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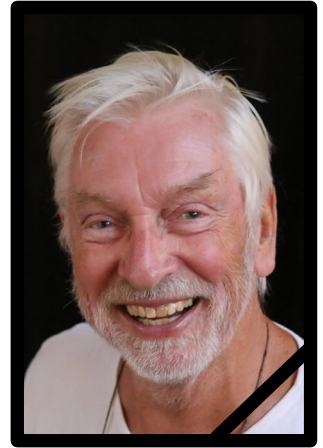
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**Cover photo: *Gymnocalycium megatae* subsp. *holdii* VoS 2194, Bolivia, hills west from Quimome
(Photo: Volker Schädlich).**

Editorial

Dear *Gymnoclycium* friends



Spring is back, the winter season is over, and we can enjoy the new growth of our plants. The first *Gymnos* are already showing their beautiful flowers. It is good that we have our hobby in this Covid-19 pandemic. Regrettably political and health measures do not allow meetings, events, and markets to take place. I cannot predict when we will be able to meet again and to cross borders to meet our friends. Personal contact is especially important, modern means of communication cannot replace them.

You will certainly have noticed that this *Schütziana* edition looks somewhat different. The editorial board has changed. Mario Wick, so far the leading person, passes the responsibility on to Ludwig Bercht. He will still carry on supporting the editorial team in the future and take care that technical proceedings will work smoothly. We are really grateful for the work he has done in the past years.

Henk Viscaal is going to deal with the layout of the magazine from now on, Holger Lunau is revising the German edition. Chief editor is Ludwig Bercht. The team will endeavour to devise three editions per year.

A contribution by Volker Schädlich opens this first edition in 2021. Based on morphological features and comparisons of sowings he recombines the taxon *G. anisitsii* subsp. *holdii* as a subspecies of *Gymnocalycium megatae*.

Wolfgang Papsch has once again immersed himself in old literature. The subject of his contribution is Leopold Quehl's history and *Gymnocalycium quehlianum*, which was named after him. I hope you enjoy yourselves reading and I wish you a charming flowering time.

Kind regards

Ludwig Bercht

We would like to express our warmest thanks to Mrs Iris Blanz (Austria) who supports us with the translation into English, to Mrs Larisa Zaitseva (Russia) for the translation into Russian, to Mr Victor Gapon (Russia) for the content corrections of the Russian edition, to Mr Takashi Shimada (Japan) for the translation into Japanese, to Mr Jiahui Lin (China) for the translation into Chinese, to Mr Václav Johanna (Czech Republic) for the translation into Czech and to Mr Daniel Schweich (France), who mirrors our publications under: <https://www.cactuspro.com/biblio/>.

Dr C. A. Ludwig Bercht 06.02.1945 - 02.03.2021

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For many and also for me completely unexpectedly, our long-time good friend, travel companion and mentor Ludwig Bercht passed away after a short, serious illness, shortly after his 76th birthday. It is not an exaggeration to say that he was well known and loved in the cactus community.



Ludwig Bercht earned his doctorate on the subject of hemp after completing his studies in chemistry. He spent the first years of his working life as a chemist in a laboratory. This was followed by a short difficult period of unemployment. For the last 22 years of his working life, he worked as a lobbyist for the Dutch dairy industry on food legislation and environmental issues. He really enjoyed this activity. Due to his job he was on the road on many continents, he enjoyed traveling very much.



Paraguay 2006, at Cerro Acahay.

He made many trips to visit cactus sites. He saw his first cacti in nature on the Dutch Caribbean island of Curaçao. He told me about this first trip again and again during our travels together. He visited more than 6400 sites during his 26 trips to cacti areas of Argentina, Brazil, Bolivia, Paraguay, Uruguay and the USA. Many publications followed in the cactus journals *Succulenta*, *Gymnocalycium* and *Schütziana*. Ludwig was active for many years as a volunteer on the editorial boards of *Succulenta* and *Schütziana*. He passed on his wide-ranging knowledge in countless, unforgettable lectures all over Europe. He knew how to quickly inspire the audience with his uncomplicated manner. For many years he organized the *Gymnocalycium* meetings in Niftrik, The Netherlands. Later, when the conference location was relocated from Niftrik to Radebeul, he was still there as an excellent moderator.

For several years he was chairman of the working group *Gymnocalycium* of the DKG. His long-time occupation with cacti, put him in the position to describe cacti himself. Thus, he was involved in the description of the following species:

Micranthocereus uilianus Brederoo & C. A. L. Bercht

Melocactus glauxianus Brederoo & C. A. L. Bercht

Gymnocalycium baldianum var. *albiflorum* C. A. L. Bercht

Gymnocalycium baldianum subsp. *sanguiniflorum* (Werderm.) C. A. L. Bercht

Gymnocalycium erolesii Neuhuber & C. A. L. Bercht

Gymnocalycium meregallii C. A. L. Bercht

Gymnocalycium mendozaense C. A. L. Bercht & Schädlich

Frailea piltzii C. A. L. Bercht & Schädlich

Gymnocalycium cabreraense Schädlich, Bercht & Melojer

He was very interested in all South American cacti. As co-author of the book "Lobivia & Co." published by the DKG in 2015, he also contributed his extensive knowledge here.

Another passionate hobby was listening to and collecting marching music. For many years he attended major events with military marching music all over Europe. No way was too far for him. For me, his certainty of the lyrics was astounding. We often sang songs from the GDR in the car on our travels, and he knew them all. We had a lot of fun with this. I have never seen Ludwig in a bad mood. He was always very open-minded, inspiring and lovable.



Two *Gymnocalycium* species bear his name, *Gymnocalycium berchtii* und *Gymnocalycium carolinense* subsp. *ludwigii*.

For many years Ludwig distributed cactus seeds of assured origin in his extensive seed list. All over the world, plants with the acronym LB are cared for in greenhouses. His plants from the locality LB 2178 (*G. friedrichii*) have already become legendary, especially in Asia.

A cosy evening at Cerro Leon in 2006 in Paraguay.

Ludwig, we will miss you very much! You will always have a place in our hearts. Despite the great pain I feel now, there will be moments again when I laugh out loud while looking at the pictures of our travels together or reviewing the many experiences we shared.

Our deepest condolences go to his family, his wife Monique, his children and grandchildren.



Look what I have here, Paraguay 2006.



You have to walk this way, Bolivia 2008.



Full commitment, Paraguay 2009.



Get me out of here, Bolivia 2008.



Always up for a joke early in the morning, Brazil 2009.



In the highlands of Bolivia in 2011.



Way across the border from Paraguay to Bolivia, 2009.



Military camp in the Chaco of Bolivia, trip 2011.



In the historical park of Filadelfia, Paraguay 2016.



Always these fences! Argentina, San Luis in 2018.



***Gymnocalycium megatae* subsp. *holdii* (Amerhauser) Schädlich comb. nov.**

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ABSTRACT

Gymnocalycium anisitsii subsp. *holdii* was first described in 2003. In this paper the plants are rearranged as subspecies of *Gymnocalycium megatae*.

KEYWORDS

Cactaceae, *Gymnocalycium*, *anisitsii*, *marsoneri*, *megatae*, *holdii*.

INTRODUCTION

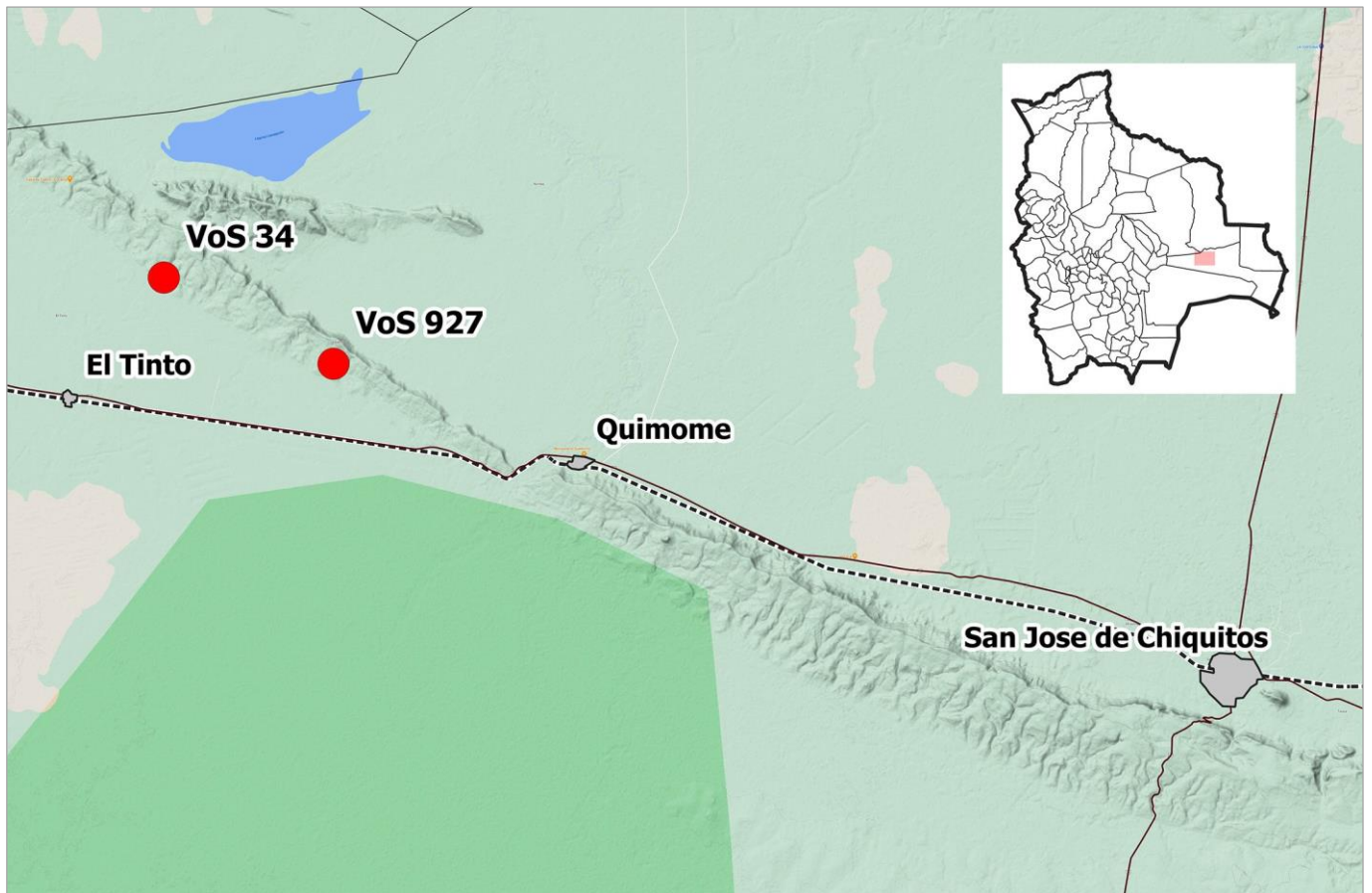
In 2003 H. Amerhauser described the plants which he had found close to El Tinto, Prov. Chiquitos, Dept. Santa Cruz, Bolivia in 1998 as *Gymnocalycium anisitsii* subsp. *holdii*. The first description in translation is as follows:

The depressed spherical plant with shallow roots differs from G. anisitsii in being 70 to 100 mm in diameter and possessing about 4 to 5 cm high, wide ribs that carry protuberances, as well as in its mostly 5-7 flexible spines curving towards the body, sometimes even tight to the body. Only rarely are few scattered spines slightly twisted of which the lowest one, which points towards the base, is usually the shortest. Another difference is the bell-shaped (funnel-shaped with G. anisitsii) purely white flower with dark yellow pollen in the anthers. Fruit and seed are very similar to those of the type species (fig. 25-26). In contrast to G. anisitsii, which grows in rather moist Chaco regions on both sides of the Rio Paraguay, its habitat are arid shrub-covered areas with sandy clearings and more or less large slabs with sparse humus soil. Here the plants are exposed to the blazing sun, almost exclusively damaged individuals can be found (fig. 27) especially in dry years. Although they mostly recover during the following rainy season, they still remain damaged. The locality was revisited during two later journeys to study further distribution areas. The new subspecies is named after Gerfried Hold, Graz, Austria, at that time the author's travel companion during his first journey to Bolivia.

Home: Serrania de San José, near El Tinto, Dep. Santa Cruz, Bolivia“.

Diagnosis: A subspecie typica spinis rectis et floribus campanulatis nec infundibuliformibus toto albis differt.

Type: Bolivia, Depto. Santa Cruz, Serrania de San José, prope pagum El Tinto, 300 m a.s.l.; H. Amerhauser HA 98-1401, 21.9.1998, (Holotype: LPB).



Map 1: Locality of *Gymnocalycium megatae* subsp. *holdii*

(Map: Mario Wick).



Fig. 1: Plants at the type locality of STO 1401 (correlates with *G. megatae* subsp. *holdii* VoS 34).



Fig. 2: Habitat of *G. megatae* subsp. *holdii* (locality VoS 34).



Fig. 3: Plants of the taxon *G. megatae* subsp. *holdii* VoS 34 grow in rocky soil.



Fig. 4: The plants always show uniform spination (locality VoS 927, mountains west of Quimome).



Fig. 5: Seedling of *G. megatae* subsp. *holdii* at its locality (VoS 927). Fig. 6: The spines are thin and flexible (VoS 927).

In 2003 H. Amerhauser and I could visit the type locality. The locality was a small hill north of the railway station El Tinto right next to the old road from Santa Cruz de la Sierra to Puerto Suarez. The lower part of the hill was overgrown with almost impenetrable plant covering, on the hilltop the vegetation was more open. It was only here where we found the plants. The soil was interspersed with rocks. During my later journeys I was no longer able to find the plants in this locality. The hill was grown over completely. Presumably, the area had been burnt down now and again in former years, which is reported about in the first description.

While I was travelling in 2011, I could discover another locality about 13 km to the east of the type locality. In the years 2015 and 2017 this locality was revisited (fig. 4-6).



Fig. 7: One-year-old seedlings, sown on April 27, 2019. Left *G. megatae* subsp. *holdii* VoS 34, right *G. anisitsii* VoS 1200.



Fig. 8: Three-year-old seedlings, sown on January 13, 2017. Left *G. megatae* subsp. *holdii* VoS 34, right *G. anisitsii* VoS 290.



Fig. 9: Five-year-old seedlings, sown on April 18, 2015. Left *G. megatae* subsp. *holdii* VoS 34, right *G. anisitsii* VoS 1200.

Plants were grown from the collected seeds. It turned out that the plants cannot be assigned to *G. anisitsii*. Even at the seedling stage they differ from *G. anisitsii* seedlings of the same age (fig. 7-9). *G. anisitsii* seedlings often flower as early as 2 or 3 years after sowing. Seedlings of *G. megatae* subsp. *holdii* as well of *G. megatae* do not flower before the fifth or sixth year after sowing. *G. anisitsii* has a persisting flowering period, it begins in spring and only ends when the plants do not get any water for a few weeks.



Fig. 10: Flower of the taxon VoS 34 *G. megatae* subsp. *holdii*.



Fig. 11: Flower of *G. anisitsii* VoS 1200.

This is completely different with *G. megatae* subsp. *holdii* and *G. megatae*. The flowering period in our collections begins in early summer and ends in autumn. The fruits' ripening time and thus also that of the seeds is noticeably shorter with *G. anisitsii*, the fruits of *G. megatae* are frequently up to one year on the plant in cultivation until they finish ripening. Small seedlings of *G. anisitsii* are already very robust, as opposed to seedlings of *G. megatae* subsp. *holdii* and *G. megatae*, which are very sensitive to cultivation errors. The flowers, too, of *G. anisitsii* and *G. megatae* subsp. *holdii* can be distinguished easily (fig. 10-11).



Fig. 12: *G. megatae* subsp. *holdii* VoS 34:
length 0.93-1.08 M (30) = 1.006 mm,
width 0,85-1,08 M (30) = 0.986 mm.



Fig. 13: *G. anisitsii* VoS 1200:
length 0.68-0.92 M (30) = 0.834 mm,
width 0.70-0.88 M (30) = 0.794 mm.



Fig. 14: Comparison of seed size of *G. megatae* subsp. *holdii* VoS 34 (left) with *G. anisitsii* VoS 1200 (right).

The seeds of *G. anisitsii* are smaller and their hilum-micropylar-region looks different (fig. 12-14). There are also differences when comparing duration and way of germinating. *G. anisitsii* seeds usually germinate within one week, the seeds can also be sown immediately whereas seeds of *G. megatae* should rest for some weeks before being sown. Germination time is mostly longer than with *G. anisitsii* and the seeds' germination rate is frequently lower than with *G. anisitsii*.

In the index of his book "Gymnocalycium in Habitat and Culture" Graham Charles (2009) includes the so far described *G. anisitsii* subsp. *holdii* to *G. marsoneri* subsp. *megatae* without any comment. He also executes a new combination in this book. He combines *G. megatae*, which was described by Y. Ito, as subspecies to *G. marsoneri* Frič ex Y. Ito. Regrettably, he does not explain this recombination. In my opinion *G. marsoneri* can be easily distinguished from *G. megatae*. *G. marsoneri* has a smaller body when compared with *G. megatae*, does not form offsets, has more flat, less pronounced, rounded ribs, the anthers are yellowish (with *G. megatae* always grey to blackish). The seeds of *G. marsoneri* are smaller and roundish (\varnothing 1 mm). Consequently, I

regard *G. marsoneri* and *G. megatae* as separate species. In a later publication on *G. megatae* I will go to elaborate on this problem.

CONCLUSION

The plants described as *G. anisitsii* subsp. *holdii* differ considerably from the *G. anisitsii* type. *G. anisitsii* always grows in soils which do not contain rocks. As described in this paper, the flowers, and seeds of *G. anisitsii* and *G. megatae* subsp. *holdii* are easy to distinguish. Adult plants of the new subspecies remain depressed spherical at older age, those of *G. anisitsii* become short columnal when growing older. A lot of features of the taxon described as *G. anisitsii* subsp. *holdii* can be easily assigned to *G. megatae*.

The subspecies is distinguished from *G. megatae* by its permanently green epidermis, fewer ribs, longer and thinner spines as well as body size. It inhabits the northernmost locality of a *Gymnocalycium* related to the subgenus *Muscosemineum*. Flower structure and seeds are very similar to those of *G. megatae*. Therefore, the following status is described for the plants:

***Gymnocalycium megatae* subsp. *holdii* (Amerhauser) Schädlich comb. nov.**

Basionym: *Gymnocalycium anisitsii* subsp. *holdii* Amerhauser in *Gymnocalycium* 16 (3): 531 (2003).

ACKNOWLEDGEMENT

I am grateful to Mario Wick for establishing the map. My thanks also go to Ludwig Bercht, Reiner Sperling, Tomas Kulhánek, Wolfgang Papsch, Thomas Strub, Christian Hefti and Mario Wick for taking part in the discussion in Radebeul.

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Till H. & H. Amerhauser (2010). Die *Gymnocalycien* des Gran Chaco und der Savannen aus Argentinien, Bolivien und Paraguay, Teil X. - *Gymnocalycium megatae* Y. Ito mit seinen Formen. - *Gymnocalycium* 23(4): 959-968.

Leopold Quehl and his *Gymnocalycium quehlianum*

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ABSTRACT

The history of *Gymnocalycium quehlianum*, originating from a cacti shipment to the company Haage in Erfurt (Germany), is examined regarding chronological aspects. The natural habitat of this taxon is defined and possible points of contact with other species from the seed group *Trichosemineum* are discussed.

KEYWORDS

Cactaceae, *Gymnocalycium*, *quehlianum*, Leopold Quehl

INTRODUCTION

In the years preceding the turn of the century in 1900 huge amounts of cacti were exported from America to Europe. Pictures and reports by Ferdinand Haage prove, for example, that his company in Erfurt received 1,700 *Pilocereus senilis* (*Cephalocereus senilis*) (fig. 1). These imports were a threat to domestic fruit- and plant- cultivation farming because there was the possibility of bringing in the dangerous San-José-coccid. Thus, a decree was enacted in the "Reichsblatt" of February 5, 1898, which completely banned the import of living plants from America. The impending absence of these mass imports was deplored, but the intention was to make cacti lovers focus more on the plants in their collections and to propagate them.

However, laws can be evaded. As early as in May 1898 it could be read in the "Monatsschrift für Kakteenkunde" that Professor Schumann, PhD, was authorized by the Chancellor to import cacti despite the ban. Obviously, this law was not followed very strictly. In February 1899, the company Haage already received a large number of cacti again, among others 1,200 *Echinocactus cylindraceus* with a total weight of 30 hundredweight. It is highly likely that Hermann Grosse was the source of several deliveries. He collected plants in Argentina, Bolivia, Peru and Brazil. Between 1897 and 1903 the Haage company was his principal customer. K. Schumann, too, was a purchaser of the collected plants, mainly those from Paraguay (see MfK 9(3): 46-47; (9): 133). Grosse got a fatal accident during a collection trip in Mato Grosso (Brazil) in 1903.

HISTORY AND DISCUSSION

Leopold Quehl was given a new plant from the Argentine Andes in cordial friendship by company owner Friedrich Adolf Haage jun. It was called *Echinocactus Quehlianus* Haage jr. and was part of a shipment in February 1899.

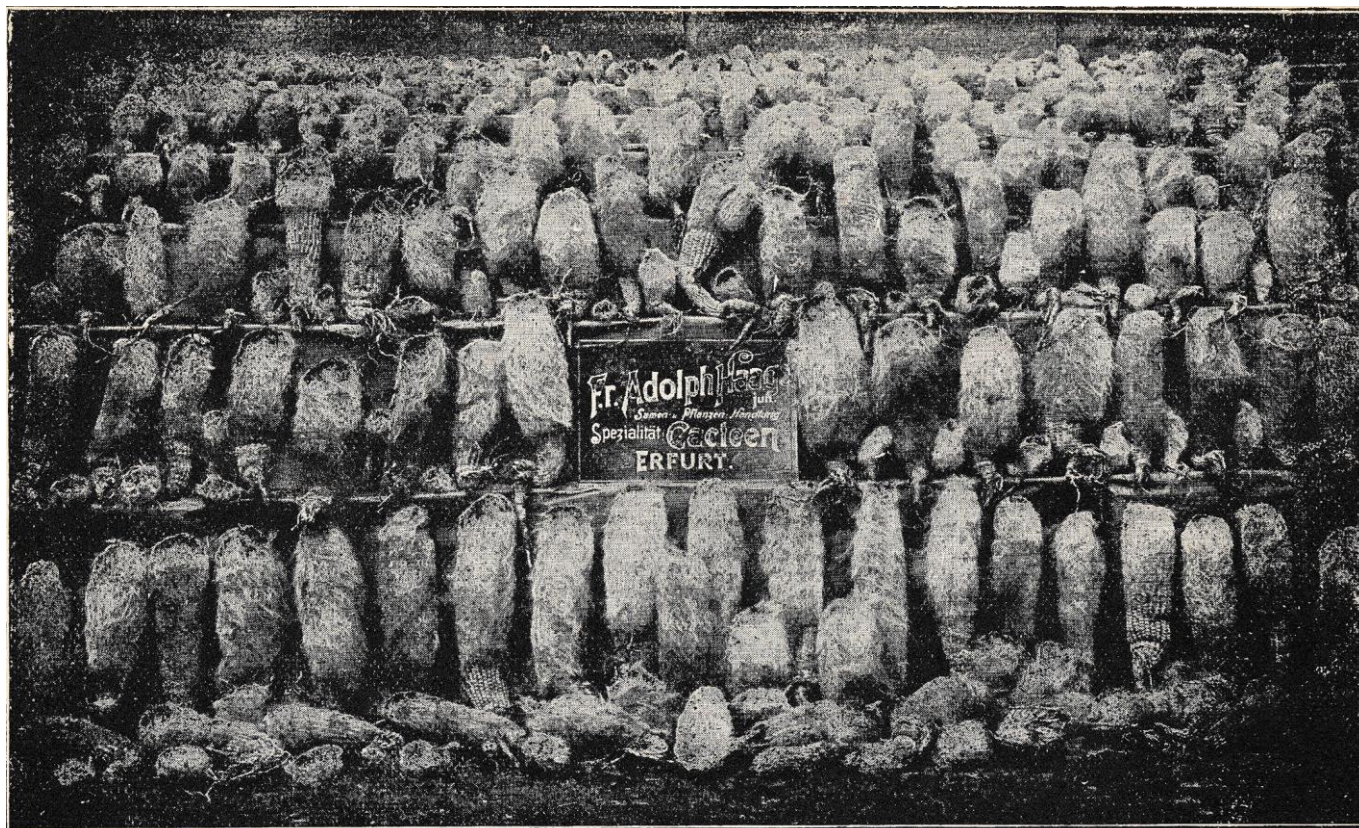


Fig. 1: *Pilocereus senilis*. Import 1,700 Species. (Copy from Haage 1900).

HISTORY AND DISCUSSION

Chief post secretary Leopold Quehl (born November 2nd, 1849, in Freyburg on Unstrut, Germany, died February 22nd, 1922, in Halle on Saale, Germany) was a lover of nature, shaped by his childhood home. He was interested in succulent plants in particular (fig. 2).

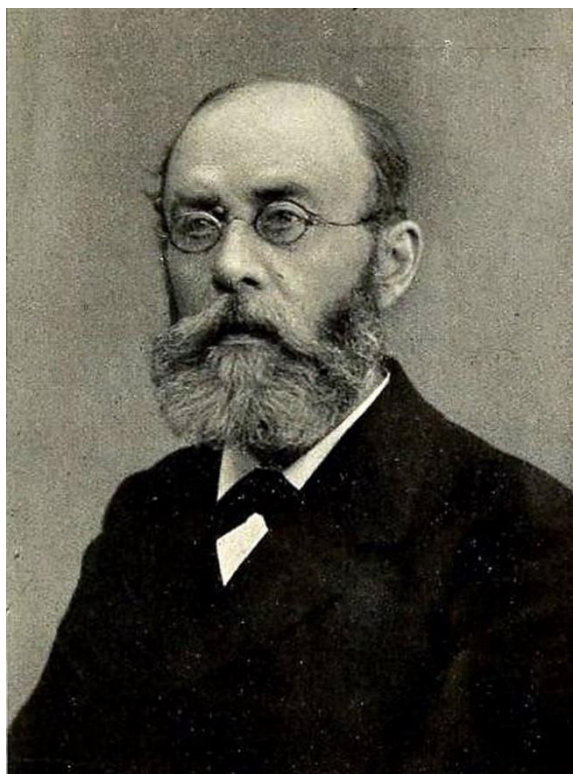
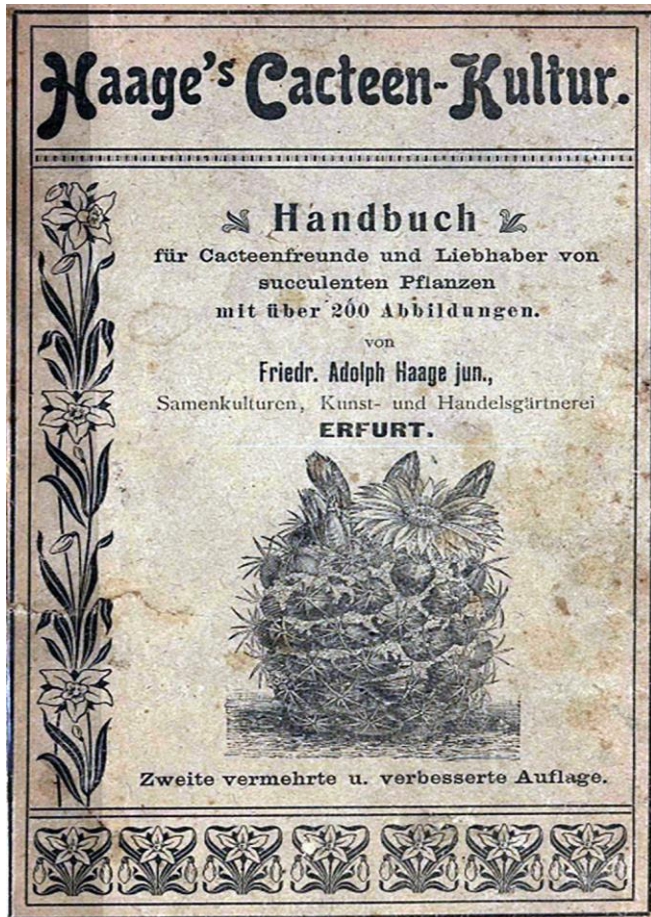
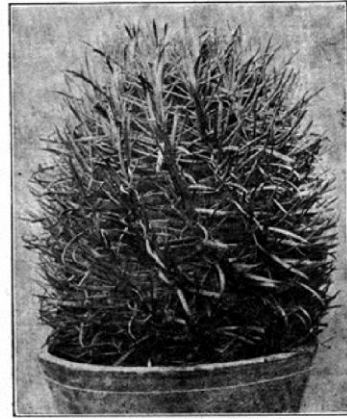


Fig. 2: Leopold Quehl.

Quehl was also a founding member of the German Cactus Society. He maintained excellent contacts not only with the large garden centres in Erfurt, like the company Haage, but also with numerous cacti lovers at home and abroad. He published several articles on known and new cacti, for instance *Mammillaria*. Therefore, it is not surprising that Haage dedicated a new cactus species to him. It must be assumed that Haage used this name immediately after receiving the plants. In his "Cacteenhandbuch" published without date, generally regarded as published by January 1st, 1900, but certainly in print as early as in 1899, he lists *Echinocactus Quehlianus* Haage jr. with the annotation "new, beautiful and rare. Argentina" (Haage 1900) (fig. 3). However, a description was missing, which Quehl added in March 1899 immediately after receiving the plants (fig. 4). With gratitude Quehl accepted the first nomenclature by Haage. In his remarks on the plant, as he calls his first description, he states that this new *Echinocactus* species must be assigned to



- E. punctulatus* Engelm.
E. pusillus
E. Quehlianus Haage jr. Neu, schön und selten. Argentinien.
E. Rebuti Web. Mexiko.
E. recurvus.
E. recurvus Lk. et. Otto. Mexiko.
E. recurvus solenacanthus, Mexiko. Varietät von
E. recurvus Lk. et. Otto. (*E. spiralis*). Prachtvolle Art, mit
langen, breiten, an der Spitze gebogenen, braunroten Stacheln.



Echinocactus polycephalus.

- E. reductus*, mit der Varietät: flavispina.
E. rhodophthalmus, Hock, siehe *E. bicolor*.
E. Rinconadensis Poselg. (Rinconensis). Mexiko. Körper
flach-kugelig, vielrippig, perlgrau; Blüten purpurrot.
E. robustus Karw. (*E. spectabilis*, *E. subulifer* Hort.,
E. agglomeratus). Mexiko. Körper gross, keulenförmig, dunkel-
grün, mit langen, purpurroten Stacheln und goldgelben Blüten. Mit
der Varietät: flavispina Linke.

Fig. 3: Copy of the cover and first reference on page 149 from Haage 1900.

Ects. Quehlianus Hge. jun., eine Neuheit aus den Argentinischen Anden, die ich mir gestatte, nachstehend näher zu betrachten. Die Pflanze gehört zur X. Untergattung *Hybocactus* K. Sch.

- A) Höcker der Rippen kinnförmig hervorgezogen, Fruchtknoten kahl, mit spitz auslaufenden, rotbraunen Schuppen besetzt;
b) Rippen sehr tief gegliedert, in Höcker aufgelöst;
d) rotgrau, Höcker dicht gestellt, gesondert.

Hiernach ist sie in die „Gesamtbeschreibung der Kakteen“ des Herrn Professor SCHUMANN unter No. 97a einzureihen.

Körper flach kugelförmig, einfach, bei etwa 7 cm Durchmesser 3,5 cm hoch, rotgrau (von der Farbe der reifen Traube des sogenannten Rheingauweins); Scheitel eingesenkt, fast nackt, mit einzelnen anliegenden Stacheln besetzt; Wurzel dick, rübenförmig, wie bei *Ariocarpus*.

Rippen 11, gerade, völlig in Warzen aufgelöst.

Warzen bis zur Höckerspitze 12—15 mm hoch, am Grunde 10 bis 12 mm im Durchmesser, in der Jugend schlanker, infolge der engen Stellung mehr oder weniger kantig, später breiter und flacher, oben eingesenkt und mit der Areole besetzt, unterhalb der Areole kinnförmig hervorgezogen, ohne Längsfurche (im Gegensatz zu *Ects. Odieri* Lem.).

Areolen rund, bis zur Entwicklung der Blüte behaart (weiß), mit dieser Behaarung verschwindend.

Randstacheln 5, spreizend, dem Körper anliegend, die beiden in der Mitte der Areole seitwärts stehenden die längsten (5 mm lang), der unterste, nach unten gerichtete, schon im Scheitel erscheinende, im

Alter verschwindende, der kürzeste. Zwischen diesen drei Stacheln ein weiterer auf jeder Seite, so daß die obere Hälfte der Areole ohne Ansatz von Stacheln ist; sämtliche Stacheln steif, am Grunde weinrot, nach der Spitze zu hornfarbig, durchsichtig.

Mittelstacheln fehlen.

Blüten sehr zahlreich im Kranze um den Scheitel gestellt, an den vorliegenden Pflanzen noch in Knospen stehend. (Fortsetzung folgt.)

Fig. 4: Formal first description of *Echinocactus Quehlianus* in Monatsschrift für Kakteenkunde 1899, 9(3): 43-44.

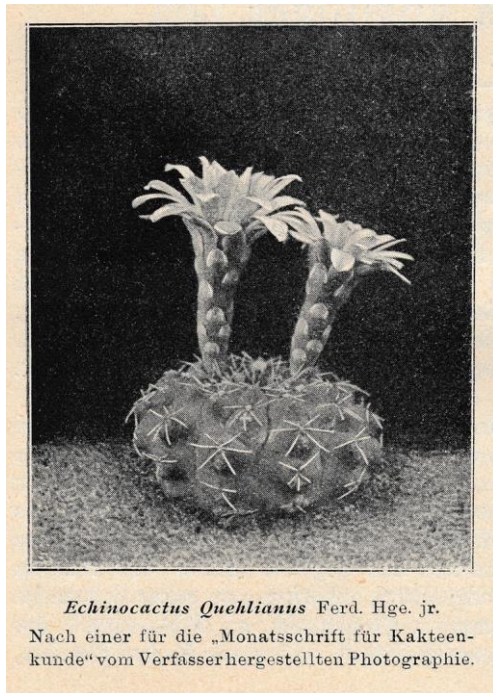


Fig. 5: Copy from MfK 1900.

the subgenus X *Hybocactus* K. Sch. and in that group with no. 97a immediately before *E. denudatus* Lk. & O. (Quehl 1899). He specifies the Argentinian Andes as place of origin, just like Haage.

Quehl sent in a photograph of the plant for the August meeting of the German Cacti Society (DKG). Karl Hirscht, secretary to the board, noted that the species would certainly have to be assigned to the morphogenetic group of *E. denudatus* (Hirscht 1900a). This picture of the flowering plant was printed in the “Monatsschrift für Kakteenkunde” in October 1900 (Quehl 1900) (fig. 5). Here the flower is described in detail. A month later it can be read in another session report that Quehl does no longer consider his assignment to *E. denudatus* correct, a relationship of the plant with *E. gibbosus* P. CD. would be more likely. A plant from the Royal Botanic Garden was shown for comparison, the plant came from Mr Anisits from Paraguay, according to the author of the report. An annotation with consequences (Hirscht 1900 b).

When finishing his series of articles on cacti from Paraguay, Karl Schumann also dealt with *E. Quehlianus* in December 1900. His specification concerning locality and receiving are interesting. As opposed to statements by Quehl he claims that this species was provided by Mr Anisits, who found it in the north of Paraguay. In addition, he mentions that he has already compiled a description of this species and that he intends to name it *E. stenocarpus* due to its strikingly thin ovary. Schumann insisted on the fact that *E. Quehlianus* originated from Paraguay. In 1903 he listed it among the 27 cacti species solely found in Paraguay.



Fig. 6: Copy from Font 2016.

In the minutes of the monthly meetings it is reported that there was an *E. Quehlianus* together with an *E. submammulosus* Lem. and *E. Monvillei* Lem. in a cacti shipment from Karl Sprenger in Vomero (Naples, Italy). For the first time the locality of *E. Quehlianus* is specified as Sierra de Córdoba, contrary to Schumann's opinion. There it can allegedly be found together with the other cacti mentioned above. The author's annotation must be emphasized: “It is gardeners' common practice not to give away the localities and suppliers in America as a connection of strangers with export firms are undesirable...” (Dams 1903).

DEUTSCHE KAKTEEN-GESELLSCHAFT



Echinocactus Quehlianus Ferd. Haage.

Tafel 105.

Fig. 7: Copy from "Blühende Kakteen" 1908.

In 1905 the cactus opus „Cactacearum Plantensium Tentamen“ by Carlos Spegazzini was published. The author did not regard *E. Quehlianus* as a species on its own but listed it with a short description under the number 94c merely as a variety of *E. platensis* Speg. (Spegazzini 1905). Spegazzini's legacy contains a photograph titled *Gymnocalycium platense* (Speg.) var. *Quehliana* (fig. 6). The genus *Gymnocalycium*, however, was reactivated by Britton & Rose not until 1923 (Font 2016). So, the caption must have been added after 1923 and before 1925, the year when Spegazzini died.

Now *E. Quehlianus* could be assumed to be represented in the plant and seed offer of the company Haage in the meantime, as a novelty promised to be good bargain for the supplier. However, this is not the case. Neither seeds nor plants of this species are offered in the catalogues between 1900 and 1906. Not until 1907, that is eight years after the first description, is *E. Quehlianus* on sale in the main catalogue of the company at a price of 2 to 7.50 German marks per item (Haage 1907).

In the same year Schelle mentions that this new species has not been much present in culture. His short description of the plant deviates somewhat from the protologue in so far that he mentions the plant's later developing an almost columnar appearance (Schelle 1907).

On September 30th, 1908, part 27 of the “Blühende Kakteen”, now under the editor Max Gürke, was published; illustration 105 shows a drawing of *E. Quehlianus*. At that time Max Gürke was the editor and the drawing was made by his wife, Mrs Toni Gürke (fig. 7). It is still claimed that this species can be found in Argentina and Paraguay and that it was originally dispatched by Anisits. The depicted plant is said to come from the Sierra de Córdoba to the Botanical Garden in Dahlem (Gürke 1908).

In the Haage general catalogue of 1908 again no *E. Quehlianus* can be found, but one year later plants are once more offered at a price of 3.50 to 5 German marks per item. Seeds and plants with the labelling *E. Quehlii* (without author citation) can then be obtained from the German company Grässner in Perleberg (Grässner 1909).

In 1912 company Haage offers *E. Quehlianus* plants once again at a price of 2 to 7.50 German marks per item. Besides, a monochrome drawing is published which, with a little imagination, resembles Mrs Gürke's drawing (fig. 8). The harvest of seeds must have been bountiful as the seeds are not only offered in portions of 50, but also of 1,000 grains (Haage 1912).



11775. *Echinocactus*
Quehlianus.

Fig. 8: Copy from “Katalog Haage” 1912.

“The Cactaceae” by Britton and Rose also publishes pictures of *E. Quehlianus*. According to them they got a plant labelled *E. Quehlianus* from the Botanical Garden Berlin. This plant is depicted in illustration XIX in volume III, flowering and slightly scaled down (fig 9).



Fig. 9: *Echinocactus Quehlianus* from Britton & Rose, Volume III, Plate XIX-1.



Fig. 10: *Gymnocalycium platense* from Britton & Rose, Volume III, Plate XVIII-2.

The flower is regarded as identical with the flower of a plant which Dr Rose brought from Córdoba and which is called *G. platense*. This plant, flowering too, is shown in fig. 2 of the illustration XVIII in volume III (fig. 10). Both pictures present relatively short flower tubes. The authors follow Spazzini's opinion in regarding *E. Quehlianus* merely as synonymous with *G. platense*, even though the differences in spination and habitus of the depicted plants are striking. The same applies to the marked differences of the flowers compared with their *E. platensis* in fig. 176 (volume III), which possesses a long flower tube (fig. 11) (Britton & Rose 1923).

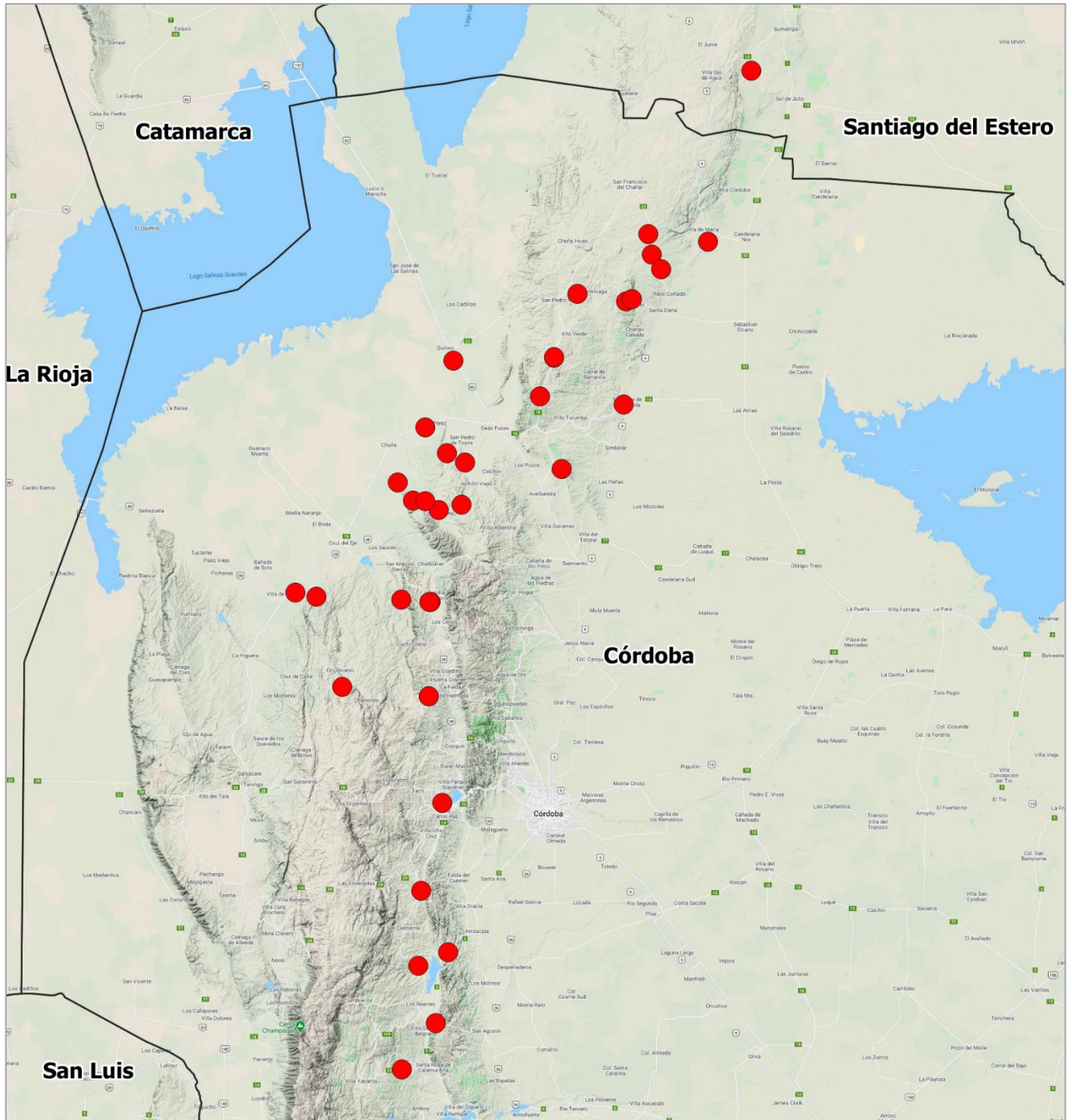
Two years later, in 1925, F. Haage publishes his main index in its 103rd year. Haage has a new drawing of *E. Quehlianus* printed here, judging from the acronym, made by Haage himself (fig. 12). Another point differing from the previous editions is the fact that it contains a juxtaposition of Schumann's nomenclature on the one hand and that of Britton and Rose on the other hand. The nomenclature of the plant offer follows not only Schumann's "Gesamtbeschreibung der Kakteen" but also that of Britton & Rose's "The Cactaceae". Haage writes on this topic: "Without preferring one of the two systems I consider it important to convey the knowledge of the new American cacti nomenclatures to every collector so that they can judge for themselves." Thus, the taxon *Quehlianus* is offered as *E. Quehlianus* and, as an alternative, as *Gymnocalycium quehlianum*, both with the author citation Haage jr and set apart by frames as imports from Argentina, offered at a price of 2 to 10 German marks (Haage 1925).

Hosseus is mentioned in literature as the author responsible for the rearrangement of *E. Quehlianus* to the genus *Gymnocalycium*. In 1926 he quotes this taxon as *G. quehlianum* (F. A. Haage jr) Vaupel. Vaupel knew the new opus by Britton & Rose and reviews the first and second volume in MfK 33(8), 113ff. He possibly used the term *Gymnocalycium* for the genus verbally in connection with the taxon looked at here. This could be the reason why Hosseus considered him the author. No quote could be found in literature which indicates Vaupel's opinion on this topic (Hosseus 1926).

The Haage catalogue was published one year before Hosseus's paper (fig. 13). As there is no discrepancy with art. 30.7 and 41.3 of ICN Haage's name is validly published. Subsequently it must be quoted:

***Gymnocalycium quehlianum* (F. A. Haage jr. ex Quehl) A. F. Haage jr.**

A photograph of the flowering plant is published in the Haage catalogue of 1929 (fig. 14). It clearly shows the slender flowers diagnosed by Quehl and Schumann (Haage 1929).



Map 1: Localities of *Gymnocalycium quehlianum* with WP field number

(Map: Mario Wick).

As Quehl neither mentioned an exact locality in his first description nor any type material, Hans Till published an interpretation which deviated from the generally accepted opinion (Till 1993). Till held the opinion that the name *G. quehlianum* was not to be applied to a species from the subgenus *Trichomosemineum* but to a plant of similar appearance from the area around Quilino. These plants were described as *G. robustum* Kiesling et al. and are representatives of the subgenus *Gymnocalycium*. *G. quehlianum* is regarded only as a representative of the subgenus *Trichomosemineum* by all authors and is also the nomenclature type of the subgenus. Following Till's view would thus have had far-reaching consequences.

To get nomenclature stability D. Metzinger et al. determined a neotype. A plant collected by R. Kiesling and O. Ferrari 8711 was selected and deposited at SI. The plant was collected in the Province Córdoba, Depto. Ischilin, between Dean Funes and Cruz del Eje on a by-road (Metzinger et al 1999).

The collection selected as neotype is situated fairly precisely in the middle of the species' distribution area. It is a relatively small strip extending over more than 300 km in north-south direction, from west of Santa Rosa de Calamuchita (Province Córdoba) as far as the surroundings of Villa Ojo de Agua in the Province Santiago del Estero.

G. quehlianum can be found between 350 m a.s.l. in the northernmost distribution area and around 1,000 m a.s.l. in the southernmost part. The highest locality discovered so far is east of Candelaria in the Sierra Grande at 1,450 m. The plants preferably grow in pastures interspersed with rocks and pebbles, sparsely covered with shrubs and a higher humus content of the soil.

In the elongated distribution area *G. quehlianum* has to cope not only with altitudes and soil conditions but also small, isolated climate conditions. This leads to a slight, not very pronounced, variability in morphological appearance such as body form or colour of spines and flowers. For that reason, several habitat forms were described or named in the past.

Kreuzinger, for example, offered under item number 223a *G. quehlianum caespitosum* var. nov. The respective picture probably shows a plant sprouting due to an apex injury. The flowers are said to be greyish pink with a pink gorge (Kreuzinger 1935). In 1948 Karl Schick described two varieties. For *G. quehlianum* var. *Rolfianum* Schick he specifies Argentina, near Capilla del Monte, as locality. For *G. quehlianum* var. *Zantnerianum* Schick only Sierra de Córdoba is mentioned as locality. This variety is distinguished from the type form by its larger seeds and some flower features, according to the description (Schick 1948). In volume 3 of "Cactaceae" C. Backeberg publishes two more varieties which differ in spine colour and which were collected by Franz Bozsing. He named these plants, which he had found close to Alta Gracia, *G. quehlianum* var. *albispinum* Bozsing ex Backeberg and *G. quehlianum* var. *flavispinum* Bozsing ex Backeberg (Backeberg 1959). All varieties listed here as well as those forms existing solely as names and almost always without a specified locality (var. *atroroseiflorum*, var. *brunispinum*, var. *depressum*, var. *kleinianum*, var. *nigrispinum*, var. *roseiflorum*) possess no taxonomic relevance and are regarded merely as synonyms of *G. quehlianum* sensu stricto here.

In 1905 Spegazzini initially named *E. stellatus* illegitimately, but in 1925 it was validly described as *G. stellatum* Spegazzini. Due to similarity some authors assign this taxon to the synonymy of *G. quehlianum*. This is based on a picture found in Spegazzini's legacy. However, there are reasonable objections to this assumption. *G. stellatum* is explicitly excluded from the discussion and is to be treated in further studies.

CONCLUSION

G. quehlianum represents a well-distinguished morphogenetic group within the subgenus *Trichomosemineum*. Its appearance is very uniform throughout the whole distribution area and always clearly recognizable. Therefore, it is not possible to differentiate on an intraspecific level. All localities known so far are situated in the Province Córdoba. Numerous populations of this species were found in places on the east side of the northern Sierra de Comechingones, furthermore on the east side of the Sierra Grande, extending to its northernmost end near Cruz del Eje resp. Villa de Soto and moreover across the Sierra de Masa and Sierra La Higuera as far as to the east side of the Sierra de Ambargasta. A finding northeast of Ojo de Agua in the Province Santiago del Estero is regarded as the northernmost population of *G. quehlianum*. To the south, the Sierra de Comechingones forms a natural borderline with *G. ochoterena* Backeberg, which occurs in western direction. Localities of *G. bodenbenderianum* Hosseus ex Berger are situated on the western side of the drafted line of demarcation formed by the Sierra Grande and the Sierra de Ambargasta. There are no contact points with the localities of *G. quehlianum*. Solely in the holding territory of the Sierra Grande and the southern foothills of the Sierra de Ambargasta at the same latitude as Dean Funes – Quilino does *G. quehlianum* expand to the edge of the Salinas Grande basin. Here, too, are no localities in common with other taxa of the subgenus *Trichomosemineum*. Some editors consider *G. obductum* Piltz a synonym of *G. quehlianum*, here, however, it is not regarded as a direct relative because of outstanding differences, mainly at the seedling stage. *G. occultum* Schütz is geographically and in territory well-separated by the Salinas Grandes and the Salinas de Ambargasta and is not taken as synonymous with *G. quehlianum* here.

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ANNEX 1

Investigated localities of *Gymnocalycium quehlianum*. Data from several of my journeys between 1989 and 2018. Sequencing from south to north.

WP 18-660-1232	<i>G. quehlianum</i>	Arg.	Córdoba	RP 228, 10 km W Santa Rosa de Calamuchita	787 m
WP 18-664/1238	<i>G. quehlianum</i>	Arg.	Córdoba	RP 365, Weg nach San Agustin	901 m
WP 18-667/1244	<i>G. quehlianum</i>	Arg.	Córdoba	Potrero de Garay	880 m
WP 04-450/868	<i>G. quehlianum</i>	Arg.	Córdoba	östlich Villa America	770 m
WP 18-670/1249	<i>G. quehlianum</i>	Arg.	Córdoba	3 km S X mit RP E 96	961 m
sn	<i>G. quehlianum</i>	Arg.	Córdoba	Oberhalb Tanti	947 m
WP 04-90/844	<i>G. quehlianum</i>	Arg.	Córdoba	Villa Carlos Paz	689 m
WP 04-439/856	<i>G. quehlianum</i>	Arg.	Córdoba	Candelaria	1475 m
WP 89-92/125	<i>G. quehlianum</i>	Arg.	Córdoba	Pampa de Olaen	1000 m
WP 89-92/125a	<i>G. quehlianum</i>	Arg.	Córdoba	La Falda	900-1000 m
WP 18-631-1192	<i>G. quehlianum</i>	Arg.	Córdoba	Villa del Soto, RP 271, Weg nach La Puerta	551 m
WP 18-632/1195	<i>G. quehlianum</i>	Arg.	Córdoba	Tulumba Süd	710 m
WP 89-101/134	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Cuniputo	670 m
WP 89-94/125b	<i>G. quehlianum</i>	Arg.	Córdoba	Capilla del Monte	1000 m
WP 16-518/1006	<i>G. quehlianum</i>	Arg.	Córdoba	Capilla del Monte	990 m
WP 89-96/127	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Masa	670 m
WP 89-102/136	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Masa, Masa	820 m
WP 89-103/137	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Copacapana	900 m
WP 18-630/1191	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra de Copacabana, 2,5 km W Copacabana	910 m
WP 18-629/1187	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra de Copacabana, 2,5 km W Copacabana	910 m
WP 89-97/130	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Masa, Los Tartagos	650 m
WP 89-104/138	<i>G. quehlianum</i>	Arg.	Córdoba	Sierra Higuera, Dean Funes	880 m
WP 89-99/133	<i>G. quehlianum</i>	Arg.	Córdoba	Ruta 16, Jaime Peter	700 m
WP 16-516/998	<i>G. quehlianum</i>	Arg.	Córdoba	Macha ->	750 m
WP 95-241/508	<i>G. quehlianum</i>	Arg.	Córdoba	Quilino	385 m
WP 16-387/991	<i>G. quehlianum</i>	Arg.	Córdoba	Tulumba-San Pedro Norte	970 m
WP 04-386/794	<i>G. quehlianum</i>	Arg.	Córdoba	Ruta 18, Agua del Rodeo	937 m
WP 16-510/985	<i>G. quehlianum</i>	Arg.	Córdoba	S.J.d.Dormida, Westende	497 m
sn	<i>G. quehlianum</i>	Arg.	Córdoba	N Santa Cruz	963 m
WP 04-391/800	<i>G. quehlianum</i>	Arg.	Córdoba	Caminiaga	855 m
WP 16-507/979	<i>G. quehlianum?</i>	Arg.	Córdoba	Co. Colorado, nord	546 m
WP 16-506/978	<i>G. quehlianum</i>	Arg.	Córdoba	Caminiaga-Co. Colorado	651 m
WP 18-620/1174	<i>G. quehlianum</i>	Arg.	Córdoba	RP 22, San Luis	580 m
WP 18-619/1173	<i>G. quehlianum</i>	Arg.	Córdoba	RP 22, Quintera	640 m
WP 16-497/957	<i>G. quehlianum?</i>	Arg.	Córdoba	SFC, 17 km südost, RP 22, La Quinta	654 m
WP 18-621/1175	<i>G. quehlianum</i>	Arg.	Córdoba	Villa de Maria de Rio Seco	358 m
WP 16-492/949	spec.	Arg.	SdEstero	Baez, nordost	410 m

ANNEX 2

Gymnocalycium quehlianum in selected localities



Fig. 15: *G. quehlianum* WP 89-96/127, Argentina, Province Córdoba, Sierra Masa, Los Tartagos.



Fig. 16-17: *G. quehlianum* WP 660/1232; Argentina, Prov. Córdoba, RP 228, 10 km west of Santa Rosa de Calamuchita, 787 m a.s.l.



Fig. 18-19: *G. quehlianum* WP 664/1238; Argentina, Prov. Córdoba, RP 365, road to San Agustín, 901 m a.s.l.



Fig. 20-21: *G. quehlianum* WP 667/1244; Argentina, Prov. Córdoba, 11 km north of Los Reartes, Potrero de Garay, 880 m a.s.l.



Fig. 22-23: *G. quehlianum* WP 670/1249; Argentina, Prov. Córdoba, RP E96, 13 km north of San Clemente, 961 m a.s.l.



Fig. 24-25: *G. quehlianum* WP 18-without field number; Argentina, Prov. Córdoba, RP 28, west of Tanti, 961 m a.s.l.



Fig. 26-27: *G. quehlianum* WP 518-1006; Argentina, Prov. Córdoba, south of Capilla del Monte, 990 m a.s.l.



Fig. 28-29: *G. quehlianum* WP 631/1192; Argentina, Prov. Córdoba, Villa del Soto, road to La Puerta, 551 m a.s.l.



Fig. 30-31: *G. quehlianum* WP 629/1187; Argentina, Prov. Córdoba, Sierra de Copacapana, west of Copacapana, 910 m a.s.l.



Fig. 32-33: *G. quehlianum* WP 507/979; Argentina, Prov. Córdoba, east of Cerro Colorado, road to Rayo Cortado, 549 m a.s.l.



Fig. 34-35: *G. quehlianum* WP 620/1174; Argentina, Prov. Córdoba, RP 22, 5 km northwest of San Luis, 580 m a.s.l.



Fig. 36-37: *G. quehlianum* WP 621/1175; Argentina, Prov. Córdoba, east of Villa de Maria de Rio Seco, 358 m a.s.l.



Fig. 38-39: *G. aff. quehlianum* WP 492/949; Argentina, Prov. Santiago del Estero, 6 km northwest of Baez, 410 m a.s.l.