

## REHABILITATION OF THE GENUS *MONVILLEA*

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**Abstract:** The goal of this paper is to rehabilitate the genus *Monvillea*, based on *Cereus cavendishii* as the type species, which identity has been attributed to another genus. The name *Cereus cavendishii* Monville corresponds to a species of northern Argentina, Paraguay, eastern Bolivia and southern Brazil, as had been considered traditionally in the literature, and that species was typified accordingly by Heath in 1992. As a consequence, *Monvillea* keeps its nomenclatural validity. Additionally, an epitype is here designated. The inclusion or not of all or some of the species in *Monvillea* under *Cereus* is a taxonomic matter, and hence a matter of opinion, but the pertinence of *Cereus cavendishii* to *Monvillea* sensu Britton and Rose cannot reasonably be disputed.

*Monvillea* is one of several genera created by Britton and Rose (1920: 21) in their monograph *The Cactaceae*, for a group of South American species which had previously been included in *Cereus*.

The genus *Cereus*, which originally included all cacti with cylindrical stems, mostly ribbed, was gradually divided in accordance with advances in knowledge of the floral and fruit structures, seeds, etc. Those separations were made mostly at the end of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> [notably by Schumann (1898) and Berger (1905), as subgenera, and by Riccobono (1909) and Britton and Rose (1920), at the generic level]. Accord-

ing to the new concepts, *Cereus* was restricted to South American plants, mostly arborescent, with erect stems, mostly 6–11 (rarely less) deep ribs, nocturnal ephemeral flowers without scales or relictals, and the perianth deciduous after blooming; the seeds are big for the subfamily, and very rugose, and the stamens are borne along a great part of the tube, starting very near the nectary chamber (Buxbaum 1968a).

Britton and Rose (1920) distinguished *Monvillea* (Fig. 1) by its smaller stems, prostrate or semi-erect, its thicket-forming habit, flowers with small scales, the withering of the perianth on the ovary,

**Figure 1.** *Monvillea cavendishii* plant (field photo taken in Tobatí, Paraguay).



**Figure 2.** Facsimile of the original description of *Cereus cavendishii* (Monville 1840).

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gai, à 4-5 angles fortement mamelonnés et à aréoles très-rapprochées. Sinus très-obtus, épines faibles, droites, diyariquées.

— Tige : 6 8 lignes de diamètre, côtes un peu obtuses, chargées de mamelons très-saillants, violet foncé au sommet, portant des aréoles distantes d'environ 3 lignes, rondes, d 1 ligne de diamètre environ, revêtues d'un duvet court et blanchâtre; épines de deux natures: les unes, 5-6, divariquées, de 3-5 lignes de long, grêles, droites, roides et piquantes, de couleur fauve clair; les autres, 2-3, inférieures, sétiformes, blanches, 2-3 lignes de long.

Patrie : Montevideo. (Placé dans le *Catalogus Monvillianus*, *Cactearum Monvillianarum ex affinitatibus naturalibus ordinato*, seu *Cact. Index methodicus* (1), après le *C. spinulosus*.)

3° CEREUS CAVENDISHII, Monv.

*Cereus*: sub-érigé, très-rameux, assez grêle, à 4-6 angles répandiformes, vert clair, aréoles rondes, très-petites, saillantes, épines droites, roides, aciculaires.

— Tige : 12-18 lignes de diamètre; côtes, et surtout les sillons, extrêmement obtuses, renflées vis-à-vis des aréoles qui sont portées par des mamelons peu saillants, couvertes d'un duvet blanchâtre et très-court, caduc. Epines extrêmement grêles, droites, roides et pointues, d'abord fauves, marquées de blanc, puis cendrées; les extérieures 7-10, sub-rayonnantes, de 4-10 lignes de long, 1 centrale plus forte, sub-érigée, 12-18 lignes de long.

Patrie : Carthagène.

Dédié à M. le duc de Devonshire (William Spencer Cavendish.)

(Placé dans le *Cat. Monv.* après le *C. pellucidus*.)

(1) Voyez : *Cactearum Genera speciosius nova*, etc., 1839, à Paris, chez Cousin, rue Jacob, 25.

and the small smooth seeds. The number of ribs varies according to the group, some having 5–10, others 3–5; in fact, 3-ribbed plants are rare, and a plant with a 3-ribbed stem develops one or two more ribs as it grows, such that a transverse section of the stem may be triangular, quadrangular or pentagonal. Stamens are borne near the upper/distal extremity of the floral tube, and not on the more proximal parts of the tube.

As the type species of *Monvillea*, Britton and Rose designate *Cereus cavendishii* Monville (Fig. 2), a species described as originating from Cartagena, Colombia, where it has not been found again and probably never occurred. The description closely corresponds to that of a common species of the Chaco area of Argentina, Paraguay and Bolivia (Zuloaga and Morrone 2008), which also occurs in southern Brazil (Taylor and Zappi 2004: 498, as *Praecereus saxicola*); and all the literature from its description in 1840 up to 1988 refers to that species, too. The diagnosis of *C. cavendishii* matches well with this, and the main objections are: (1) the place of origin, which could be a simple mistake or, as suggested by Heath (1992), could refer to the port from which the plant was exported to Eu-

rope; and (2) the sole morphological objection is the number of ribs, indicated as “4–6”, whereas the species to which this name is applied has mostly 5–9.

After the establishment of the genus *Monvillea* with seven species by Britton and Rose, several more species have been added. Backeberg (1960: 2292–2314) recognized 16 species (all from South America), grouped in three subgenera, having in common the shrubby habit, often ascending stems, scaly flowers and small shiny seeds. The differences among Backeberg's subgenera involve the sizes and proportions of flowers and fruits.

Some years later the morphologist F. Buxbaum described the genus *Praecereus*, with species segregated from *Monvillea* and *Cephalocereus*, but published more or less simultaneously a paper (Buxbaum 1968a) pointing out his concept about the differences among *Cereus*, *Monvillea* and *Praecereus*. There he offers a key to differentiate the latter three genera, based principally on the place of insertion of the stamens on the floral tube, the form and surface of the nectaries, and the proportions of the floral tube. He considered the three genera as from three different lineages (see also Buxbaum 1968b).

David Hunt (1988), citing a comment of F. Ritter (1979), who likewise took that opinion from Weingart (1914), argued that it was possible that the *Cereus cavendishii* description corresponds to an (indeterminate) species of *Acanthocereus* (Fig. 3). This can be objected to on the grounds that the *Acanthocereus* species have few ribs (typically 3, rarely 4, except for very young stems, which can have a higher number that is later reduced), which are very acute, to the extent that they are characterized as “winged” (Britton and Rose 1920), or “wing-like” (Hunt et al. 2006). That means transverse sections of *Acanthocereus* stems show markedly narrow ribs with acute points corresponding to the sharp ridges of the elevated ribs—as opposed to the ribs being lower, thicker and obtuse as in the case of *Cereus cavendishii*. Hunt's (1988) argument was vague [“If, as seems very probable (although ...)”, not documented by herbarium material, nor accompanied by the typification of the name *Cereus cavendishii*. Instead of such documented evidence, Hunt (op. cit.) continues arguing about the nomenclatural inconvenience of using the name *Monvillea* at the subgeneric level, when its species are included in *Cereus*. He considers all the previous species of *Monvillea* as *Cereus* (under the subgenus *Ebneria*). When Hunt attempts to promote the putative pertinence of *Cereus cavendishii* to *Acanthocereus*, he fails to note the great contradiction between the obtuse ribs (“extrêmement obtuses”) described originally, and the very acute (winged) ribs of all the *Acanthocereus* species.

A few years later, Heath (1992) reviewed the matter, and noted the coincidence between the original description and the plant to which the name *Cereus* (or *Monvillea*) *cavendishii* has been applied. Then, Heath typified that name with a relatively old illustration. That plate (Hooker



1899; see Fig. 4) shows a plant named “*Cereus paxtonianus* Monv. ex Salm-Dyck”, but brings into the text—as a synonym—the name *Cereus cavendishii* (a name 10 years older, which therefore must be used in accordance with the rule of priority). Heath also points out in the introduction that the number of ribs indicated by Monville in the original description of *Cereus cavendishii* (4–6) is low for *Monvillea cavendishii* (mostly with 5–9 ribs), but too high for any *Acanthocereus* (mostly 3 ribs). Apart from the number of ribs, as mentioned, the main morphological objection to the argument that the description of *Cereus cavendishii* refers to an *Acanthocereus*, is that the ribs of the former are thick and obtuse, whereas those of the latter are very narrow and acute.

In the original description of *Cereus paxtonianus*, Salm-Dyck (1850) suggested it as a possible variety of *C. cavendishii*, and in the description of the latter species the number of ribs is changed from 4–6 to “5–6”. Salm-Dyck and Monville were contemporaries, who may have had some relations or collaboration, and thereby access to the same plants, although there is no reference to that in Hoffmann’s (2009a, 2009b) publications on Salm-Dyck.

With Heath’s (1992) designation of the nomenclatural type for *Cereus cavendishii*, the original sense of the genus *Monvillea* is clear and cannot be disputed. The rejection of a typification can be done only if it is in serious conflict with the prototype, which is not the case here, and additionally, that designation is in keeping with the traditional and consistent usage. Although the nomenclatural activity of Heath is controversial, in this case his arguments are solid. In fact, neither Hunt nor Taylor made any formal rejection of Heath’s typification; they just ignored it.

In 1997 N. Taylor published (in *Cactaceae Consensus Initiatives*, privately published by D. Hunt) a note of three pages wherein 38 new combinations are made (Fig. 5). Among them he transfers *Cereus euchlorus* F.A.C. Weber (including four subspecies) to *Praecereus* Buxbaum; also assigned to *Praecereus* was *Cereus saxicola* Morong, a name always considered to be a synonym of *Cereus cavendishi*. That publication fulfils the nomenclatural requirements at that moment, but Taylor gives no explanation of the reasons for the changes made. In a previous paper, Hunt and Taylor (1992) refer to *Ebneria* and *Mirabella* as subgenera of *Cereus*, but only marginally mention *Praecereus*.

In 2006 D. Hunt and collaborators published a great work covering in a synoptic way all the Cactaceae accepted by them; a work which fortunately put some order in the family taxonomy, where over the last nine decades—i.e., since the work of Britton and Rose—many people have published with diverse criteria, resulting in a true chaos.

In that work, Hunt et al. (2006) do not include *Monvillea* as a genus, but do include *Praecereus*, with only two species—the two combined by

Figure 3. Facsimile of an excerpt of Hunt’s 1988 *Bradleya* note where the identity of *C. cavendishii* is discussed.

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**MONVILLEA Britton & Rose**

Largely for practical reasons, this genus was accepted by the IOS Working Party and has been included in the account for the European Garden Flora, but its taxonomic status, and the correct name of ‘*M. cavendishii*’ are arguable.

Ritter (1979) drew attention to the compelling argument presented by Weingart (1914) for believing that the original *Cereus cavendishii* Monv. ex Lem. was a species of *Acanthocereus*. The tentative suggestion by Schumann (1897) that *C. cavendishii* and the better-known *C. paxtonianus* Monv. ex Salm-Dyck were the same was adopted by J. D. Hooker and led to the selection of *C. cavendishii* as the type of *Monvillea* by Britton & Rose.

Ritter treated *Monvillea cavendishii* sensu B. & R. as a synonym of *M. paxtoniana* “(sensu Schumann) Borg”, which is inadmissible. If, as seems very probable (although no original material is extant), *C. cavendishii* was indeed a species of *Acanthocereus*, application of the current edition of the *International Code of Botanical Nomenclature* (Art. 10.2) renders *Monvillea* a synonym of *Acanthocereus*, the case being comparable with that of *Mitrocereus. Monvillea*, in Britton & Rose’s intended sense, is left without a valid generic name.

Taxonomically, however, the case for ‘*Monvillea*’ as a genus is weak, resting on habit and fruit characters, and Braun (1988) recommends that it be submerged in *Cereus*. Braun (l.c., fig. 1) implies that *Cereus* should consist of three subgenera, *Brasilicereus* (formally proposed in his paper), *Cereus* (autonym) and *Monvillea*, but does not make the reduction or include the group in his key to genera and subgenera.

In view of the nomenclatural problem, it is desirable that *Monvillea* should be rejected as the name of the group as a whole when it is treated at subgeneric rank. Two other valid names are available: *Ebneria* Backeb. and *Hummelia* Backeb., proposed simultaneously (along with *Eumonvillea*, which must be corrected to subg. *Monvillea*) by Backeberg (1948). Theoretically, either name would serve, but since the species of *Hummelia* have been transferred to a separate genus, *Praecereus* Buxbaum, I propose to select *Ebneria*:

**Cereus subg. Ebneria** (Backeb.) D. Hunt comb. nov. Basionym: *Monvillea* subg. *Ebneria* Backeb. in *Sukkulientenkunde* 2: 54 (1948). Type: *Cereus spegazzinii* F.A.C. Weber. Syn. *Monvillea* subg. *Hummelia* Backeb., l.c.

This choice does not affect the availability of *Hummelia* if a further subgeneric name is required. Its type is *Monvillea maritima* B. & R., which was included in *Praecereus* by Buxbaum. The type of *Praecereus* is *Cephalocereus smithianus* B. & R., but if (as seems likely) the two species are referable to the same group, *Hummelia* would be the correct subgeneric name.

The correct name for *Monvillea cavendishii* hort. remains in doubt. If, as Weingart claimed, *Cereus paxtonianus* Monv. ex Salm-Dyck was also an *Acanthocereus*, the earliest relevant names for ‘monvilleas’ of localized origin appear to be *C. saxicola* Morong and *C. euchlorus* F.A.C. Weber ex Schumann.

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N. Taylor (1997)—while including in *Cereus* other species which had been considered to be in *Monvillea* by others (Backeberg 1960, for instance). That is not understandable, because the differences between *Cereus* in the narrow sense and those inclusions [for instance, *Monvillea spegazzinii* (F.A.C. Weber) Br. et Rose] are greater than the differences between those species and the two species transposed into *Praecereus*.

If the *Monvillea* species with low rib numbers (4–5), long flowers, and stamens at the upper part of the tube are considered distinct enough to justify their separation from the “*Praecereus*” species, they would be more appropriately placed in *Mirabella*, a genus described by Ritter in 1979, than in *Cereus*.



**Figure 4.** Facsimile of the 1899 plate designated by Heath as the nomenclatural type of *Cereus cavendishii* from *Curtis's Botanical Magazine* 125: t. 7648, with the name *Cereus paxtonianus*, but having as a synonym *Cereus cavendishii* in the text.



For the sake of clarity, below are listed the main synonyms of *Monvillea cavendishii* (Monville) Britton & Rose, *The Cactaceae* 3: 21. 1920.

Basionym: *Cereus cavendishii* Monville, *Hort. Univ.* 1: 219. 1840. Neotype, designated by Heath (1992): Plate 7648 in *Curtis's Botanical Magazine* 125. 1899. Epitype, designated here: Argentina, prov. Corrientes, dpto. Empedrado, estancia La Yela, 27-XI-1983, leg. T.M. Pedersen 13651 (SI). As T.M. Pedersen was accustomed to depositing a duplicate of each of his specimens at C, and because his private herbarium is now part of CTES, it would appear likely that there could be duplicates (Iso-epitypes) at both herbaria.

*Cereus paxtonianus* Monville ex Salm Dyck, *Cact. Hort. Dyck.* 1849: 211. 1850. Type: not designated.

*Cereus saxicola* Morong, *Anal. N.Y. Acad. Sci.* 7: 121. 1893.

*Eriocereus cavendishii* (Monv.) Riccobono, *Boll. Real Orto Bot. Palermo* 8: 239. 1909.

*Monvillea saxicola* (Morong) A. Berger, *Kakteen*: 343. 1929. Type: Paraguay, Morong s.n. (NY).

*Praecereus saxicola* (Morong) N. P. Taylor, *Cactaceae Consensus Initiatives* 3: 10. 1997.

The species from the same area with close affinity to *Monvillea cavendishii* (Monville) Britton & Rose are (1) *Monvillea euchlora* (K. Schum.) Backeb., a tall tree-like plant of wide distribution in South American forests, with flowers relatively short and stout, and (2) *Monvillea krapovickiana* R. Kiesling (2010), a sparsely branched low shrub with a tendency to be scandent, with long thin flowers, from Chaco environments.

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**Figure 5.** Facsimile of excerpt from Taylor's note (1997) with the combinations of two species under *Praecereus*.

***Echinocereus viridiflorus* ssp. *davisii*** (Houghton) N.P. Taylor, **stat. nov.** Basionym: *Echinocereus davisii* Houghton, *Cact. Succ. J. (US)* 2: 466 (1931); *E. viridiflorus* var. *davisii* (Houghton) W.T. Marshall.

***Escobaria alversonii*** (J. Coulter) N.P. Taylor **comb. nov.** Basionym: *Cactus radiosus* var. *alversonii* J. Coulter, *Contrib. US Nat. Herb.* 3: 122 (1894); *Coryphantha alversonii* (J. Coulter) Orcutt, *Cactography*, 3 (1926); *Escobaria vivipara* var. *alversonii* (J. Coulter) D. Hunt, *Cact. Succ. J. Gt Brit.* 40(3): 13 (1978).

***Praecereus euchlorus*** (Weber) N.P. Taylor **comb. nov.** Basionym: *Cereus euchlorus* Weber in Schumann, *Gesamtb. Kakt.*, 84 (1897); *Monvillea euchlora* (Weber) Backeberg, *Cact.*, 4: 2301 (1960).

***Praecereus euchlorus* ssp. *amazonicus*** (Schumann ex Vaupel) N.P. Taylor **comb. et stat. nov.** Basionym: *Cereus amazonicus* Schumann ex Vaupel, *Notizbl. Bot. Gart. Berlin* 5: 283 (25 Jan 1913); *Monatsschr. Kakt.-Kunde* 23: 164 (15 Nov 1913); *Monvillea amazonica* (Schumann ex Vaupel) Britton & Rose, *Cact.* 2: 24 (1920); *Praecereus amazonicus* (Schumann ex Vaupel) Buxbaum.

***Praecereus euchlorus* ssp. *diffusus*** (Britton & Rose) N.P. Taylor **comb. et stat. nov.** Basionym: *Monvillea diffusa* Britton & Rose, *Cact.* 2: 24 (1920); *Cereus diffusus* (Britton & Rose) Werdermann ex Backeberg, *Neue Kakteen*, 69 (1931).

***Praecereus euchlorus* ssp. *smithianus*** (Britton & Rose) N.P. Taylor **comb. et stat. nov.** Basionym: *Cephalocereus smithianus* Britton & Rose, *Cact.* 2: 37 (1920); *Monvillea smithiana* (Britton & Rose) Backeberg, *Blätt. Kakteenf.* 1934(12): sine pag. (1934); *Praecereus smithianus* (Britton & Rose) Buxbaum.

***Praecereus saxicola*** N.P. Taylor **comb. nov.** Basionym: *Cereus saxicola* Morong, *Ann. New York Acad. Sci.* 7: 121 (1893).

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