Chung 2711 from China and records his statement that the plant is sold there in shops selling fresh medicinal plants and that it is used in Chinese native medicines. Keng (1969) calls the species the "long-leaved pipewort". Material has been misidentified and distributed in some herbaria as E. wightianum Mart. and "E. wightianum Martin". On the other hand, the Cramer 2779, distributed as E. sexangulare, is actually E. setaceum var. capillus-naiadis (Hook. f.) Moldenke

It should be noted that Thwaites (1839) cites his C.P. 220 as E. wallichianum Mart. and C.P. 795 as E. sexangulare. Thwaites C.P. 790 has broader leaves than usual, while Lewis & Silva s.n. (cited below) has one plant with broadish leaves and 3 other plants with narrow leaves on the same sheet. In view of Thwaites' notorious habit of combining plants from several localities under the same number, it is not at all certain that these plants all came from the same locality.

Additional citations: INDIA: Kerala: Herb. Wight 2858 (Pd). SRI LANKA: Alston 1068 (Pd), 1214 (Pd); Amaratunga 153 (Pd), 1047 (Pd), 1240 (Pd); Balakrishnan NBK.1157 (Pd, W--2721815); Collector undetermined s.n. [Hunnawatte, June 1895] (Pd); Cramer 2712 (Pd), 2844 (Pd, W--2718095, W--2718096), 3105 (Pd); G. Gardner O.C.937 [Thwaites C.P.220, in part; Karawita Kanda, April 1833] (Pd); Hepper, Maxwell, & Fernando 4566 (Pd, W--2720114); Jayasuriya 1520, in part (Pd); Lewis & Silva s.n. [Delgoda, 24.3.1919] (Pd, Pd); Moldenke, Moldenke, & Sumithraarachchi 28316 (Ac, E, Gz, Kh, Ld, Pd, Tu); Thwaites C.P.220, in part [Kukul-korale, Dec. 1833] (Pd), C.P.220, in part [Kueunegala, July 1846] (Pd), C.P.220, in part [Ratnapura, March 1876] (Pd), C.P.790 (Pd). BURMA: Tenasserim: Falconer s.n. [Moulmein] (Pd). HONGKONG: S. Y. Hu 6503 (W--2711187), 6618 (W--2697819), 7138 (W--2697900), 8547 (W--2711170), 8569 (W--2711167), 9306 (W--2711860). HONGKONG ISLANDS: High: S. Y. Hu 8657 (W--2697718). THAILAND: Larsen, Larsen, Nielsen, & Santisuk 31091 (Ac), 32284 (Ac), 32318 (Ac). INDOCHINA: Vietnam: Squires 235 (Pd). MALAYA: Singapore: T. Anderson 189 (Pd).

ERIOCAULON SEXANGULARE f. VIVIPARUM Moldenke

Additional bibliography: Moldenke, Phytologia 25: 75 (1972) and

28: 445 & 446. 1974.

Additional citations: SRI LANKA: G. Gardner O.C.937 [Thwaites C.P.220, in part; Pasdun-Koralala, Dec. 1848] (Pd, Pd).

ERIOCAULON SOLLYANUM Royle

Additional bibliography: Durand & Schinz, *Consp. Fl. Afr.* 5: 503. 1894; Engl., *Pflanzenw. Ost-Afr. C.* 133. 1895; N. E. Br. in *Thiselt.-Dyer, Fl. Trop. Afr.* 8: 254. 1901; Backer, *Handb. Fl. Java* 3: 6--7. 1924; H. N. Ridl., *Journ. Bot.* 63: Suppl. 126. 1925; Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135] (1929), 50 (1): 231 & 232 (1930), and 53 (2): 261. 1930; Alston in *Trimen, Handb. Fl. Ceylon* 6: 304 & 306. 1931; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Abeywickrama, *Ceylon Journ. Sci. Biol.* 2: 140. 1959; Gunawardena, *Gen. & Sp. Pl. Zeyl.* 207. 1968; Hamzah, Toha, & Van Steenis, *Mount. Fl. Java pl.* 19, fig. 1. 1972; Moldenke, *Phytologia* 26: 39 (1973), 28: 447 (1974), and 29: 86. 1974.

Additional illustrations: Hamzah, Toha, & Van Steenis, *Mount. Fl. Java pl.* 19, fig. 1 (in color). 1972.

This species was named in honor of R. H. Solly (1778--1858), a keen worker on the physiology and anatomy of plants. Gunawardena (1968) erroneously gives Solly's death date as "1758".

Hamzah, Toha, & Van Steenis (1972) record this species from Java, Sumatra, and New Guinea. They describe it as "A glabrous herb, the culms 7--35 cm. tall. Leaves 3--10 cm. long. The receptacle of the heads densely long-hairy." They comment that "In Java on the Priangan Mts (not on Mt. Gedé), on Mts Diéng & Jang (Taman Hidup), locally common, sometimes in dense tufts, in marshy places, and swinging bogs, at 1500--2000 m. Also known from SE. Asia and Sumatra (as low as 750 m), and from New Guinea!" Durand & Schinz (1894) record it from Zanzibar.

ERIOCAULON SONDERIANUM Körn.

Additional bibliography: Durand & Schinz, *Consp. Fl. Afr.* 5: 503. 1894; Engl., *Pflanzenw. Ost-Afr. C.* 133. 1895; N. E. Br. in *Thiselt.-Dyer, Fl. Trop. Afr.* 8: 245. 1901; Moldenke, *Phytologia* 26: 39 (1973), 28: 443 & 457 (1974), and 29: 113. 1974.

It should be noted that the *E. sonderianum* of Rendle is a synonym of *E. decipiens* N. E. Br. Durand & Schinz (1894) record *E. sonderianum* Körn. from Cape Province, South Africa.

ERIOCAULON SPONGIOSIFOLIUM Alv. Silv.

Additional bibliography: Fedde & Schust. in *Just, Bot. Jahresber.* 53 (1): 60 [42]. 1928; Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1157 & Ind. 12. 1972; Moldenke, *Phytologia* 26: 39. 1973.

ERIOCAULON STEINBACHII (Moldenke) Moldenke

Additional bibliography: R. C. Foster, *Contrib. Gray Herb.* 184: 39. 1958; Moldenke, *Phytologia* 25: 78. 1972.

ERIOCAULON STELLULATUM Körn.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahrest. 51 (2): 296. 1933; Moldenke, Phytologia 25: 78--79. 1972.

Nain describes this plant as a tufted herb, the flowering heads white, with "stellately spreading involucral bracts", and found it growing in pastures. The T. Thomson s.n. [Plan. Ganget. Inf.] collection, cited below, is a mixture with E. quinquangulare L.

Additional citations: INDIA: Gujarat: Nain s.n. [Western Ghats, 7-9-71] (Ac). State undetermined: T. Thomson s.n. [Plan. Ganget. Inf.] (Pd, Pd).

ERIOCAULON STEYERMARKII Moldenke

Additional bibliography: Moldenke, Phytologia 26: 183--184 (1973) and 28: 438. 1974.

Additional citations: BRAZIL: Goiás: Irwin, Harley, & Smith 33115 (N).

ERICCAULON STOLONIFERUM Welw.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 234 & 241--242. 1901; Moldenke, Phytologia 26: 464. 1973.

Brown (1901) cites only the type collection, Welwitsch 2458, from "in the cold rapid mountain streams of Morro de Lopollo, 3800--5800 ft.", Huila, Angola. He comments that "According to the notes with Welwitsch's specimen, this plant forms a green carpet on the beds of the streams under the water, and rarely flowers, the heads being frequently viviparous, when their peduncles bend down and produce young plants, forming the so-called stolons. It is allied to E. Woodii, N. E. Br., from Natal."

ERIOCAULON STRIATUM Lam.

Additional bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 503. 1894; Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Phytologia 25: 80. 1972.

ERICCAULON STUHLMANNI N. E. Br.

Additional synonymy: Eriocaulon sexangulare Ruhl. apud N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 259, in syn. 1901 [not E. sexangulare Auct. ex Cuf., 1971, nor Burm. f., 1826, nor Fyson, 1959, nor Heyne, 1832, nor L., 1753, nor Kart., 1893, nor sensu auct. Japon., 1965, nor Willd., 1841].

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 232 & 259. 1901; Moldenke, Phytologia 25: 80 (1972) and 28: 457. 1974.

Brown (1901) cites only the type collection, Stuhlmann 3552, and comments that "This plant is unhesitatingly referred by Ruhland to E. sexangulare, Linn., but that species grows 12--16 in. high and the female flowers have very distinct and rather peculiar petals. I have not seen the plant, but think it possible that Ruhland made the

comparison with E. sieboldianum, Sieb. & Zucc. (E. sexangulare, Mart., not of Linn.) to which, from the description, it appears to be closely related; but I doubt its identity with that plant. The only African species with which it can be compared is E. amboense, Schinz, from which it differs (according to the characters given by Ruhland in his key to the species) by the connate sepals of the male flowers."

ERIOCAULON SUBGLAUCUM Ruhl.

Additional bibliography: Alston in Trimen, Handb. Fl. Ceylon 6: 303 & 305. 1931; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 25: 80 (1972) and 29: 86, 91, & 98. 1974.

Material of this species has been misidentified and distributed in some herbaria as E. atratum Körn. and E. subcaulescens Hook. f. The Thwaites C.P.61 collection of July 1866 is a mixture with E. atratum Körn. and E. ceylanicum Körn., so I am regarding the February portion of the assemblage as representing the type collection of E. subglaucum.

Additional citations: SRI LANKA: G. Gardner O.C.934 [Thwaites C.P.934; April] (Pd, Pd); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28285 (Ac, Gz, Kh, Ld, Pd, Tu, Z); Thwaites C.P.61, in part [July 1866] (Pd), C.P.61, in part [February] (Pd--isotype, Pd--isotype).

ERIOCAULON SUBMERSUM Welw.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 234 & 240--241. 1901; Moldenke, Phytologia 25: 80. 1972.

Brown (1901) cites only Welwitsch 2456 & 2457, the cotypes, and comments that this species is "Allied to E. bifistulosum, Van Heurck, but differing in having acute sepals to the male flowers, with a few minute white hairs on the keel. The name of this species antedates by 7 months the E. submersum, Tate, of South Australia."

ERIOCAULON SUBULATUM N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233 & 255--256. 1901; Moldenke, Phytologia 26: 40. 1973.

Brown (1901) cites only the type collection, Kirk s.n., from "on an island at Victoria Falls", Zambesi River, "British Central Africa", and comments that "This is very near E. ciliisepalum, Rendle, and may be only a robust form of that species, but it differs in appearance, in its stouter subulate leaves, more numerous and stouter peduncles, larger heads, larger flowers, and the slightly different form of the sepals and petals."

ERIOCAULON SUISHAENSE Hayata

Additional synonymy: Eriocaulon suichaense Hayata apud Wangerin

in Just, Bot. Jahresber. 49 (1): 160, sphalm. 1927.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 49 (1): 160. 1927; Fedde in Just, Bot. Jahresber. 49 (2): 423. 1932; Moldenke, Phytologia 25: 81 (1972) and 28: 457. 1974.

ERIOCAULON TENUIFOLIUM Klotzsch

Additional bibliography: Moldenke, Phytologia 25: 81—82. 1972.

Additional citations: BRAZIL: Roraima: Prance, Steward, Ramos, & Farias 9177 (S).

ERIOCAULON TEUSCZII Engl. & Ruhl.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 235, 236, 245--246, & 249--250. 1901; Moldenke, Phytologia 26: 464. 1973.

Brown (1901) cites for E. teusczii only Mechow 231 from Malange, Angola, noting "Said to be allied to E. huillense, Engl. & Ruhland, but differing in its larger leaves and heads, pure white sepals, longer female petals and narrow equal male petals. I have not seen it." For E. lacteum he cites Johnston s.n. and Welwitsch 2452, 2452b, & 2453 from Angola, Bryce s.n. from "British Central Africa", and Thompson s.n. from Tanganyika, noting that "E. lacteum may prove to be conspecific with E. Teusczii, Engl. & Ruhl., but the description of the latter does not enable me to identify it." For E. huillense he cites only Antunes s.n., the type, from Huila, Angola, commenting that it is "Said to be allied to E. Teusczii, Engl. & Ruhland, and from description appears to be near E. Bauri, N. E. Br., from South Africa. I have not seen it, and do not understand the use of the term lanceolate as applied to the leaf, which is stated to be only 3/4 millimetre broad in the upper part. Probably the sepals are dark olive or fuscous at the apex, rather than green as described."

Robinson describes this plant as an erect annual, with the rosette leaves "more or less succulent", and found it growing at 4000 feet altitude, flowering and fruiting in June. Material has been misidentified and distributed in some herbaria as Syngonanthus poggeanus Ruhl.

Additional citations: ZAMBIA: E. A. Robinson 2266 (Mu).

ERIOCAULON THOUARSII H. Lecomte

Additional bibliography: Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Phytologia 25: 83. 1972.

Perrier de la Bâthie (1934) records this species from the east coast of Madagascar.

ERIOCAULON THUNBERGII Wikstr.

Additional bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 503. 1894; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233 & 239. 1901; Moldenke, Phytologia 25: 83. 1972.

Brown (1901) cites only the type collection, Afzelius s.n., from Sierra Leone.

ERIOCAULON THWAITESII Körn.

Additional bibliography: Thwaites, Enum. Pl. Zeyl. 2: 341. 1839; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Alston in Trimen, Handb. Fl. Ceylon 6: 304. 1931; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Gunawardena, Gen. & Sp. Pl. Zeyl. 206. 1968; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 876 [thesis]. 1973; Moldenke, Phytologia 26: 33 & 40--41 (1973) and 29: 86. 1974.

Recent collectors have found this species growing in rice paddy fields, in muddy roadside streams, and in wet rock areas, at 2613 feet altitude, flowering and fruiting from January to March. Material of this species has been misidentified and distributed in some herbaria as E. truncatum Hamilt. The Thwaites C.P.790, cited below, is a mixture with E. neesianum Körn. (of which it is the type collection) and E. truncatum Hamilt.; Fyson s.n. [Kitulgale, 4/3/82], distributed as E. thwaitesii, is E. truncatum.

Additional citations: SRI LANKA: Amaratunga 449 (Pd); G. Gardner O.C.936 [Thwaites C.P.790, in part] (Pd, Pd); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28310 (Ac, Gz, Ld, Pd, Z), 28340 (Ac, E, Gz, Kh, Ld, Tu), 28341 (Ld); Sumithraarachchi DBS. 116 (Z); Sumithraarachchi & Fernando DBS.123 (Ld).

ERIOCAULON TOFIELDIFOLIUM Schinz

Emended synonymy: Eriocaulon tofieldiifolium Schinz apud Friedrich-Holzhammer & Roessler in Merxmüller, Prodr. Fl. Südw. Afr. 15, 159: [i] & 2. 1967.

Additional & emended bibliography: Friedrich-Holzhammer & Roessler in Merxmüller, Prodr. Fl. Südw. Afr. 15, 159: [i] & 2. 1967; Moldenke, Phytologia 25: 83. 1972.

Friedrich-Holzhammer & Roessler (1967) cite for this species only the type, Dinter 378, from "sumpfige Stellen am Waterberg", Dinter 1757, and Volk 2744 from Namibia.

ERIOCAULON TOGOËNSE Moldenke

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 232 & 237--238. 1901; Moldenke, Phytologia 26: 465. 1973.

Brown (1901) cites only the type collection, Barter 778, from "in the drier part of a swampy pond near Fakum", Borgu, Niger Territory [Northern Nigeria].

ERIOCAULON TRANSVAALICUM N. E. Br.

Additional bibliography: Moldenke, Phytologia 26: 265. 1973.

Lewalle collected this plant at 1900 meters altitude in Burundi.

Additional citations: BURUNDI: Lewalle 2707 (Gz).

ERIOCAULON TRANSVAALICUM var. HANNINGTONII (N. E. Br.) Meikle

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 236, 253, & 255. 1901; Moldenke, Known Geogr.

Distrib. Verbenac., [ed. 2], 117 & 204. 1949; Moldenke, Phytologia 26: 465. 1973.

Brown (1901) cites only the type collection, Hannington s.n., from Kwa Chiropa, Tanganyika, and comments that "This is very similar to E. zambesiense, Ruhland, in appearance, but, in the single sample seen, the peduncles are much shorter and the flowers are quite different in structure. From E. elegantulum, Engl. (which it also closely resembles), the pallid involucrel-bracts will at once discriminate it."

ERIOCAULON TRILOBATUM Ruhl.

Additional bibliography: Perrier de la Bâthie, Cat. Pl. Madag. 21. 1934; Moldenke, Phytologia 25: 84. 1972.

ERIOCAULON TRUNCATUM Hamilt.

Additional & emended bibliography: H. H. W. Pearson, Journ. Linn. Soc. Lond. Bot. 34: 357. 1899; Backer, Handb. Fl. Java 3: 7. 1924; Backer, Onkruidfl. 1 [Handb. Suiker.-Cult. 7]: 177--178 & 844, pl. 187. 1928; Fedde & Schust. in Just, Bot. Jahrasber. 53 (1): 60 [42]. 1928; Alston in Trimen, Handb. Fl. Ceylon 6: 304 & 306. 1931; Alston, Kandy Fl. 76. 1938; Bond, Wild Fls. Ceylon Hills xiii, 232, & 233. 1953; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Burkill, Dict. Econ. Prod. Malay Penins. 1: 953. 1966; Gunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Keng, Ord. & Fam. Malay. Seed Pl. 313 & 314, fig. 183. 1969; Sharma, Nucleus 15: Append. 10. 1972; Moldenke, Phytologia 26: 466 (1973), 28: 446 (1974), and 29: 86, 96, & 100. 1974.

Additional illustrations: Backer, Onkruidfl. 1 [Handb. Suiker.-Cult. 7]: pl. 187. 1928; Bond, Wild Fls. Ceylon Hills 233. 1953; Keng, Ord. & Fam. Malay. Seed Pl. 313, fig. 183. 1969.

Alston (1931, 1938) suggests that this species and E. minimum Lam. may be conspecific and, if so, the latter would be the valid name for the taxon. Pearson (1899) found E. truncatum "very abundant above 5000 feet" altitude in Sri Lanka and cites his nos. 61 (from 5600 feet) and 65 (from 5800 feet). Thwaites (1839) cites his C.P."790 (793)" as very common in company of E. thwaitesii Körn. C.P.790, as seen by me in the Peradeniya herbarium, is a mixture with E. thwaitesii, at least insofar as the Gardner O.C. 936 portion is concerned.

Recent collectors have found E. truncatum growing in rice-fields, in streams, in loose moist sandy soil, in marshy grasslands, "in a pool and along its edge", and in clay soil of sunny roadside ditches more or less in water, flowering and fruiting in practically every month of the year, from sealevel to 1000 feet altitude, and describe the flowering heads in general as grayish-white. Additional vernacular names recorded for it are "babawangan" (in Java) and "short-leaved pipewort" (in Malaya). Sharma (1972) records the chromosome counts of 30 and 32.

The G. Thomson s.n. [Maisor, Carnatic], cited below, is a mix-

ture with E. diana Fyson, while Amaratunga 1149 is a mixture with E. cinereum R. Br.

Hu describes E. truncatum as the "smallest species in the [Hongkong] area....few leaves....heads 2--3 mm. in diameter.....bracts not papillose, rounded at the apex....flowers white" and notes that it is "smaller than 5956 and 5957".

Material has been misidentified and distributed in some herbaria as E. cinereum R. Br., E. setaceum L., E. thwaitesii Körn., and E. trimenii Hook. f. On the other hand, the Collector undetermined s.n. [Dambulla Rock, 20 Dec. 1881], distributed as E. truncatum, is E. minimum Lam. and Moldenke, Moldenke, Dassanayake, & Jayasuriya 28340 & 28341 and Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28310 are E. thwaitesii Körn.

Additional citations: INDIA: Mysore: G. Thomson s.n. [Mairor, Carnatic] (Pd). West Bengal: Helfer 136 (Gz). SRI LANKA: Alston 1210 (Pd), 1215 (Pd), 1216 (Pd), s.n. [Peradeniya Estate, 17.9.26] (Pd); Amaratunga 1149, in part (Pd), 1759 (Pd); Collector undetermined s.n. [Meddekande, Balangoda, Sept. 1895] (Pd); Cramer 2914 (Pd); Fyson s.n. [Kitugale, 4/3/82] (Pd); G. Gardner s.n. [Thwaites C.P.790, in part; Rambodde, Jan. 1847] (Pd); J. M. Silva s.n. [Kalugannamam, 1.2.1927] (Pd); N. D. Simpson 9613 (Pd); Thwaites C.P.790, in part [Ambagama, Dec. 1854] (Pd); L. C. Wheeler 12056 (Pd). BANGLADESH: Hooker & Thomson s.n. [Chittagong, 1-1000 ped.] (Pd). HONGKONG: S. Y. Hu 5591 (W--2711359), 5958 (W--2697303), 8111 (W--2711196), 8554 (W--2711166). MALAYA: Perak: Wray 782 (Pd).

ERIOCAULON ULAEI var. RADIOSUM Ruhl.

Additional bibliography: Moldenke, Phytologia 25: 86 (1972) and 28: 438. 1974.

Reitz & Klein found this plant growing at 1000 meters altitude, flowering and fruiting in October.

Additional citations: BRAZIL: Santa Catarina: Reitz & Klein 10251 (Z).

ERIOCAULON VANHEURCKII Muell.-Arg.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 51 (1): 169 [135]. 1929; Fedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Venkatareddi, Bull. Bot. Surv. India 12: 220. 1970; Moldenke, Phytologia 25: 75 & 86-87 (1972) and 28: 444. 1974.

Venkatareddi (1970) found this plant "Common on plateau", flowering in August and September, and cites his nos. 98776 & 99007.

Additional citations: INDIA: Kerala: Santapau 13285 (E--1624142), 13322 (E--1624125), 13323 (E--1624124), 13360 (E--1624112).

ERIOCAULON VOLKENSII Engl.

Additional & emended bibliography: Engl., Pflanzenw. Ost-Afr. C: 133--134. 1895; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233 & 238. 1901; Moldenke, Phytologia 25: 128. 1973.

Brown (1901) cites Volken 2032 & s.n. from Tanganyika, found there in damp depressions on Mt. Kilimanjaro, at 1100 feet altitude.

ERIOCAULON WALKERI Hook. f.

Additional bibliography: Alston in Trimen, Handb. Fl. Ceylon 6: 304 & 306. 1931; Abeywickrama, Ceylon Journ. Sci. Biol. 2: 140. 1959; Cunawardena, Gen. & Sp. Pl. Zeyl. 207. 1968; Moldenke, Phytologia 26: 41--42 (1973) and 29: 86. 1974.

Alston (1931) notes that "This is considered to be a variety of E. quinquangulare by Fyson.....but he should have adopted Thwaites' name for it." He also claims that this species is mentioned by Fyson, Journ. Indian Bot., on a page "31", but I can find no such reference on that page in either volume 2 or 3 of that journal in which Fyson wrote on the Eriocaulaceae of India.

Recent collectors describe E. walkeri as a small plant, 5--8 cm. tall, the scaped 7-ribbed, the heads flat-topped, white, and the bractlets pale-brown in color. They have found it growing on sandy lagoon margins and "locally abundant" in moist sand with short-sedge vegetation, at 1700 feet altitude, flowering in January, April, and June. Material has been misidentified and distributed in some herbaria as E. quinquangulare L.

Additional citations: SRI LANKA: Collector undetermined s.n. [near Vakameri, 21.IV.07] (Pd); Mueller-Dombois & Cooray 68012817 (Pd); School teacher s.n. [6-4-1905] (Pd); N. D. Simpson 9875 (Pd); Thwaites 3562 (Pd).

ERIOCAULON WELWITSCHII Rendle

Additional synonymy: Eriocaulon welwitschii (Rendle) Ruhl., in herb.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 234 & 249. 1901; Friedrich-Holzhammer & Roessler in Merzmüller, Prodr. Fl. Südw. Afr. 15, 159: 2. 1967; Moldenke, Phytologia 25: 87. 1972.

Brown (1901) cites only Welwitsch 2441, the type collection, from "between Lombe and Candumba, between 2400 and 3800 ft.", Pungo Andongo, Angola, and notes that the collector says "only seen in one place". The E. welwitschii var. pygmaeum Rendle is now considered to be a synonym of E. aristatum H. Hess, which see. Robinson collected E. welwitschii at 1250 meters altitude, flowering in June.

Additional citations: ZAMBIA: E. A. Robinson 3735 (Mu).

ERIOCAULON WIGHTIANUM Mart.

Additional synonymy: Eriocaulon wightianum var. capitulis nigrocinereis, parce pilosis Thwaites, Enum. Pl. Zeyl. 2: 341. 1839.

Additional bibliography: Mart., *Erioc. Selbst. Pflanzenfam.* 29. 1833; H. H. W. Pearson, *Journ. Linn. Soc. Lond. Bot.* 34: 320 & 357. 1899; Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135]. 1929; Alston in *Trimen, Handb. Fl. Ceylon* 6: 305. 1931; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Abeywickrama, *Ceylon Journ. Sci. Biol.* 2: 140. 1959; Moldenke, *Phytologia* 25: 42 (1973) and 29: 96. 1974.

Thwaites' variety, cited in the synonymy above, is based on *Thwaites C.P.3382*. Pearson (1899) describes *E. wightianum* as a "large species, common above 5000 feet" altitude in Sri Lanka, citing his no. 72 from 5600 feet. He also notes that "*Eriocaulon wightianum* together with *Anaphalis oblonga*, *Exacum zeylanicum*, *Polygala glaucoides*, *Blumea flexuosa*, etc. parts found in 1'0 feet of wet black humus exposed in road cutting in Ambavela [Sri Lanka] - 5900 ft."

The *Thwaites C.P.378* [G. Gardner O.C.938], distributed as *E. wightianum*, is actually *E. nilagirensis* Steud., *Siranji s.n.* [31.3.69] is *E. odoratum* Dalz., and *Amaratunga 1240* is *E. sexangulare* L.

Additional citations: INDIA: Kerala: Stocks, Law, &c. s.n. [Malabar, Concan] (Pd). West Bengal: Helper 135 (Gz).

ERIOCAULON WIGHTIANUM var. HELPERI Hook. f.

Additional bibliography: Wangerin in *Just, Bot. Jahresber.* 51 (1): 169 [135]. 1929; Fedde in *Just, Bot. Jahresber.* 51 (2): 296. 1933; Moldenke, *Phytologia* 25: 38. 1972.

ERIOCAULON WILDENOVIANUM Moldenke

Additional bibliography: Durand & Schinz, *Consp. Fl. Afr.* 5: 503. 1894; Backer, *Handb. Fl. Java* 3: 6. 1924; Alston in *Trimen, Handb. Fl. Ceylon* 6: 304 & 306. 1931; Perrier de la Bâthie, *Cat. Pl. Madag.* 21. 1934; Abeywickrama, *Ceylon Journ. Sci. Biol.* 2: 141. 1959; Gunawardena, *Gen. & Sp. Pl. Zeyl.* 207. 1968; Moldenke, *Phytologia* 26: 466 (1973), 28: 401, 445, & 457 (1974), and 29: 86. 1974.

Alston (1931) asserts that this species differs from *E. sexangulare* L. in having its florets dimerous (instead of trimerous) and the bractlets acute (not acuminate). He further comments that "This species is given for Ceylon in the *Fl. Brit. Ind.* & by Ruhland; it is scarcely separable from *E. sexangulare* Linn." My wife and I found it quite abundant in certain of the very low-lying and extremely wet parts of coastal Sri Lanka.

Additional citations: SRI LANKA: Moldenke, Moldenke, Sunithraarachchi, & Waas 28313 (Ac, E, Gz, Kh, Ld, Pd, Tu).

ERIOCAULON WILDENOVIANUM var. FERGUSONII Moldenke, *Phytologia* 28: 401. 1971.

Synonymy: *Eriocaulon wallichianum* var. *fol. hirsutis* Ferguson ex Moldenke, *Phytologia* 28: 457, in syn. 1974.

Bibliography: Moldenke, *Phytologia* 28: 401, 445, & 457. 1974.

Ferguson's variety is described by him as having the leaves and sheaths "long-pilose", and this description fits quite well the specimen on whose label it is written in the Peradeniya herbarium. The same description is written on the sheet of Alston 1069 in the same herbarium, plus the phrase "anthers gray".

Additional citations: SRI LANKA: Alston 1069 (Pd); W. Ferguson s.n. [Cinnamon Gardens, Colombo, March 1983] (Pd--type).

ERIOCAULON WOODII N. E. Br.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 242. 1901; Moldenke, Phytologia 26: 466. 1973.

ERIOCAULON XERANTHEMUM Mart.

Additional bibliography: Wangerin in Just, Bot. Jahresber. 51 (1): 159 & 170 [135 & 136]. 1929; Pedde in Just, Bot. Jahresber. 51 (2): 296. 1933; Venkatareddi, Bull. Bot. Surv. India 12: 220. 1970; Moldenke, Phytologia 25: 89 (1972), 25: 152 & 239 (1973), and 28: 446. 1974.

Venkatareddi (1970) found this plant "occasional", flowering in August and September, and cites his no. 99103.

Additional citations: INDIA: Assam: Hooker & Thomson s.n. [Mont. Khasia, 4000 ped.] (Pd). Kerala: Stocks, Law, &c. s.n. [Malabar, Concan] (Pd). THAILAND: Larsen, Larsen, Nielsen, & Santisuk 32183 (Ac).

ERIOCAULON ZAMBESIENSE Ruhl.

Additional bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 233, 235, 252--253, & 255. 1901; Perrier de la Bâthie, Cat. Pl. Madag. 22. 1934; Moldenke, Phytologia 26: 466. 1973.

Perrier de la Bâthie (1934) records this species from central Madagascar, but I have seen no material of it from Madagascar. Brown (1901) cites Buchanan s.n., Whyte s.n. [Mount Malosa], and Whyte s.n. [Mount Zomba] from Nyasaland and says that the last-named collection was erroneously attributed to Johnston by Ruhland. He further notes that "Ruhland has described the female bracts as villous and the male bracts as subglabrous at the apex, and the petals of the male flowers as glandless. I find them to be the reverse of this. The heads are viviparous on the Mount Zomba specimens."

ERIOCAULON ZOLLINGERIANUM Körn.

Additional bibliography: Backer, Handb. Fl. Java 3: 8. 1924; Moldenke, Phytologia 26: 42. 1973.

ERIOCAULON ZYOTANII Satake

Additional bibliography: Moldenke, Phytologia 25: 90. 1972; Hocking, Excerpt. Bot. A.23: 292. 1974.

[to be continued]