

Cactology 5

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Cover illustration

A very tall and branched plant of *Azureocereus hertlingianus* from Peru, Río Pampas. Photo
by G. Charles (GC317.01).

Back cover illustration

A single stemmed plant of *Azureocereus hertlingianus* ssp. *columnaris* from Peru, Chincheros.
Photo by G. Charles (GC318.01).

Nomenclatural novelties proposed in this issue

Azureocereus hertlingianus subsp. *columnaris* (F.Ritter) Guiggi *comb. et stat. nov.*
Azureocereus hertlingianus f. *viridis* (Rauh et Backeberg) Guiggi *comb. et stat. nov.*
Gymnanthocereus amstutziae (Rauh et Backeberg) Guiggi *comb. nov.*
Gymnanthocereus hernandezii (Fernández-Alonso) Guiggi *comb. nov.*

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31 August 2014

EDITORIAL

The Andean region of north-western South America is assumed to be the centre of origin and radiation of the Cactaceae. A group of columnar cacti is considered to be one of the oldest representatives of the family and ancestors of the giant cacti of North America. These taxa are characterized by flowers covered with leaf-like scales that were classified in the Tribe Browningieae Buxbaum. In this fifth issue of Cactology, the generic circumscription of the Tribe is analysed with the acceptance of Azureocereus Akers et Johnson and Gymnanthocereus Backeberg as distinct genera from Browningia Britton et Rose, and some new combinations are proposed.

31 Agosto 2014

EDITORIALE

La regione andina del nord-ovest del Sud-America si presume essere il centro di origine e radiazione delle Cactaceae. Qui cresce un gruppo di cactus colonnari considerato tra i più vecchi rappresentati della famiglia e ancestrale dei cactus giganti del Nord-America. Questi taxa caratterizzati dai fiori ricoperti da squame simili a foglie furono classificati nella tribù delle Browningieae Buxbaum. In questo quinto numero di Cactology, la circoscrizione a livello di genere della tribù viene analizzata con l'accettazione di Azureocereus Akers et Johnson e Gymnanthocereus Backeberg come generi distinti da Browningia Britton et Rose, con la proposizione di alcune nuove combinazioni.

31 Agosto 2014

EDITORIAL

La región andina, al noroeste de América del Sur es supuestamente el centro de origen y radiación de las Cactaceae. Un grupo de cactus columnares es considerado uno de los miembros más antiguos de la familia y el antepasado de los cactus gigantes de América del Norte. Estos taxones se caracterizan por flores cubiertas de escamas en forma de hojas, que fueron clasificados en la tribu Browningieae Buxbaum. En esta quinta edición de Cactology, la división genérica de la tribu se analiza con la aceptación de Azureocereus Akers et Johnson y Gymnanthocereus Backeberg como géneros separados de Browningia Britton et Rose, y se proponen nuevas combinaciones.

31 Août 2014

ÉDITORIAL

La région andine, au nord-ouest de l'Amérique du Sud est supposée être le centre d'origine et de rayonnement des Cactaceae. Un groupe de cactus colonnaires est considéré comme l'un des plus anciens représentants de la famille et l'ancêtre des cactus géants de l'Amérique du Nord. Ces taxons sont caractérisés par des fleurs couvertes d'écailles en forme de feuilles, qui ont été classés dans la tribu Browningieae Buxbaum. Dans ce cinquième numéro de Cactology, la circonscription générique de la tribu est analysée avec l'acceptation de Azureocereus Akers et Johnson et Gymnanthocereus Backeberg comme genres distincts de Browningia Britton et Rose, et de nouvelles combinaisons sont proposées.

CIRCUMSCRIPTION AND NOMENCLATURAL REVISION IN *AZUREOCEREUS* AKERS *ET* JOHNSON FROM SOUTH PERU (*CACTOIDEAE-BROWNINGIEAE*)

Abstract – The vegetative and reproductive characters of the genus *Azureocereus* Akers *et* Johnson distinguish it from *Browningia* Britton *et* Rose *s.s.* An analysis of the proposed epithets and of the living specimens and herbarium samples have permitted a revision nomenclatural and infra-specific for the only accepted species *A. hertlingianus* (Backeberg) Backeberg.

Riassunto – I caratteri vegetativi e riproduttivi del genere *Azureocereus* Akers *et* Johnson lo distinguono da *Browningia* Britton *et* Rose *s.s.* L'analisi degli epiteti proposti, di esemplari viventi e di campioni d'erbario ha permesso una revisione nomenclaturale e infra-specifica per la sola specie accettata *A. hertlingianus* (Backeberg) Backeberg.

Resumen – Los caracteres vegetativos y reproductivos del género *Azureocereus* Akers *et* Johnson difieren de *Browningia* Britton *et* Rose *s.s.* Un análisis de los epítetos propuesto, especímenes vivos y muestras de herbario han permitido una revisión de la nomenclatura y infra-específica para la única especie aceptada *A. hertlingianus* (Backeberg) Backeberg.

Résumé – Les caractères végétatifs et reproductifs du genre *Azureocereus* Akers *et* Johnson se distinguent de *Browningia* Britton *et* Rose *s.s.* Une analyse des épithètes proposées et des spécimens vivants et des échantillons d'herbier ont permis une révision de la nomenclature et infra-spécifique pour la seule espèce acceptée *A. hertlingianus* (Backeberg) Backeberg.

The genus *Browningia* was erected for *Cereus candelaris* Meyen (1833) by Britton & Rose (1920: 63). It is characterized by drooping reproductive branches that are spineless, a funnellform flower with lanceolate scales (8-12 cm long), fruit fleshy, juicy, acid (to 10 cm long), and a seed that is normally strongly tuberculate (1.7-2.2 mm long), distributed from north Chile to central Peru. Several cactologists (Marshall & Bock, 1945: 114; Marshall, 1946: 8; Buxbaum, 1965: unpagged, 1966: 43; Rowley, 1982: 48; Hunt & Taylor, 1991: 85) have amplified the concept of this genus to include also *Gymnanthocereus* Backeberg (1937, incl. *Gymnocereus* Rauh *et* Backeberg, 1959), *Azureocereus* Akers *et* Johnson (1949), *Castellanosia* Cárdenas (1951), and *Rauhocereus* Backeberg (1957), for the shared presence of the large flower scales. Nowadays, *Browningia sensu lato* is taken to include *Browningia sensu stricto*, *Gymnanthocereus* and *Azureocereus* (Hunt *et al.*, 2006: 35). The author is convinced that *Azureocereus* is clearly distinguishable from *Browningia s.s.* for its different stem, flower and fruit morphologies (*i.e.* blue stem, ribs in lower number, tuberculate, with transverse inter-areolar notches, epidermal cells papillose, flower tubular, smaller, with the dark pigmentation of the laminae that do not fade in a solution, flower scales fleshy, tough, persistent with fimbriate margins, fruit dry, seed smaller, normally smooth). As a consequence *Browningia* is here reinstated as a monospecific genus with two subspecies (*B. candelaris*, *B. candelaris* ssp. *icaensis* (F.Ritter) D.R.Hunt, *cfr.* Hunt *et al.*, 2006: 35), with the exclusion of *B. microsperma* (Werdermann *et* Backeberg) W.T.Marshall (1946), because its distribution and morphology is closer relative to that of the other accepted species of *Gymnanthocereus* Backeberg (1937) (see the next revision). Starting from this taxonomic point of view the writer has investigated the correct nomenclature and the infra-specific variability of the only accepted species of *Azureocereus* (*A. hertlingianus*). This study is based on specialized literature (Britton & Rose, 1920; Backeberg, 1937, 1957, 1959, 1977; Akers & Johnson, 1949; Rauh, 1956a-b, 1958; Buxbaum, 1963; Ritter, 1981; Knize, 1987; Gibson, 1992; Eggli *et al.*, 1995; Barthlott & Hunt, 2000; Anderson, 2001; Hunt *et al.*, 2006, 2013; Anderson & Eggli, 2011), living plants cultivated in famous scientific collections (*e.g.* Jardin Exotique de Monaco, Huntington Botanical Gardens, Zürich Sukkulenten-Sammlung) and

herbarium specimens deposited in prestigious institutions (e.g. SGO, ZSS, UC, K) with locality data. Two new combinations [*A. hertlingianus* ssp. *columnaris* (F.Ritter) Guiggi, *A. hertlingianus* f. *viridis* (Rauh et Backeberg) Guiggi], one lectotypification and a key for the accepted subspecies are here proposed.

Circumscription and infra-specific taxonomy

Azureocereus Akers et Johnson, in Cact. Succ. J. (U.S.) 21(5): 133 (1949). *Typus generis*: *Azureocereus nobilis* Akers, *op. cit.* (1949) [= *A. hertlingianus* (Backeb.) Backeb.]. *Synonymi*: *Clistanthocereus* Backeberg *pro parte*, in Jahrb. Deutsch. Kakteen-Ges. 1(2): 24 (1937). *Browningia* subgen. *Azureocereus* (Akers et Johnson) Buxbaum, in Krainz, Die Kakt. C iv/I (1965). **Descriptio**: Plants columnar, with erect bluish stems, mesotonic branched; epidermis papillose; ribs high, strongly tuberculate, with prominent horizontal inter-areolar furrows; areoles with dense wool; spines normally stout but in the flowering stems denser and more flexible; flower tubular, to 7 cm long, limb slightly expanded and sometime oblique, receptacle scales fleshy, imbricate, ciliate, black; fruit dry with persistent scales and flower remnant, ovoid, black, 2.5 cm in diameter; seeds black-brown, glossy, testa with flattened cells and interstices pitted or with verrucose and aculeate cells near the hilum (*cf.* Gibson, 1992: 67), 1.6 x 1.2 mm. **Etymologia**: from the Latin *azureus*, pure deep blue, and the substantive *Cereus* (Mottram, 2014: 32). **Distributio**: subtropical valleys of south Peru (Apurímac, Ayacucho), between 1500-2500 m a.s.l. **Note**: *Azureocereus deflexispinus* (Rauh et Backeberg) Backeberg *ex* Rauh (1958: 281) belongs elsewhere and is excluded from this study.

A. hertlingianus (Backeberg) Backeberg, Die Cact. 2: 926 (1959) (front-cover). *Basionymus*: *Clistanthocereus hertlingianus* Backeberg, in Jahrb. Deutsch. Kakteen-Ges. 1(2): 24 (1937). **Typus**: Peruvia centralis, Río Mantaro, south of La Mejorada, ca. 2500 m, *Hertling s.n., non servatus*. **Autotypus** (*cf.* ICBN Art. 9.1, McNeill *et al.*, 2012): *icon* in Backeberg, *loc. cit.* 24 (1937). *Synonymi*: *Azureocereus hertlingianus* (Backeberg) Backeberg *ex* Rauh, in Cactus (Paris) 51: 94 (1956), *nom. inval.* (*cf.* ICBN Art. 41.5, McNeill *et al.*, 2012); *Azureocereus hertlingianus* var. *nobilis* (Akers) Backeberg *ex* Rauh, in Cactus (Paris) 52: 104 (1956), *nom. inval.* (*cf.* ICBN Art. 41.5, McNeill *et al.*, 2012); *Browningia hertlingiana* (Backeberg) Buxbaum, in Krainz, Die Kakt. C iv/I (1965); *Azureocereus nobilis* Akers, in Cact. Succ. J. (U.S.) 21(5): 134 (1949). **Typus**: along the Río Mantaro ‘Montaro’, S of Mejorada [?, *holo.*]; **Specimina visa**. **Plantae viventum**: Peru, Huancavelica, *sine aliquo loco*, F. Ritter FR 149 *sub* *Browningia hertlingiana* [6979(2)-8267(2) *cult. hort.* Jardin Exotique de Monaco, fig. 2]; Peru, Mantaro valley, Ayacucho-Huanta, 1500-2000 m, K. Knize KK 334 [14479(5) *cult. hort.* Jardin Exotique Monaco, fig. 4]; Peru, Ayacucho-Casacancha, 2000-2500 m, K. Knize KK 1063 *sub* *Azureocereus hertlingianus* var. *monstruosus n.n.* [14480(2) *cult. hort.* Jardin Exotique de Monaco, fig. 5]; Peru, Coatahuasi to Velinga, Canon de Cotahuasi, 1920-2170 m, P. Hoxey PH764.08 *sub* *Browningia hertlingiana* [*cult. hort.* A. Guiggi]; *sine legit et loco* [3362(3)-24965 *cult. hort.* Jardin Exotique de Monaco]; *sine legit et loco*, *sub* *Azureocereus ayacuchensis n.n.* [6996 *cult. hort.* Jardin Exotique Monaco, figs. 8-9]; Peru, Huancavelica, *sine aliquo loco*, F. Ritter FR 149 (ISI 664), *sub* *Browningia hertlingiana* [16263 *cult. hort.* Huntington Botanical Gardens, figs. 3, 6]; Peru, Prov. Ayacucho, *sine legit et aliquo loco*, *sub* *Browningia hertlingiana* [40448 *cult. hort.* Huntington Botanical Gardens]; *sine legit et loco*, *sub* *Browningia hertlingiana* [18498 *cult. hort.* Huntington Botanical Gardens, fig. 7]; Peru, Mantaro valley, Ayacucho-Huanta, 1500-2000 m, K. Knize KK 334 [*cult. hort.* ZSS coll.]; Peru, *sine legit et aliquo loco*, *sub* *Browningia hertlingiana* [*cult. hort.* ZSS coll.]. **Exsiccata**: Peru, Prov. Ayacaha, Dept.

Huancavelica, Valley of the Río Mantaro, 4 km S of La Esmeralda, 2450 m, 30 Oct. 1957, *P.C. Hutchison* 1699 [UC, *holo. spec. vis.*, fig. 1; US, F, NY, USM, HEID, GH, S, K *spec. vis.*, G, MICH, M, LE, LIL, BH, E, CP, *iso.*; two sheet, corp., ar., sp.]; Peru, Mantaro valley, Ayacucho-Huanta, 1500-2000 m, *K. Knize* KK 334 [ZSS, seedling: corp., ar., sp.]; Peru, Marcas Nr. 8, Sept. 1953, *F. Ritter* 149 loc. 4 *sub Browningia hertlingiana* [ZSS, *spec. vis.*, sem.]; Peru, Huancavelica, “Villa Azul”, sine data, *F. Ritter* 149 loc. 3 *sub Browningia hertlingiana* [SGO, *spec. vis.*, two sheets, corp., ar., sp.]. **Note:** this species was described by Backeberg *loc. cit.* (1937: 24) only from a habitat picture and data from Hertling, and initially included by the same author in *Clistanthocereus* for the erroneously presumed orange flower (Buxbaum, 1966: 43).

A. hertlingianus subsp. columnaris (F.Ritter) Guiggi *comb. et stat. nov.* (retro-cover). *Basionymus:* *Browningia columnaris* F.Ritter, *Kakt. Südamerika* 4: 1323 (1981). *Synonymus:* *Azureocereus columnaris* (F.Ritter) J. Lodé, *Cact.-Avent. Int.* 103: 18 (2014). **Typus:** Peru, Ayacucho, Valle Pampas, in association with *Browningia (Azureocereus) viridis*, 1965, *F. Ritter* 1294 loc. 1 [U, *holo.*, corp. ar. sp.]; **Isotypus:** Peru, Ayacucho, Valle Río Pampas, Sep. 1964, *F. Ritter* 1294 loc. 2 [SGO, *iso. spec. vis.*, corp., ar., sp.; ZSS, *spec. vis.*, sem.]. **Specimina visa. Plantae viventum:** Peru, Río Pampas, below Chincheros, 2150 m, *P. Hoxey* PH740.01 *sub Browningia columnaris* [*cult. hort.* A. Guiggi]. **Note:** This subspecies possesses a simple stem with a denser fertile zone and grooving, and is confined to limestone substrates.

A. hertlingianus f. viridis (Rauh et Backeberg) Guiggi *comb. et stat. nov.* *Basionymus:* *Azureocereus viridis* Rauh et Backeberg, in Backeberg, *Descr. Cact. Nov.* 14 1956 (1957), in Rauh, *Sitzungsber. Heidelb. Akad. Wiss.* 1: 280 (1958). **Typus:** Peru, Apurímac valley, near Limatambo, 1900-2200 m, 1954, *W. Rauh* K69a-c [*holo. non servatus fide* HEID database]; **Lectotypus hic designates** (fig. 14): *icon* 60 from Apurímac valley, near Hacienda Caráhuasi, 2000-2200 m, 28 Jun. 1954, *Werner Rauh* K69 (1954), in Rauh *loc. cit.* 140 (1958). *Synonymi:* *Browningia viridis* (Rauh et Backeberg) Buxbaum, in Krainz, *Die Kakt. C iv/I* (1965); *Azureocereus ciliisquamus* F. Ritter, in *Samenkatalog H. Winter* (1962), *nom. inval.* (*cfr.* ICBN Art. 32.1, McNeill *et al.*, 2012); *Browningia ciliisquama* (F. Ritter) Buxbaum, in Krainz, *Die Kakt. C iv/I* (1965), *nom. inval.* (*cfr.* ICBN Art. 32.1, McNeill *et al.*, 2012). **Specimina visa. Plantae viventum:** Peru, Apurímac valley, Apurímac, 1500-2200 m, *K. Knize* KK 333 *sub Azureocereus viridis* [5534 *cult. hort.* Jardin Exotique de Monaco, figs. 10-13]. **Exsiccata:** Peru, Ayacucho, Río Pampas, *sine data*, *F. Ritter* 669 loc. 2 *sub Browningia viridis*, originally as *Azureocereus ciliisquamus* F. Ritter *nom. nud.* [SGO, *spec. vis.*, corp., ar., sp.]. **Note:** This taxon is characterized by a taller and greenish stem, fewer ribs and shorter spines uniform in length. Ritter (1981: 1323, *cfr.* Hunt *et al.*, 2006: 36) also reported a different mode of dehiscence of the fruit than the type of the species.

Key to the recognized subspecies of *A. hertlingianus*

1. Habit branching, 5-10 m high; stem normally bluish, fertile part with < 30 bristles spines; areoles 3.5-4 cm apart; central spines 1-3, to 8 cm long.....**1. ssp. hertlingianus**
- Habit simple, 3-5 m high; stem sometimes glaucous, fertile part with ca. 30 bristles spines; areoles 1-2.5 cm apart; central spines 4, to 6 cm long..... **2. ssp. columnaris**

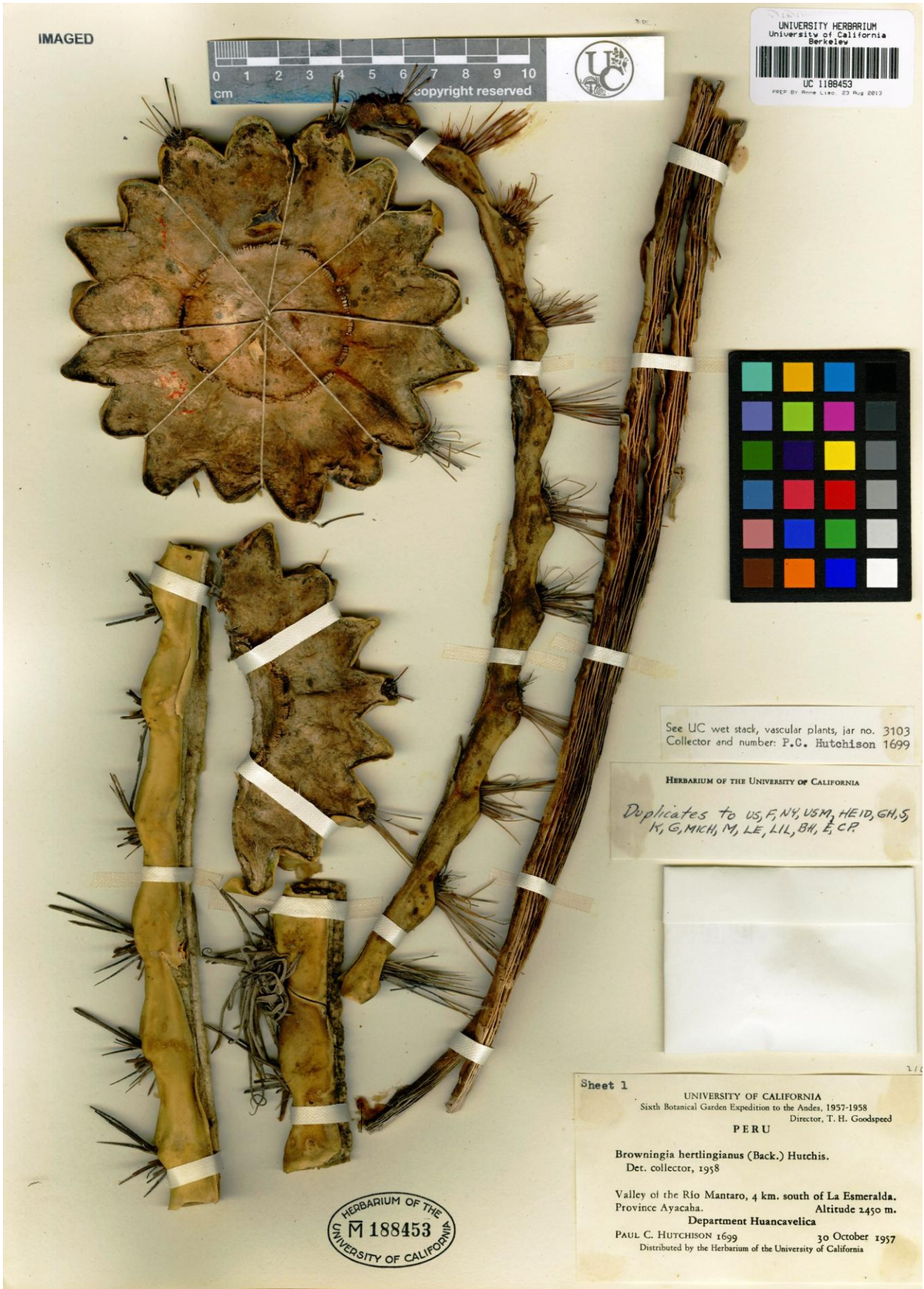


Image 1: Herbarium sample of *Azoreocereus hertlingianus* (*Browningia hertlingiana*), including different sections of the stem, deposited at University of California, Berkeley. Photo: Andrew S. Doran.



Images 2-5. *Azureocereus hertlingianus* in cultivation. **2:** FR 149 sub *Browningia hertlingiana*, cult hort. Jardin Exotique de Monaco. **3:** FR 149(ISI 664) sub *Browningia hertlingiana*, cult hort. Huntington Botanical Gardens. **4:** KK 334 sub *Azureocereus hertlingianus*, cult hort. Jardin Exotique de Monaco. **5:** KK 1063 sub *Azureocereus hertlingianus* var. *monstruosus* n.n., cult hort. Jardin Exotique de Monaco. Photo: A. Guiggi.



Images 6-9. Morphological and reproductive parts of *Azureocereus hertlingianus*. **6:** a new shoot with the ciliate scales [FR 149(ISI 664) *sub Browningia hertlingiana*, 16263 *cult. hort.* Huntington Botanical Gardens]. **7:** apical stem with the flower bottoms and a mature flower [*sub Browningia hertlingiana*, 18498 *cult. hort.* Huntington Botanical Gardens]. **8:** particular of a flower with the scales [*sub Azureocereus ayacuchensis n.n.*, 6996 *cult. hort.* Jardin Exotique de Monaco]. **9:** in- and outside parts of two sectioned flowers [*sub Azureocereus ayacuchensis n.n.*, 6996 *cult. hort.* Jardin Exotique de Monaco].



Images 10-13. *Azureocereus hertlingianus* f. *viridis* in cultivation [KK 333 sub *Azureocereus viridis*, cult hort. Jardin Exotique de Monaco]. **10:** erect stems, greenish in the lower parts. **11:** bluish apex of the stem. **12:** particular of the tuberclated ribs with the spines. **13:** a dry flower covered with the blackish scales. Photo: A. Guiggi.

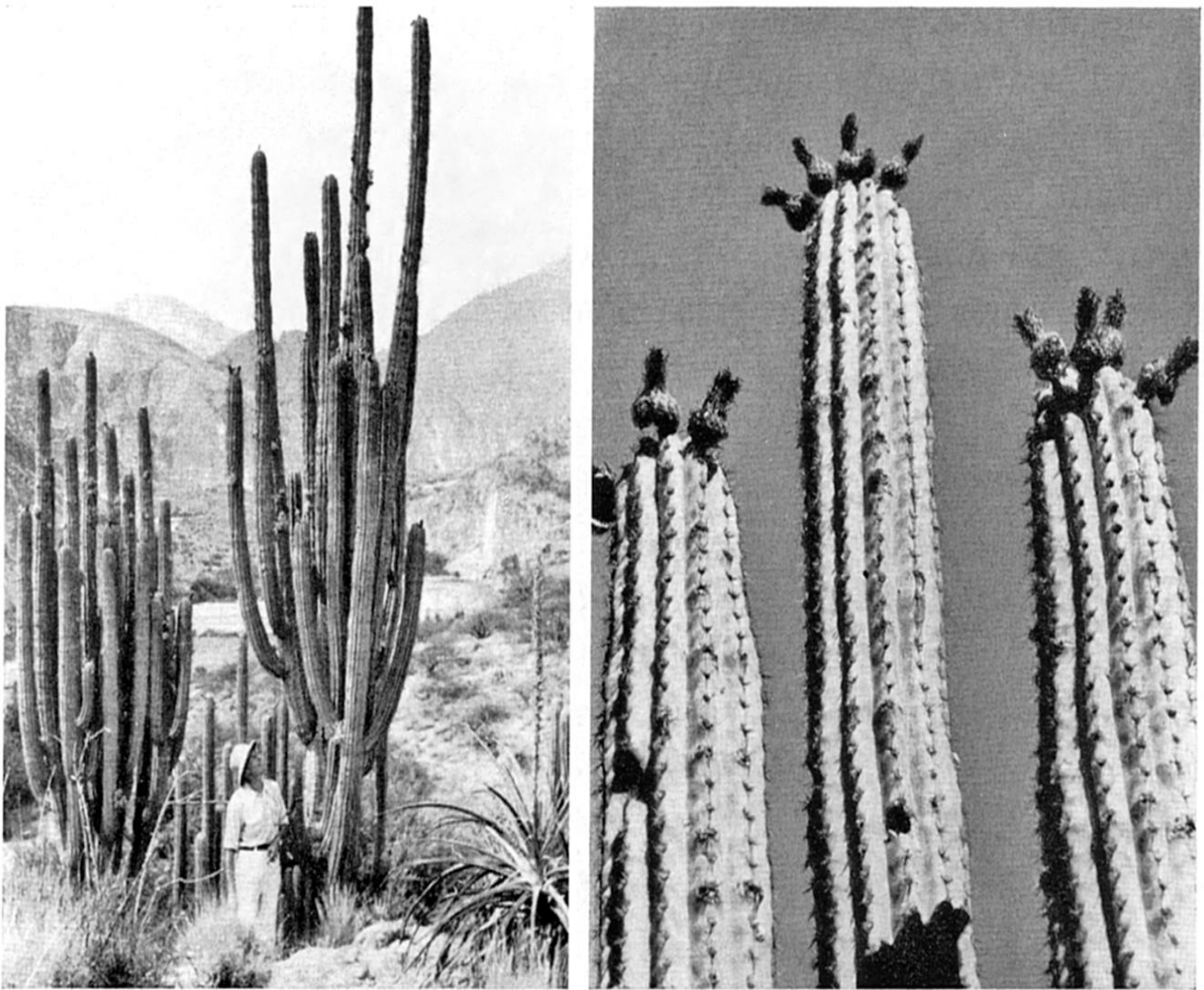


Abb. 60. *Azureocereus viridis* Rauh et Backbg. im Apurimactal bei der Hacienda Carahuasi, 2000 m

Image 14. Reproduction of the pictures from same gathering collected as Rauh K69 (1954) designated here as lectotype. Photo: R. Mottram (Rauh, 1958: 140).

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NEW COMBINATIONS IN THE ACCEPTED GENUS *GYMNANTHOCEREUS* BACKEBERG FROM NW SOUTH- AMERICA (*CACTOIDEAE-BROWNINGIEAE*)

Abstract – *Gymnanthocereus* Backeberg comprising six recognized species distributed in Peru, Ecuador and Colombia is here reinstated from *Browningia* Britton *et* Rose *s.s.* Two new combinations are made for the long known *Gymnocereus amstutziae* (1957) and for the relatively recently discovered *Browningia hernandezii* (2006).

Riassunto – *Gymnanthocereus* Backeberg che comprende sei specie distribuite in Peru, Ecuador e Colombia viene qui ristabilito e separato da *Browningia* Britton *et* Rose *s.s.* Due nuove combinazioni sono state realizzate per *Gymnocereus amstutziae*, conosciuto da tempo (1957) e per la relativamente recente scoperta *Browningia hernandezii* (2006).

Resumen – *Gymnanthocereus* Backeberg incluyendo seis especies reconocidas, distribuidas en Perú, Ecuador y Colombia, se restaura a partir de *Browningia* Britton *et* Rose *s.s.* Dos nuevas combinaciones se hacen para *Gymnocereus amstutziae*, conocido desde hace tiempo (1957) y la relativamente recién descubierta *Browningia hernandezii* (2006).

Résumé – *Gymnanthocereus* Backeberg comprenant six espèces reconnues, distribuées au Pérou, en Équateur et en Colombie, est ici rétabli à partir de *Browningia* Britton *et* Rose *s.s.* Deux nouvelles combinaisons sont effectuées pour *Gymnocereus amstutziae*, connu depuis longtemps (1957) et pour le relativement récemment découvert *Browningia hernandezii* (2006).

The tropical genus *Gymnanthocereus* Backeberg originating from the Andean region in the north-western parts of South America, as defined by Backeberg (1937: 4(7): [2], 1977: 196), Ritter (1981: 1313-1317) and Gibson (1992: 62-68), possesses cells with funicular pigmentation of the flower and fruit, and with mucilage in the stem, flower salverform, of medium dimension (2-6 cm long), with sclerified laminae and scales usually rounded without stomata, fruit with green wall and white pulp, seed glossy, small (0.7-1.5 mm long) normally with smooth testa (verrucose in *G. microspermus*). The author accepts *Gymnanthocereus* as a valid and distinct genus from *Browningia* Britton *et* Rose *sensu stricto* for the diagnostic characters mentioned above, amplifying its circumscription to include the two taxa *Gymnocereus amstutziae* (1957) and *Browningia hernandezii* (2006). A total of six species are recognized here, five distributed in northern Peru and southern Ecuador: *G. chlorocarpus* (Kunth) Backeberg (1937, fig. 15-16), *G. microspermus* (Werdermann *et* Backeberg) Backeberg (1938, syn. ? *Browningia albiceps* F.Ritter 1981), *G. altissimus* F.Ritter (1959, fig. 17-18, syn. *Browningia utcubambensis* Hutchison *ex* Wittner 2012), *G. pilleifer* F.Ritter (1967, syn. ? *G. macracanthus* F.Ritter 1981), *G. amstutziae* (Rauh *et* Backeberg) Guiggi (2014); and one disjunct in central Colombia: *Gymnanthocereus hernandezii* (Fernández-Alonso) Guiggi (2014). A synopsis of the nomenclatural history of the genus and the required two new combinations are as follows.

Revised nomenclature

Gymnanthocereus Backeberg, Blätt. Kakteenf. 4(7): [2]. (1937). **Typus generis:** *Cactus chlorocarpus* Kunth, Nov. Gen. Sp. 6: 67 (1823) [= *Gymnanthocereus chlorocarpus* (Kunth) Backeberg, Blätt. Kakteenf. 1937(8): [8], 15[2] (1937)]. **Synonymi:** *Browningia* Britton *et* Rose *pro parte*, The Cact. 2: 63. 1920; *Seticereus* Backeberg *pro parte*, Blätt. Kakteenf. 4(11): [1]. (1937), in J. DKG II: 75 (1942); *Gymnocereus* Rauh *et* Backeberg *pro parte*, Die Cact. 2: 920 (1959), *nom. illeg.* (cfr. ICBN Art. 52.1, McNeill *et al.*, 2012). **Etymologia:** from the Greek *gymnos*, naked or smooth, and *anthos*, flower, and the substantive *Cereus* (Mottram, 2014: 149).

Gymnanthocereus amstutziae (Rauh et Backeberg) Guiggi **comb. nov.** *Basionymus*: *Gymnocereus amstutziae* Rauh et Backeberg, in Backeberg, Descr. Cact. Nov. 14 1956 (1957), in Rauh, Sitzungsber. Heidelb. Akad. Wiss. 1: 284 (1958). *Typus*: Peruvia, Dep. de Pasco, Río Paucartambo valley, km 72, near Jaupi Bajo, 2000 m, 1956, W. Rauh K5, [HEID, *holo. n.v.*, spirit coll., *fide* HEID database]. *Synonymus*: *Browningia amstutziae* (Rauh et Backeberg) Hutchison *ex* Krainz, in Krainz, Kakteen, Lief. 31 & 32, Gen. C iv/I (1965).

Gymnanthocereus hernandezii (Fernández-Alonso) Guiggi **comb. nov.** *Basionymus*: *Browningia hernandezii* Fernández-Alonso, Revista Acad. Colomb. Ci. Exact. 30(114): 20 (2006). *Typus*: Boyacá. Mpio. Paz de Río, Cordillera Oriental de Colombia, vertiente occidental, vía Paz de Río - Tasco, 2300 m, 19 Dec. 2005, J.L.Fernández-Alonso, G.Pérez et N.Vega 23.878 [COL, *holo n.v.*; HUA, *iso n.v.*]

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Images 15-18. Gymnanthocerei in flower and fruit in cultivation. **15-16:** *Gymnanthocereus chlorocarpus* [Peru, Lambayeque/Piura, E of Olmos, Huancabamba and Abra Porculla, atlantic side, Aug. 1954, F. Ritter FR 290, *cult hort.* Jardin Exotique de Monaco]. **17-18:** *Gymnanthocereus altissimus* [Peru, Crisnejas, 1400 m, K. Knize KK 1294 *sub Gymnocereus amazonicus n.n.*, *cult hort.* Jardin Exotique de Monaco]. Photo A. Guiggi.

