

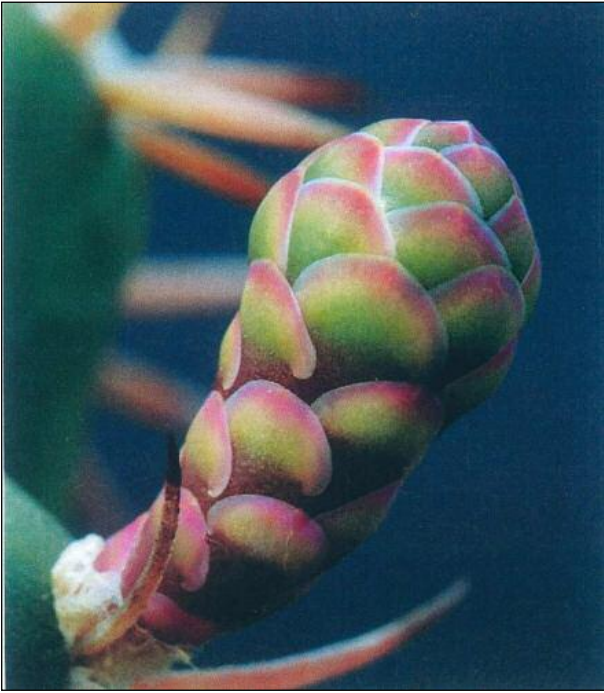
THE CHILEANS 2012

VOLUME 22 NUMBER 71

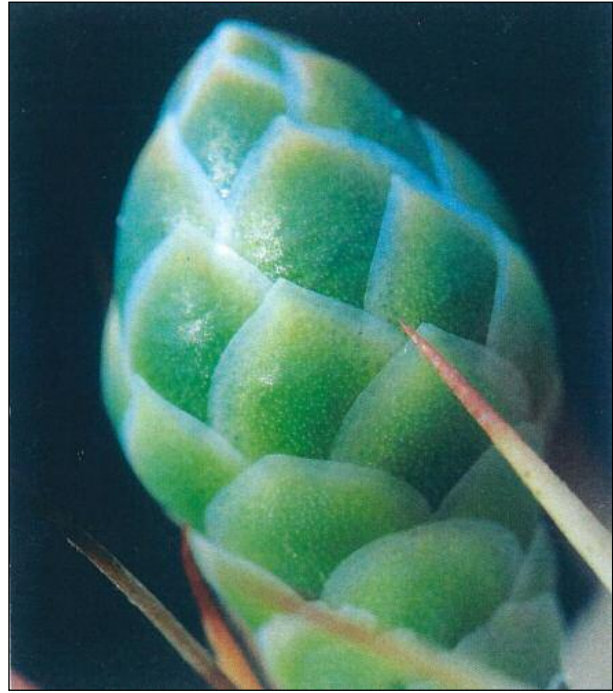


Micranthocereus purpureus and Micranthocereus streckeri
near Seabra, Bahia state, Brazil

Photo:- J.C.Hughes

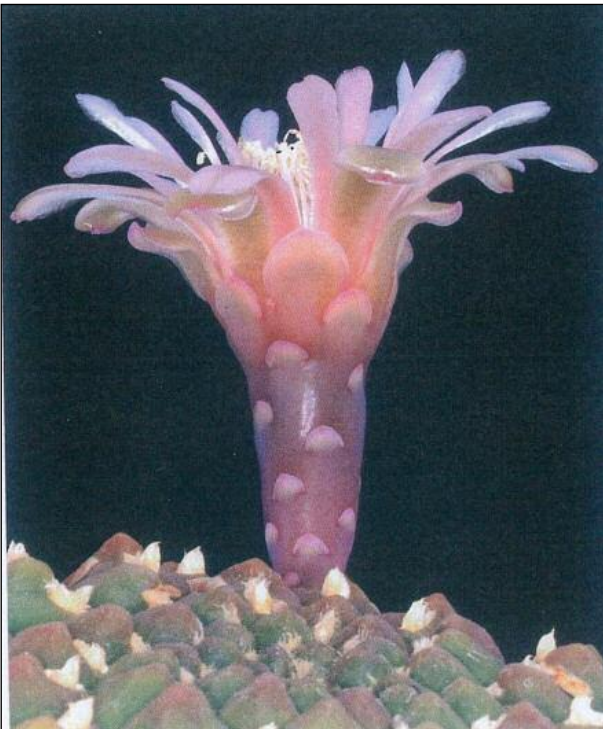


Gymnocalycium delaetii

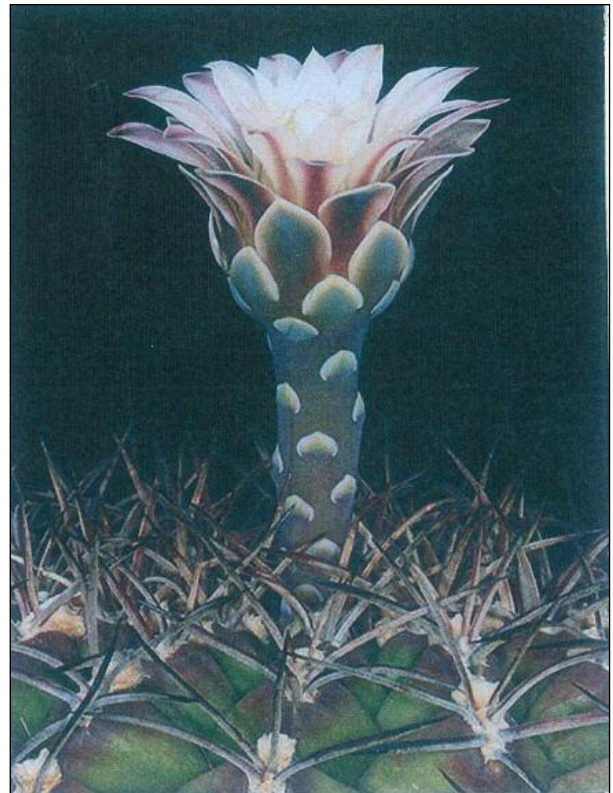


Gymnocalycium schickendantzii

Photos: V. Schädlich



Gymnocalycium delaetii
(syn. G. delaetii)
CB47 - San Jose de Escalchi, Salta



Gymnocalycium schickendantzii
CB35 Pituil, La Rioja

Photos: D. Metzger

THE SOURCE OF GYMNOCALYCIUM STUCKERTII By G.J.Swales

Gymnocalycium schickendantzii was first described by Weber in 1896 in the *Bois Dictionnaire d'Horticulture*. This was a very brief description and did not contain any details of the flower, nor any illustration. Then in 1898, Schumann – in his *Gesamt. der Kakteen* – provided a more lengthy description of this species, still acknowledging Weber as the originator of the name, but again with no details of the flowers and also no illustration.

It was on p.124 in my 1903 Supplement to his 1898 publication that Schumann stated that he had only a “small dead portion” of a plant when making his 1898 description.

.....from H.Middleditch

Where and how would Schumann have obtained this small dead plant?

.....from B.Schütz *Kaktusy* 20(1)1970

Schumann received from Dr. Weber only one mummified example of this plant.

Dr. Weber was an army doctor and was involved in the expeditionary force to Mexico under the administration of the Emperor Maximilian. When he returned to his native land, Dr. Weber had a large collection of plants imported from Mexico and became an acknowledged authority on cacti. Dr. Weber also had connections in South America. We know that the teacher Schickendantz collected for him, mostly in Tucuman in Argentina. After the death of Schickendantz in 1895, Dr. Weber described *Echinocactus* (= *Gymnocalycium*) *schickendantzii* in his honour. This was described in 1896, quite briefly, and no illustration was provided. The flowers were said not to differ much from *G.saglionis*. In reality the flower of *G.schickendantzii* may be said to be funnel shaped with a long tube, whereas *G.saglionis* has a bell shaped flower with a really short tube. Evidently the feature that struck Dr. Weber was that both flowers are hairless, as with all other flowers of *Gymnocalycium*.

.....from H.Middleditch

The statement by Dr. Weber that the flowers on *G.schickendantzii* were not greatly different from those on *G.saglionis*, might possibly have referred to their lacking any hairs on their exterior. However, it is odd that the flowers were described by B.Schütz as funnel shaped, as this is contrary to the urn shape, or inverted bell shape, of the flower as depicted currently for *schickendantzii* in the illustrations of flower cross sections in the *Austrian Gymnocalycium Journal* 17(2)2004 pp.563 & 565, and in the flower bearing illustrations of this species in the *Charles Gymnocalycium book*.

.....from K.Schumann, *M.f.K.* October 1901

At the end of the working year, in July, we were able to pay a visit to de Laet who had some of his plants in extensive cold frames, others in large greenhouses, and also some growing in fresh air. He had already twice sent an *Echinocactus* to Berlin [Botanic Gardens] which I frankly could not place. I also saw here a piece of another species which I intend to describe as *Echs. delaetii*.

.....from B.Schütz, *Kaktusy* 20(1)1970

In the year 1901, Schumann visited the Belgian firm de Laet. The owner of the firm was a keen collector of cacti and his large scale importation of cacti was a wide success. De Laet became a leading importer of cacti into Europe. Dr. Weber was able to study many interesting plants there, including many imported specimens of *G.saglionis* which not long before had arrived from Tucuman. Among them were specimens which may have looked similar to *saglionis* but had flowers of an entirely different shape. Schumann at once recognised that here was a new species and he named this in honour of his host as *Echinocactus* (= *Gymnocalycium*) *delaetii*. The description was published in the 1901 *Monat. Der Kakteenkunde* on p.186 and a very clear photograph was published at the same time.

.....from H.Middleditch.

In *Chileans No.58* there is reproduced the biography of F.Schickendantz where it may be seen that he was occupied for some years in the area of Catamarca, Andalgalá and Pilcaó, evidently botanising in that area.

.....from R.Mottram.

In 1885 Schickendantz moved from Catamarca to Tucuman to take charge of the laboratory there. He enlisted the young Miguel Lillo to collect specimens for his herbarium, in the neighbourhood of Tucuman town and as far north as the adjoining mountains. His cactus gatherings were probably in the Sierra Candelaris just inside Salta province and in the Sierra Medina in the Trancas district in the north of Tucuman province.

.....from H.Middleditch

In my December 1901 issue of *M.f.K.*, Schumann observes that his *E.delaetii* “probably originated from Tucuman”. It appears to be quite possible that it came from the north of Tucuman, possibly not far from Choromoro.

.....from R.Mottram

The Lau 445 *G.delaetii* is recorded as being found at 1200-1500m altitude on the Sierra Medina, which lies in the north of Tucuman province, with Lau 448 *G.saglionis* at the same locality.

.....from B.Schütz, *Kaktusy* 20(1)1970

Following the 1901 publication of *E.delaetii* by Schumann, Dr. Weber wrote to Schumann asserting that the *E.delaetii* Sch. was nothing more than *E.schickendantzii* and claiming for himself the priority for his species name. Schumann accepted this and in his 1903 “Supplement” he published his same photograph of *E.delaetii* as *E.schickendantzii* Web. and added to Weber's description precise details of the flowers.

.....from G.J.Swales

In my 1903 Supplement to his 1898 publication, where Schumann has an entry on p.123 for *E.schickendantzii*, the words *E.schickendantzii* Web. appear on the top line and *E.delaetii* Sch. on the next line, thus implying that he is making his *delaetii* just a synonym of *schickendantzii*. This is accompanied by

the very same illustration that appeared in his 1901 M.f.K. article in conjunction with the description of, and entitled, *E.delaetii*, but this time the picture is entitled *E.schickendantzii*. However there is no specific statement to say that the two names are synonymous.

.....from B.Schütz, *Kaktusy* 70, 1, 1970

Each of these *Gymnocalyciums* has on the whole its own - one could say unique - history. It is an instructive story, for it demonstrates that social considerations, respect for authority, etc., can prevail over the interests of genuine science. We might call it opportunism, but that would not be correct. In our collections, *G.schickendantzii* and the similar *G.michoga* are moderately well represented. Quite often we come across it under the incorrect name of *G.stuckertii*.

As well as all that, with *G.delaetii* there was the difficulty that seeds thus designated yielded forms resembling *G.schickendantzii*, *damsii*, etc. After some years however, there came nice imported specimens, and also plenty of seedlings were grown from imported seed, and so we can compare the two plants side by side. The differences are so marked, that really the independent existence of two sorts should not be doubted. Because however criteria for the assignment of species and varieties are not universally binding - it is more a matter of opinion - argumentation as to whether one is dealing with two species or merely with one species and its variety, would not be profitable.

With regard to the outcome of these problems, it is necessary still to add, that the fruits are also very different. In *G.schickendantzii* they stand straight at the apex of the plant, whilst with *delaetii* they are noticeably bigger and on ripening they lie so as to stand outwardly from the body. In this situation, it is certain that Dr. Schumann would have been easily able to defend the truth of his description; evidently, however, he did not wish to argue with Dr. Weber and therefore refrained. Apparently he acted thus, aware that with the passage of time, his *E.delaetii* would be rehabilitated. Dr. Werdermann, as we have seen, provided formal recognition of this.

.....from G.J.Swales,

The original description of *Gymnocalycium stuckertii* (as *Echinocactus stuckertii*) appeared in the *Cactacearum Platensium Tentanum* in 1905. This description gave the habitat distribution area as from the provinces of "San Luis, Córdoba, Tucumán and Salta". In 1905 the only two species of *Gymnocalycium* which had been found to extend over those provinces were the combined distributions of *G. delaetii* and *G. schickendantzii*. Also in this 1905 Spegazzini description, the flowers are described as "from the shoulders of the plant", a feature which is typical of *G. delaetii* and *G. schickendantzii*, but otherwise decidedly uncommon - or. not occurring at all - in any other species of *Gymnocalycium* known at that time. Taking these two observations together would appear to rule out the name *G. stuckertii* being associated with any species other than the earlier published *G. delaetii* and *G. schickendantzii*.

My theory is that Spegazzini was not in agreement with the change of *delaetii* from a species in its own right to a variety of *schickendantzii* and that consequently in 1905 he described his *E.stuckertii* to replace the original Schumann *delaetii*, which he could do only by selecting a different species name. This Spegazzini description of *G.stuckertii* is in accordance with the ICBN and so establishes it as a valid name.

There are many instances in the literature where a species has been described in the initial publication and then at a later date another description appears in print from a different author or authors. In many of these instances there are differences in the description of specific features as between the different authors concerned and the differences in the descriptions of *G.delaetii* and *G.stuckertii* are no more than may be found in other authors' descriptions of one and the same species.

.....from H.Middleditch.

In the 1905 periodical in which the description of *E.stuckertii* by Spegazzini first appeared, there is a separate entry for *G.schickendantzii* in which reference is made to "Schumann Mono. Cactaceae p. 415" and to "Supplement 1898-1902 p.102" In his 1905 publication, Spegazzini makes quite a number of references to the 1898 edition of this Schumannn publication and also ten references to the 1898-1902 supplement. It would appear that Spegazzini was familiar with the literature of his time that was relevant to *G.delaetii* and *G.schickendantzii*

Hence it would appear that Spegazzini did recognise the "floribus e margine disci" - flowers from the shoulders, and - together with the area of distribution - decided to redescribe as *stuckertii* the *E.delaetii* which Schumann had put as a variety of his own *schickendantzii*. In that case, why did Spegazzini in 1905 note under his "Observations" that his *G.stuckertii* had a "habit of *Es.hyptiacanthum* Lem., very similar to the illustration in Schumann's *Gesamtb. Kakteen* p.403, Fig.70"? Solely from the numbers and attitude of the spines?

.....from G.J.Swales.

Immediately following Spegazzini's 1905 Latin description of his *stuckertii*, there is a set of "observations" on this species. Here, we would seem to have been looking at a different plant, the flowers of which he describes as "often solitary", something quite out of keeping with the abundance of flowers from the "shoulders of the plant" as so clearly portrayed in Schumann's 1901 and 1902 pictures. Is it possible that Spegazzini was looking instead at the photograph which he later gave to Rose and which appeared as Fig. 180 in Britton and Rose II 1920 under the title of *stuckertii*?

.....from H.Middleditch.

The plant in that Britton & Rose 1920 picture has an unopened flower with the tube rather short and straight, arising from close to the growing point and hence not "e margine disci" i.e. not arising from the shoulders of the plant in accordance with the 1905 Spegazzini description of his *stuckertii*. In that 1920 publication, the illustration was stated to "have been contributed by Spegazzini". How could it come about that Spegazzini could make such a mistake?

.....from G.J.Swales.

But it would appear that Spegazzini was not exactly meticulous in the manner in which he undertook aspects of his botanical work.

.....from U.S. C. & S. Jnl. (3) 1940. by A. Castellanos.

Before 1913 when the botanical section of the Museum of Natural Sciences of Buenos Aires was founded, some collections existed which were under the honorary care of the botanist Carlos Spegazzini. But the types of the majority of his species or classifications were not preserved in it, because Spegazzini generally made his notes on the spot from plants cultivated in his house, from flower pots without labels. His memory was not always so reliable as to recollect the name itself and place of origin of each species.

For example, we have been able to establish that all the specimens of *Opuntia cordobensis* Speg sent to the Botanical Garden at Berlin Dahlem and other places in Europe, were not the Spegazzini species at all, but another quite different one. Spegazzini did not preserve the specimens of Cactaceae used in his studies which in several cases created synonyms of his own species.

.....from H.Middleditch.

Which may help to explain why the photograph sent by Spegazzini to Britton & Rose differed materially from the original Spegazzini 1905 description of his *stuckertii*, as well as his peculiar observations on the flower compared with the description of the flowers on his *stuckertii*. Probably because of these confusing contradictions, there has been little or no regard in the later cactus literature given to his 1905 *stuckertii*.

Over the course of many years there has been a great deal of discussion in print over the alternative of placing *G.stuckertii* as a variety of *G.schickendantzii* or a species in its own right. Is there actually any simple and effective means of identifying plants with one or other of these two names?

For example, how do the seeds of these two sorts compare?

.....from V.Schädlich

I find that the seed are not completely different, but one is able to differentiate between them. The hilum region of *G.schickendantzii* is larger than that of *G.delaetii*.

.....from D.Metzing.

The seeds of *G.delaetii* are slightly more helmet shaped than those of *G.schickendantzii*.

.....from V.Schädlich

I am sending you six samples of these seeds and would be interested to hear how they compare under the microscope.

.....from G.J.Swales.

Looking at these samples of seed under the microscope I do find it possible to distinguish those of *delaetii* from those of *schickendantzii*, although the differences are certainly not outstanding. However, considering the side view of these seeds with the hilum at the base, the *delaetii* are wider than tall whilst the *schickendantzii* are taller than wide, the hilum being a similar length in both, so that in *delaetii* the body of the seed overhangs one side of the hilum distinctly more than on the *schickendantzii* seed. But the GN293 seed does not fit happily into either species.

.....from H.Middleditch

Would it be possible to distinguish *G.delaetii* from *G.schickendantzii* by the outward appearance of the body?

.....from L.Bercht.

Looking at my own plants with these two names, I would find no difficulty in deciding which name to put on any of them. But it is difficult to explain in words exactly what is the difference between the two – I never measure the height of a tubercle or the exact length of a spine. To me, the bodies of these plants have two different faces - in *delaetii* the ribs are more clearly divided into tubercles than in *schickendantzii*. For example, looking at the illustrations in the Charles' *Gymnocalycium* book, I would accept Figs. 592, 593, and 594 as *schickendantzii* but I would never call Fig.596 other than *delaetii*.

.....from R.Edginton.

I find it hard to differentiate between *G.schickendantzii* and *G.delaetii*, although the *schickendantzii* do seem to have more pronounced vertical ribs, whereas *delaetii* have more rounded, tubercle like ribs, not in such distinct vertical lines.

.....from B.Schütz, Monograph. Genus *Gymnocalycium* 1986

These two species differ especially in that *G.delaetii* has ribs totally divided into tubercles whilst *G.schickendantzii* has clearly visible ribs which have well-developed protrusions.

.....from H.Middleditch

Would it be appropriate to observe that the ribs on some *schickendantzii* have a tendency to protrude with an acute-angled cross section, with inter-rib grooves which can also be V-shape in cross section?

.....from M.Kurka

My approach to these two species is to regard *schickendantzii* as having V section ribs with the inter-rib grooves vertical, whilst *delaetii* has ribs which are rounded in section and the inter-rib grooves curve from side to side.

.....from G.J.Swales.

To my mind the ribs on *G.delaetii* are separated by clear cross-grooves between adjacent tubercles, whereas each of the ribs on *G.schickendantzii* consist of a continuous rib which carries a set of projecting tubercles. However, looking in the Charles' *Gymnocalycium* book, most of the illustrations fit this idea, but the Fig.580 in the *schickendantzii* section displays the rib and tubercle features of *G.delaetii*.

.....from H.Middleditch.

Looking at other illustrations of these two species, in the Austrian *Gymnocalycium* Journal, in L.Bercht's

review of this group in Succulenta, and elsewhere, there are indeed quite a number of plants which fit these rib and tubercle forms, but a number which do not. Hence this aspect alone can hardly be used as a satisfactory method of separating these two species. Could any other features be considered?

..... from D.Metzing

To distinguish *delaeitii* and *schickendantzii* by appearance, I would say that *delaeitii* has a more appanate body and less strong spination which does not cover the apex. The ribs on *delaeitii* are also more rounded than on *G.schickendantzii*.

.....from G.J.Swales

I would also suggest that these two species might be separated by looking at the ratio of height to body width, as *G.delaeitii* tends to adopt a flattened globular appearance whereas *schickendantzii* tends to grow as tall, or taller, than broad.

.....from W.Knoll G.O.K.Journal Sept. 1976

In January of 1973 I was driving along the trail from Cafayate which led towards the provincial capital of Salta, when we had to cross over a dried up river bed in the vicinity of Ampascachi. We stopped here and walking round we came across a number of cacti which were still complete with ripe fruits. Usually growing solitary, the heads reaching a diameter of up to 30cm., generally matt grey-green coloured. The few (5-7) short spines appeared a deep brown close to the crown, older spines being horn coloured to grey. Noteworthy was the fact that the fruits were to be found more at the sides of the body, which suggested that the flowers appeared not close to the crown, but more to the sides. There were not many of these small plants, to which I gave my collection number WO28 which in all probability is *G.delaeitii*.

.....from H.Middleditch

I am astonished at the idea that plants of *G.delaeitii* can grow up to 30cm in diameter in habitat.

.....from G.Charles

The lower picture of *G.delaeitii* in on page 255 of my book was seen to the north of Alemania and was about dinner plate size, at least 20cm in diameter.

.....from V.Jiranek,

I have regularly seen plants of *G.delaeitii* in the wild of 15cm in diameter and they can reach up to 20cm. across. The largest *G.schickendantzii* that I remember from habitat was approximately 15cm tall and 10cm. wide.

.....from R.Slaba

The *G.delaeitii* that I have seen in habitat have wide, flat bodies whilst the *G.schickendantzii* have longer, even short columnar, bodies. The largest *G.schickendantzii* that I saw in the habitat was 40cm tall and 15cm wide.

.....from C.Sherrah

I have seen *G.schickendantzii* at many varied locations and it does grow taller than wide, up to about a foot high.

.....from L.Bercht

In my collection the *G.delaeitii* normally tend to grow in a rather flattened globular form whilst *schickendantzii* never grow flat, but commonly adopt a more globular shape or in habitat they may even become columnar. In habitat the bodies of *G.delaeitii* are more flat than tall and can reach 25cm in diameter, whilst *G.schickendantzii* is normally flat to columnar and indeed can reach 50cm tall.

.....from J.Lambert

In the course of coming across these plants in Argentina, I have found old plants of *G.schickendantzii* which lie down and start to elongate. I did come across a plant near Los Molinos which grew in front of some heavy vegetation. This provided a quite shaded situation so that the *schickendantzii* must have laid itself down in the direction of the light and started elongating. According to my notes, a length of 55cm – for a diameter of 16cm – was the longest plant that I found. I have never seen an elongated specimen of *delaeitii* but then they generally grow in more open surroundings.

.....from F.Vandenbroeck

Going from Valle Fertil to Marayes the road passes through an endless flat maquis landscape. It is the home of the Pampas hares and the Seriema – large birds, a sort of road runner. The neighbouring Sierras seem to be devoid of cacti. Near Marayes the vegetation becomes much more open and the landscape takes on much more the appearance of a semi-desert. Here we found numerous specimens of *G.schickendantzii* of which most of them had grown so tall that they had leant over or lay on the ground. Most of these plants were growing at the foot of a bush.

.....from G.Charles.

I have seen plants of *G.schickendantzii* of up to about half a metre tall growing in thick undergrowth under low trees to the NW of Cordoba city and also growing quite tall among spiny bushes near Chepes Viejo.

.....from V.Schädlich

In Argentina, *G.schickendantzii* has the largest population area of all *Gymnocalycium* and is therefore pretty variable. These plants almost always grow columnar and specimens with a height of 80cm can be found.

.....from H.Middleditch.

This distinction in overall body shape alone, i.e. appanate or columnar, does appear to offer a satisfactory basis for separating these two names, especially if it is not replicated in any other species or species group of *Gymnocalycium*. So that this difference alone would mean that the names *delaeitii* and *schickendantzii* can be considered to be two different species? If not, what other features could be considered? Looking closely at my solitary adult plant of *schickendantzii*, I see that the epidermis is not a fairly uniform green colour, but consists of innumerable tiny little dots. Is this peculiar to *schickendantzii*?

.....from H.Kallenowsky

With the help of a lens I have taken a close look at the epidermis of my seedlings of *G.delaetii* and I could see that the epidermis was covered with numerous tiny white dots.

.....from L.Bercht

These minute dots on the epidermis are not specific to *schickendantzii*, they appear on many of the *Muscosemineum Gymnos*.

.....from D.Metzing

These spots on the epidermis can often be seen on plants of *G.schickendantzii* but also on other plants of *Muscosemineum* e.g. in *G.mihanovichii* and *G.megatae*.

.....from J.Lambert

A character which has attracted my attention among the *Muscosemineae* is the fact that some species are distinctly spotted, whilst others are not. Among the latter, I have so far noted *anisitsii*, *damsii*, and *marsoneri*. On the other hand, spotted species which I have been able to check include *mihanovichii*, *friedrichii*, *knebelii*, *michoga*, *pseudo-malacocarpus*, *griseopallidum*, and *schickendantzii*.

.....from M.Meregalli,

These spotted bodies are to be found on all of the *Muscosemineum* group of *Gymnocalycium* which of course includes *G.schickendantzii* and *G.delaetii*.

.....from H.Middleditch

This also seems to be a feature which does not appear to readily differentiate *schickendantzii* and *delaetii*, so what else could be considered? The fruit, perhaps?

.....from R.Crooke

The fruit set on my *G.schickendantzii* stays on for a full year – even a fruit from last year can be on a plant at the same time as a fruit from this year. On all my other *Gymnocalycium* the fruit falls off at the end of the growing season.

.....from A.Lorenzini

The fruits on my *G.schickendantzii* are green to start with and then go from plum to a dark reddish-brown when ripe. I had a pair of these plants which still had their ripe fruits after a year.

.....from J.Lambert

In my own greenhouse, these two *Gymnocalycium* flower regularly and also set fruit readily. Ripening of the fruit is very slow, it may take one year or more. The fruit remains pulpy and juicy over this period. I suspect that in nature the fruit will be eaten by some animals - birds or rodents - and that the seed will be distributed with their excrement.

.....from L.Bercht

It is not only on *schickendantzii* and *delaetii* that the fruit remains on the plant over winter and well into the following growing season, but then this is typical of the *Muscosemineae* group of *Gymnocalycium*. The ripe fruit on *schickendantzii* may be green, green tinged with violet, or red in colour, whilst the ripe fruit on *delaetii* can be green, or green tinged with violet.

.....from H.Kallenowsky

I have seen ripe fruits on *G.schickendantzii* near Catamarca and I would describe them as being of a deep red colour.

.....from B.Schütz, Kaktusy 70.1.1970

The fruits on *G.delaetii* are bluish green in contrast to the red fruits on *G.schickendantzii*.

.....from R.Hillmann.

To my mind the fruit on *G.delaetii* is a very blue colour and is thicker than the fruit on *schickendantzii*.

.....from D.Metzing

Both *G.delaetii* and *G.schickendantzii* have green to glaucous fruits which turn red when ripe. At present, near the end of March, my P55 *G.delaetii* has a bright red fruit and my Lau 446 *G.schickendantzii* has a fruit with red and violet colouration.

.....from H.Middleditch.

On its own, this possible difference in the size and colour of the ripe fruit would hardly seem to be adequate grounds for distinguishing *G.schickendantzii* and *G.delaetii*. Would there be any distinguishing features between these two names in regard to the buds and flowers?

.....from L.Bercht

This morning I have taken quite some time to examine the flower buds on my *G.delaetii* and *G.schickendantzii*. Yes, they do differ - the buds on *G.schickendantzii* are more or less greenish and terminate in a point. The buds on *G.delaetii* have a violet gloss and have a rounded top. A nice separation of the two taxa.

.....from J.Lambert

The differences which separate *schickendantzii* from *delaetii* lie in the shape and colour of the scales, buds, and flowers. Whereas the *schickendantzii* shows, like many *Gymnos*, snakes-head shaped flower buds, with more or less lanceolate scales, going over into lanceolate tepals on the flower, the *delaetii* has globular headed buds with rounded scales, and hence more spatulate tepals.

On both, the scales are bordered with pink or red. These details could not have been observed by Schumann for his 1898 description of *delaetii* due to the fact that he was faced with only a small dead plant for examination.

.....from V.Schädlich

Yes indeed the buds on my *schickendantzii* are pointed but the scales do not display any red at the edges, whereas on *delaetii* the buds are rounded at the top and have a red colouration at the edges of the scales.

.....from F.Berger.

It can be said that *G.delaetii* and *G.schickendantzii* are from two development lines and therefore have to be regarded as two types. One can already watch this in the bud development of the two types. With *G.delaetii*, we have round red buds at the sides of the plant and with *G.schickendantzii* the buds are pointed with green edges.

.....from G.J.Swales.

Consulting carefully again the illustrations of these plants in various publications, there appears to be a difference between the two names in the external shape of the flowers when viewed from the side. Above the pericarpel, the *schickendantzii* have an urn-shape flower outline, whereas the *delaetii* tend to have a beaker or funnel shaped outline. The buds on *schickendantzii* are of a pointed snakes head shape, but on *delaetii* they are round headed. However, I do find one or two illustrations of provenanced plants which do not fit this pattern. But even in those examples the flower buds on *delaetii* are quite definitely always round headed.

.....from H.Middleditch.

Do we have any examples of these exceptions? I have a side of JL27 of a plant from Salta which even though it is in the *delaetii* habitat area, clearly carries the *schickendantzii* type snakes head buds and also carries urn shape *schickendantzii* type flowers; the same plant is illustrated as Fig.286.2 in the New Cactus Lexicon [Misidentified as *G. delaetii*, but really *G. schickendantzii*]. In Succulenta 90(1)2011 there is a picture of a *G.delaetii* GN303 from El Tala in the north of Tucuman province, also with a bell-shaped flower section, but the bud is round-headed. Also the 1901 M.f.K. picture of *G.delaetii* displays a campanulate flower. Could there be any explanation for these odd anomalies?

.....from V.Schädlich

From experience in my own greenhouse, I would expect that the fruits on these plants need a long time to mature completely. The fruits are red when ripe and so they are distributed by birds. I am in contact with a resident of Paraguay who has studied the plants of the Chaco for many years, who confirmed to me that the fruit of *G.mihanovichii* is eaten by birds.

.....from F.Strigl.

On my trips through Argentina I have come across *G.schickendantzii* and its various forms, growing together at many places. Also Piltz in his field list made a distinction between plants with differing features, by using a suffix letter to his P number. But if one travels from north to south and from east to west in Argentina, why does one repeatedly find such different forms of *schickendantzii*? My own explanation for that, is that the fleshy fruit remains on these plants for almost a year. The opening of the ripe fruit occurs at a time when the flocks of birds – especially pigeons – by the millions pass, and the ripe fruit - which in addition to the seeds also contains accessible fruit flesh as food and moisture – nourishes them at their stopping places. Their excrement then falls to the ground further along their journey and starts new populations.

.....from H.Middleditch

Does this imply that occasionally there will be seed of *G.delaetii* deposited by pigeons in the distribution area for *G.schickendantzii*, and visa versa? Which could have been going on for several hundred years, so that hybrids between the native species and the pigeon-imports could have been generated. Would this explain why there are examples of such plants to be found in habitat?

.....from V.Schädlich

My plant of *delaetii* GN 293 which I have as recorded from Cobo Castel in province Salta, does have urn shaped flowers.

.....from G.J.Swales

The seed from the GN 293 grown by V.Schädler does not quite fit into either the normal *delaetii* or *schickendantzii* appearances, so that this GN293 could be a hybrid..

.....from H.Middleditch

Possibly the eventual result of cross-breeding between *delaetii* and *schickendantzii* after seed was deposited earlier by pigeon post? How does the disposition of the flowers on the plant body compare between these two species?

.....from G.J.Swales

My understanding of the disposition of the flowers on these plants is that on *G.stuckertii* (= *delaetii*) they arise from the sides of the body, often quite low down on the sides, whilst on *G.schickendantzii* the flowers appear from the shoulder or the crown of the plant.

.....from R.Slaba

The *delaetii* has wide flat bodies and the flowers are growing from the sides, whereas *schickendantzii* flowers from the top and has longer – even columnar – bodies.

.....from V.Schädlich

The flowers on *delaetii* emerge from areoles near the base of the plant.

.....from M.Kurka

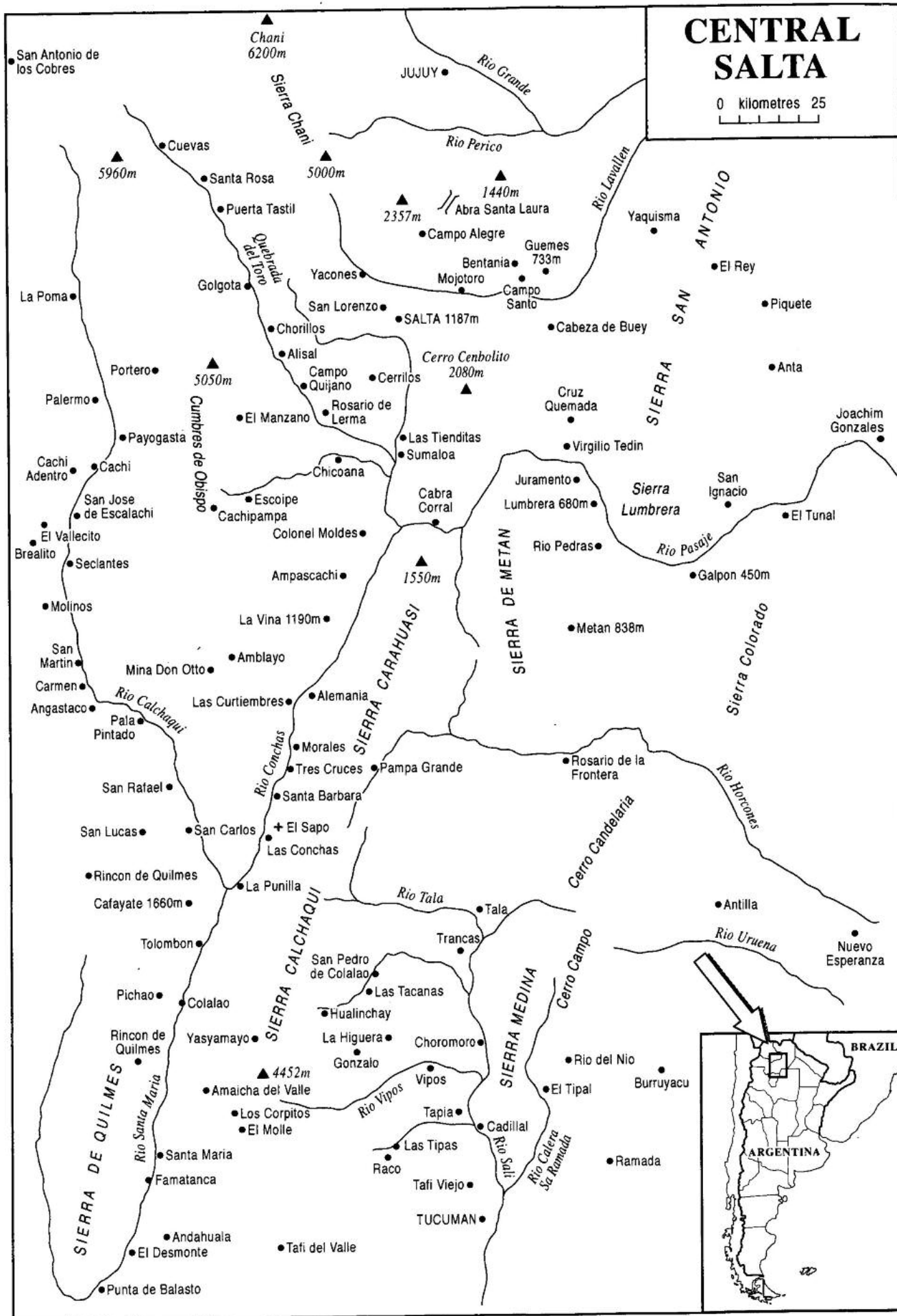
The buds on *G.schickendantzii* are mostly on the top but they do appear from the sides of the plant, too.

.....from H.Middleditch

In Succulenta 90 (1) 2011 there are some pictures from L.Bercht of *G.schickendantzii* with flowers appearing from not only the shoulders of the plant but others from the sides of the body.

.....from L.Bercht

Looking at the plants in my own collection, I find that on *G.delaetii* the flowers normally arise from about half way down the body, which is often the widest part of the body, whereas on *schickendantzii* the flowers normally appear from the crown of the plant. It is not in any way abnormal for the flowers on either sort to arise more from about half way between the side of the plant body and the growing point, that is, at the



shoulder of the plant body.

.....from H.Middleditch

The position of the flowers on the body of the plant appears to have a tendency to be a distinction between these two species, but evidently not a consistent distinction. Are the flowers on the two species comparable in their internal form?

.....from D.Metzing

I see that Till has written that the anthers of *G.delaetii* are grey to blackish-brown, whereas those of *G.schickendantzii* should be yellow.

.....from H Middleditch

Is there any distinction in the nature of the surroundings where these two sorts are to be found growing in habitat?

.....from F.Strigl

I could not find any areas with extensive populations of *G.schickendantzii* anywhere. These plants are mostly to be found hidden under shrubs.

.....from J.Lambert.

In the wild *G.schickendantzii* is encountered in all sorts of situations. It may grow in the company of bushes which are barely one meter high in some places, and over 2m high in other places. So spaced that it is easy to walk round them when searching for the *Gymnocalyciums*. At other places these plants may be growing near a bunch of tussock grass. Sometimes *Trichocerei* may be growing in the same locality, sometimes not; there is no particular association between the two species. This *G.schickendantzii* commonly grows in places without stones, but that does not mean in pure sand. On the contrary at Colonel Moldes the *G.delaetii* grew in a brown forest-soil with quite a lot of humus, and near Los Molinos it was a mixture of sand and loam. But where these plants were rooted into the ground there was neither any sizeable pebbles nor even grit.

.....from M.Kurka

The vegetation where *G.schickendantzii* grows is usually relatively open and dry. Mostly it grows below spiny bushes, usually there is very little grass as the place is too dry for grass. But I have found *G.schickendantzii* on small green islands in Salinas Grandes with rather rich green vegetation of herbs and small bushes and even succulents like *Grahamia bracteata*. These *Gymnos* were mostly on the banks of the islands where there was less greenery but not under the dense vegetation of the islands themselves. I have met *G.delaetii* in two places, one on the banks of the Rio Pasaje downstream from Cabra Corral dam, and the other a spot a kilometer or so upstream from Alemania on the Rio de la Conchas. Both places were a spiny deciduous forest with trees of 5 to 10m in height. In places it is rather dense with spiny branches low above soil level so in these conditions we had to crawl rather than walk to search for cacti. When in leaf the trees often have a rather deep shade where the *delaetii* grew. Both places were fairly rich in other cactus species.

.....from M.Lowry

Travelling north from Tucuman city in November 1999 we came into the Trancas district in the north of Tucuman, where we decided to branch off along a dirt road, passing through leafless woodland. We stopped a few km to the east of Choromoro when we saw some cereiform cacti. Here we found some scattered plants of *G.delaetii* growing in company with *G.saglionis* as well as with spp. of *Echinopsis*, *Harrisia*, *Cereus*, *Trichocereus*, *Cleistocactus*, *Opuntia* and *Rhipsalis*. They were all growing in an almost flat wooded area in "Tucuman thorn scrub" which consisted of bushes growing 3 to 4m in height that were just far enough apart for us to walk between them. In their leafless condition at that time of year they only provided a modest amount of shade, but nevertheless there was little or nothing in the way of low growing ground cover such as grasses or herbs to be seen.

Then we followed the eastern foot of the Andes further northwards to near Metan, where we again found *G.delaetii* growing under similar thorn bushes, but here the bushes were so closely spaced that we had to stoop to walk round in our search for cacti. Then later on we made a stop at about 40km. to the south of Salta city, near Cabra Corral, where we again found *G.delaetii* and here it was growing in flat ground in the dry surroundings of thorn bush scrub, similar to those near Choromoro.

Later on, going south along the valley of the Rio Conchas, we stopped a few km to the south of Alemania, with mountains rising at both sides of the valley floor. Here it was much less dry compared with the nature of the surroundings at our previous stops, due to the rain clouds dropping their moisture as they rose to cross the Andes. Here the trees grew up to about 10m in height where we found *G.delaetii*, which was growing in company with a range of other cactus spp. similar to those seen in the thorn scrub at Choromoro.

Then in December 2000 we were again in the vicinity of Cabra Corral, but now stopping at a different spot, where we again found *G.delaetii* growing in dry thorn bush surroundings. The plants of *G.delaetii* that we saw did not really differ between those that we saw in the drier thornbush surroundings and those seen in the wetter conditions near Alemania where there were much taller trees

.....from V.Schädlich.

I found that *G.delaetii* prefers to grow in thick bush and shade, which ensures that the fibre roots lying near the top of the substrate obtain moisture for as long as possible. These plants do not thrive in direct sunlight.

.....from H.Middleditch

In the Charles' *Gymnocalycium* 2009 book the distribution areas for *G.schickendantzii* and *G. delaetii* are evidently separated from one another by the southern part of Tucuman province where there appears to be no record of either species being found. Can this be due to a difference in the climatic conditions which prevail in these separate areas?

.....from D.C.Money "South America"

Especially during winter the cold polar air moves northwards to the east of the Andes, towards Buenos Aires.

.....from I.Pohl & J.Zepp. "Latin America"

In the Argentine lowlands, (including Sierra Cordoba,) a particular menace is the famous Pampero, an outbreak of cold polar air.

.....from P.E.James Latin America 1959

In the Chaco, occasionally and frequently in winter, there are cool spells as cold masses of polar origin push northwards through the lowland against the stream of hot and humid air from the north. Agriculture changes notably where the great dry belt spreads across the full width of the plains as far as the east of the Andes. This is also the zone of transition between the hot deserts of the north and the cool deserts of Patagonia.

.....from R.Kiesling, Cold resistant cacti of Argentina, C&SJ US, Vol58

The annual rain distribution which is characteristic of all the north-west of Argentina is a consequence of the high and low atmospheric centres in summer and winter. In summer, the sun heats the high plateaus and mountains of Bolivia and northern Argentina, producing a low atmospheric pressure area. The winds converge on this low pressure area, coming mainly from the east, laden with moisture from the Atlantic Ocean, even though it crosses half the continent. This moisture is then dropped on the mountains. These rains are concentrated in the summer, from November to March, whilst in winter – from May to September – there is virtually no rain and this is just when the temperatures are very low.

.....from J.Frenguelli, Phytogeography of Argentina. 1940

The Chaco forest is a narrow belt which runs from Aconquija in the province of Tucuman, as far north as the border with Bolivia, occupying the slopes of the mountains and narrow valleys from 400 to 1200 or 1400m. altitude. It occupies the eastward facing slopes of the mountains which face the humid air currents which reach them from the Atlantic Ocean. This forest is more regular on the foothills which start in Tucuman with the Sierra Medina and the Sierra Santa Barbara and passes northwards into the tropics.

In Tucuman, between Calchaqui and the Rio Sali the impoverished sequel to the northern forest gives way to the Selva more to the south. As the valley of the Rio Tacanas widens out towards the basin of San Pedro de Colalao the mesophytic formation appears, woodland mixed with representatives of the xerophytic formation of the Rio Sali valley. The same aspect is displayed in the stretch between Raco and Tapia in the valley of the Rio Sali where a rapid transition from the mesophytic monte to the xerophytic monte may be observed. Even before reaching Las Tapas, the picture of the vegetation has undergone a complete change, the trees replaced by different species [itemised] with the addition of dense thickets of tall bushes and many *Cereus*.

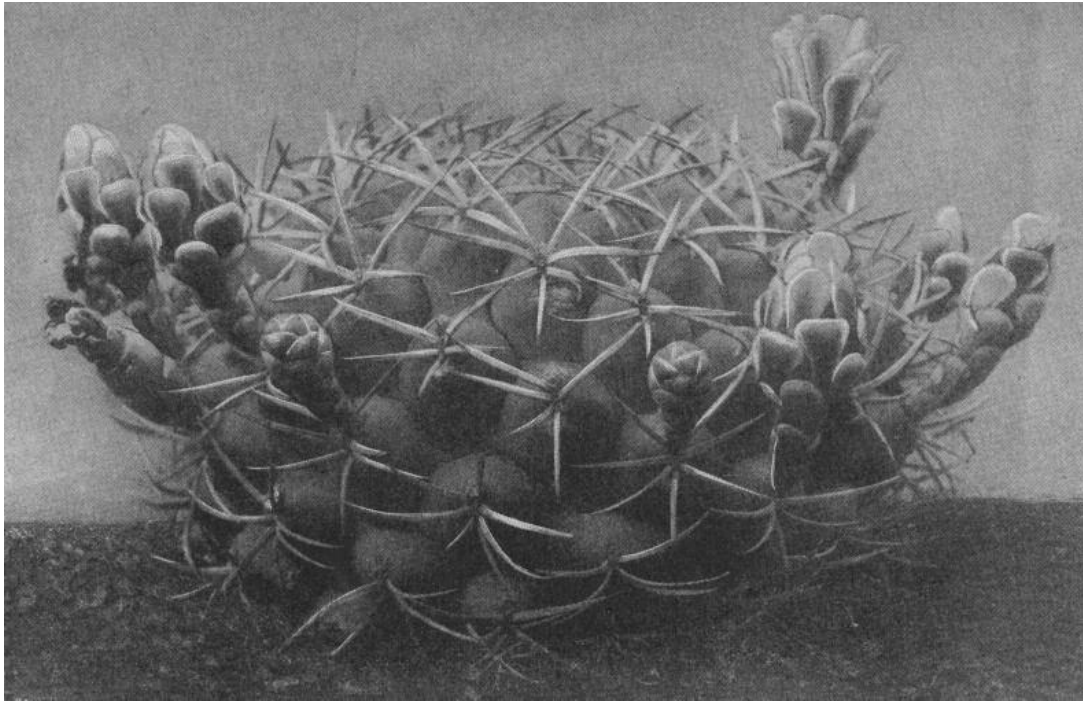
.....from H.Middleditch

Most of these place names, which lie in the northern part of province Tucuman, may be seen on the accompanying map as well as Choromoro, which appears to be the southermost reported location for *G. delaetii*. This suggests that *G. delaetii* grows in a near-tropical habitat, where overnight or winter temperatures are not likely to drop to freezing. In those areas where *G. schickendantzii* is found, the climatic conditions are the opposite of tropical (see *Pterocactus*, this issue). As with all parts of the world, the dividing line between two climatic regimes migrates backwards and forwards to some degree from one year to another, so that no precise and fixed dividing line can be drawn between one climatic regime and another. Hence the gap between the distribution areas for *G. schickendantzii* and *G. delaetii*, in which the climate can change from one year to another.

It would hardly be unexpected for this very marked climatic difference to have an effect not only upon the nature of the vegetation, which in turn will have an effect on the fauna and upon the available pollinating agents. For example, Schickendantz mentions that the mule trains going from Andalgala to Tucuman encounter blood-sucking bats on the descent of the Rio Canas, but there would appear to be no evidence that they are to be found any further to the south. In a similar way, many plants growing in the tropical zone may be orientated to certain pollinating agents that do not exist further to the south. In consequence it would be hardly surprising to find a change in those features of the flora which are largely intended to attract specific pollinating agents, compared with the flora in the other zone.

These circumstances would suggest that the different flower forms displayed by *G. schickendantzii* and *G. delaetii* are a reflection of the different climate regimes in which they have to survive and the different pollinating agents that they are designed to attract. The occasional introductions by pigeon post from one climatic regime to another may well continue and be able to survive for many generations, hybridising with the native species. Hence their infrequent occurrence outside their normal area of distribution? And do the pigeons migrate northwards to avoid the winter frosts and then return when the frosts have retreated southward again? i.e. from the *delaetii* growing area to the *schickendantzii* growing area?

The applanate body form of *G. delaetii* is evidently quite distinct from the columnar body form of *G. schickendantzii* and possibly sufficient on its own to separate these two as different species. In addition the round topped buds and funneliform flowers are peculiar to *delaetii* and snakes head shaped buds and urn shaped flowers to *schickendantzii*. These features alone would separate the two names into distinct species, but the difference in the climatic regime between their two distribution areas is of far more significance. Possibly a rather better basis for establishing a species name than such as spine numbers, length, and the extent of their body coverage, which can vary appreciably in a single species due to the nature of the local surroundings. Probably a better separation of two species than between many other pairs of *Gymnocalycium* species.



The picture of *Echinocactus delaetii* which accompanied the first description in MfK 1901

.....from D. Metzging, Oldenburg University

Where the Type connected with a published name is a hybrid, then that name applies to the populations of all such hybrids. The name of a hybrid which has been described and published can be valid in accordance with Article H.3 of the ICBN section H.3.1.

.....from the Royal Botanic Gardens, Kew

When a name is validly published for any plant - irrespective of whether it is an independent species or hybrid - it is nomenclaturally incorrect to re-use that name for a quite different plant.

FINDING TWO SORTS OF TRICHOCEREUS. From F.Vandenbroeck.

I have very pleasant reminiscences of Capilla del Monte where we spent several days in 1985 and again in 1991 in a cosy little hotel from which we made long excursions into the surrounding countryside, which has a very variegated aspect of bushes, trees, rock formations, rivers, and so on, consequently a large variety of herbs, epiphytes, and cacti. Although Kiesling observes that *T.lamprochlorus* is "moderately abundant" in Sierra Chica and Sierra Grande, it was my impression that this species is definitely rare. For example, in the Sierra Grande I was not able to observe a single specimen. But I did find this plant in the Sierra Chica, somewhat to the east of Villa de Soto. We found a red flowering mistletoe here, growing in trees and in this area, where *Gymnocalycium valnicekianum* is to be found, and also this *Trichocereus*. The branches grew up to more or less 40cm long and would be about 3 or 4cm thick. They produced branches from the base which grew not quite upright, starting off pointing somewhat sideways, curving gently so that their upper parts became vertical. The complete plant consisted of quite a number of these sprawling stems. Then we also found some specimens of this plant to the east of Cosquin near a mountain called Pan de Azucar. We climbed up some slopes which proved to be rather difficult as they were overgrown with spiny grasses, bushes, and bromeliads, between the colourful herbs. Then, on a ledge on a vertical rock face, we saw a *Trichocereus* in bud, which was probably *T.lamprochlorus*.

On the other hand, we often met with *Trichocereus candicans* as it is far more widely spread in nature. It is a far more robust species than *T.lamprochlorus* – the stems are thicker and ribs more obtuse and the spination much stronger. We found that it is impossible to confuse *T.candicans* with *T.lamprochlorus*.

.....from P.Shipsides

I joined a coach party undertaking a field trip to Argentina, which started off at Cordoba. Going north from there, we passed through El Manzano and followed a typical dirt road to reach El Guadrado, where we made a stop next to a hillside. There were no obvious cacti to be seen at the roadside, but we walked up a gentle slope where there were scattered bushes but mostly sparse grassland, which was grazed by goats, following paths worn down to the dusty soil and stone typical of this area.

We walked up the hillside for about twenty minutes and the gradient gradually got steeper as we proceeded, then bringing us to a flattish area with slabs of exposed rock. Here we saw some bromeliads and euphorbias, as well as *Echinopsis aurea*, *Gymnocalycium amerhauseri*, *G.bruchii*, and *G.mostii*, all growing low and squat with greyish-green bodies and covered by the pale grey dust of the area, as well as *Notocactus submammulosus*, all growing between the stones. Here and there were patches where the grass was longer and we could see *Trichocereus lamprochlorus* and *T.candicans* growing decumbent amongst the tangle of grasses.

.....from F.Strigl

On my various field trips through Argentina I have come to know many forms of *Trichocereus candicans*. The higher the altitude one reached, the shorter become the stems. The largest example seen on my last trip was a single stem of some two metres in length which was 20cm. thick. Only the head lifted itself up. The outer petals on the buds are mostly reddish and one always suspects that it may be a red flower. Whether a red flowering form is a natural hybrid or a divergent form is not yet clear to my knowledge. It was thirty years ago that I received a fine plant from Fescher which had a shiny epidermis and an upright form of growth.

.....from G.Charles.

On my very first field trip to Argentina in 1992 we arrived at Cordoba airport and from there drove north, towards La Granga. As we were passing a fairly steep road-cut, we caught sight of one or two cacti there, so we decided to stop and take a look at them. The hillside was basically solid rock with cracks and crevices. It was so steep and rough that it had to be climbed with care, especially as there were loose stones in many places. Even though the surface was mostly bare rock, there were numerous places where low growing grasses and herbs had found a foothold, as well as some scattered bushes, most of them about a foot high but some reached almost head height.

Scattered here and there were some *Platyopuntia* and an occasional *Gymnocalycium mostii* – some of these in flower. We also found a few plants of *Trichocereus lamprochlorus* which were branching from the base but were only up to about a foot in height. It was fifteen years later when the same *Trichocereus* was found again, at three locations not far from Ischilin in the north of the Sierra Cordoba.

.....from H.Middleditch

On the stems of the plants in the habitat photographs taken by G.Charles of this *T.lamprochlorus*, it is possible to see five or six ribs – four facing the camera and also one or two at the sides of the stem, so suggesting about 11 to 14 ribs in total on the stem. The original Lemaire 1838 description of this species, which was of a plant in the Monville collection, quotes 12 to 15 ribs, a figure repeated by Kiesling in *Darwiniana* for 1978 and by J.Lambert in his *Cactus d'Argentine*. The plants in these habitat pictures from G.Charles would appear to conform to those descriptions.

The Gillies description of *T.candicans* in *Horto Dyckensis* 1834 does not quote a rib count, but Rumpler in Forster's *Handbuch der Kakteenkunde* quotes 9-10 ribs for *Trichocereus (Echinocereus) candicans*, whilst Kiesling 1978 quotes 6-11 ribs for *T.candicans*. This would suggest that fewer ribs would be seen in camera view on *T.candicans* in comparison with *T.lamprochlorus*, a difference which is quite evident on the habitat photographs of this species taken by G.Charles.

.....from G.Charles

We have seen *T. candicans* on many occasions, not only in the Sierra Cordoba but elsewhere in western Argentina in both San Luis and Mendoza provinces. There is no difficulty in separating this species from *T.lamprochlorus*. Commonly the stems of *T.lamprochlorus* are about 3 inches (7.5cm) thick compared to *T.candicans* that are commonly about 10cm or more in thickness. But this is always dependant upon the state of hydration of the plants. I would also be inclined to say that the spination on *T. candicans* is coarser – heavier spines.

.....from H.Middleditch

On the habitat photograph from G.Charles of the plants of *T.lamprochlorus* seen near Agua de Ramon, the stems are almost vertical, close to one another, quite different from the decumbent attitude of the stems in his other pictures of this species. This plant also displays central spines which are almost half as long as the thickness of the body. If the latter is perhaps about 3 inches, then the central spines may be 1.5 inches long - about 4cm – which is considerably in excess of the length of “up to 20mm” which is quoted in various author's descriptions of this species.

.....from G.Charles.

But you will see that the surroundings where this particular *T.lamprochlorus* was growing near Agua de Ramon is very stony indeed, on a sloping hillside together with only short grasses and very few dwarf bushes, nothing to shade the plants from the sun or from the heat reflected off the stony ground. Apart from this being a hot locality, it was also grazed by animals – hence the absence of other vegetation. This brings about the stronger spination and the different attitude of the individual stems on this plant

.....from H.Middleditch.

Which might also suggest that the body thickness – used as comparison for spine length – may also be somewhat less than that at locations which were less hot and dry?

.....from G.Charles.

If you look at my picture of a plant of this species seen on the western slopes of the Sierra Ischilin, where it was in more moist surroundings, together with tall herbaceous plants and bushes which would be providing shade to the *Trichocereus*, you will see that all the stems are decumbent, and by comparison with a body thickness of about 7.5cm, the central spines will be only about 10mm long, both these features being typical of almost all the plants of *T.lamprochlorus* that we saw.

.....from H.Middleditch.

Which fits reasonably well with the 1838 Lemaire indication of central spine length for this species.

.....from G.Charles.

Looking at the spination and the number of ribs in camera view in the habitat photograph taken by F.Vandenbroeck, it appears to me to be like what one would call *T.lamprochlorus*.

.....from R.Stanik

In the course of our 2007 field trip to Argentina, we travelled from Mendoza city to the very NW corner of province San Luis, in order to pay a visit to the Sierra Quijadas. At about 10km along the road to San Luis



West of Ischilin, Prov Cordoba

Photo: G. Charles



Near San Pedro del Norte, Prov. Cordoba

Photo: R.Hillman

Trichocereus lampochlorus

city from the junction with Ruta 20, which followed the foot of Sierra Quijadas, we turned off on the dusty road going into the National Park, driving for about 5km. to the camping ground where we spent the night in our tents.

Along the eastern foot of the Sierra we had been able to see some well wooded places, but around our camping site it was much drier with low growing vegetation and bare rocky patches. From the canyon where we had camped, we took a path leading to the ridge of the Sierra. Here and there, on bare stony patches, we found some *Opuntia* and also an occasional *Pyrrhocactus bulbocalyx*. Also two plants of a *Trichocereus* with short stems – barely even half a metre in length – branching from the base, which was probably *Trichocereus lamprochlorus*. They were growing on a patch of rocky ground, in company with a few scattered dwarf bushes and a few low growing herbs and grasses. There were also a few *T.candicans* to be seen there, but they were readily distinguishable from the *Trichocereus lamprochlorus*. One plant of *T.candicans* had an open flower, with a tube that was mostly reddish in colour.

.....from R.K.Hughes.

Quite a few years ago I obtained a plant of *T.candicans* which did not have any provenance but in due course put out a single flower. The flower tube was reddish over its full length and the exterior of the outer flower petals had a distinct red midstripe.

.....from F.Strigl

You will see on the picture of my *T.candicans* in flower in K.u.a.S. 49(4)1998 that the flower tube is distinctly red in colour.

.....further from R.Stanik.

At the exit from the National Park, we found *Gymnocalycium strigianum* on both sides of the road. Going south from there, towards San Luis city, we took the side road to La Calera which runs into the valley between the Sierra Gigantes and Sierra Alto Pencoso. Not far from this road, on the open, rocky hillsides, we found quite a number of plants of *Gymnocalycium strigianum* ssp. *aeneum*, at its type locality.

.....from H.Middleditch

For the habitat of *Trichocereus lamprochlorus*, Kiesling quotes "this species is moderately represented in the Sierra Chica, in the Sierra Grande and in other outlying Sierras in the NW of Cordoba, on rocky places or slopes of gritty ground, well drained, among grassy vegetation, in clearings surrounded by deciduous xerophytic bushes... also in the serranias in the SE of Prov. La Rioja, such as those of Malanzan and Los Llanos". This account from R.Stanik provides a sighting of *T.lamprochlorus* in the very NW of San Luis province, but so far no reported sightings are to hand from the nearby Sa. Malanzan or Los Llanos.

.....from R.Ferryman

Yes indeed I do have a recollection of coming across *T.lamprochlorus* whilst we were in the Sierra Malanzan.

.....from M.Winberg

I found only a few plants of this *Trichocereus* MN79 near Capilla del Monte, where they grew on very gentle slopes among large stones and grass. There did not seem to be many of them around. They were clustering, with stems up to 50cm long. They grew in company with *Notocactus submammulosus*, a *Platyopuntia*, and *Gymnocalycium valnicekianum*. Plants in my collection grown from MN79 seed flower at about 15cm tall with stems of about 3-4cm thick.

.....from R.Hillmann.

Between Ischilin and Las Palmas in the north of the Sierra Cordoba, we found both these *Trichocereus* species growing together. But they can be told apart – *lamprochlorus* has a smaller, thinner flower tube and the size of the flower is smaller whereas *T.candicans* has a flower twice as big as that on *T.lamprochlorus*, which I think is pollinated by bats.

.....from L.Bercht

To my eyes, *T.lamprochlorus* and *T.candicans* are two different species, the *lamprochlorus* having thinner and more erect stems and more ribs, whilst *T.candicans* has thicker arms and relatively few ribs.

.....from J.Lambert

The *Trichocereus* seen by F.Vandenbroeck near Capilla del Monte is *T.lamprochlorus*. I have a picture of this sort from near Agua Colorada, the plant looking exactly like that in the photograph taken by F.Vandenbroeck, except that it carries half a dozen flowers. Other localities where I found this form were Los Patayes and San Salvador, this latter place lying exactly 5km to the north of Capilla del Monte. Agua Colorada is no more than 25km from Capilla del Monte as the crow flies and, together with Los Patayes, is situated on the road from Villa de Soto to La Falda.

I also took a photograph of a flowering plant along the road from Ischilin to Ongamira, which is more to the north-east. This plant bears only a single flower. All these flowers were white inside, but the outside tepals are carmine-red. The most characteristic feature, though, is the tube, which is pinkish and covered by purplish wool, which earns the plant the synonymous name of "*T.purpureopilosus*".

Although this species is not scarce in the wild, it is never encountered in populations of numerous specimens, but rather as scattered clumps. Moreover, the plant seems to prefer a well-lit location so that you will never find it under a more or less heavy cover of other vegetation, but in open, well-exposed places instead. That is why it will often thrive on the edge of the road. Comparing my notes and photographs, I find that these plants are generally growing in almost identical circumstances i.e. their biotype consists of grassy areas with some stones and outcrops of rocks. The clumps are often found at the foot of some rocks. Only at Patayes did I see some small shrubs growing with these *Trichocereus*.

.....from G.Charles

My own plant of *T.purpureopilosus* has flowered but the flower tube displays only greyish coloured wool.



At Quilmes, Prov San Luis

Photo: G. Charles



Sierra de las Quijades,
Prov. San Luis

Photo: R.Stanik

Trichocereus
candicans

.....from J.Lambert

It is quite possible that G.Charles does have a plant under this name with grey wool on the flower tube. On the plant which I photographed at Los Patayes, the colour of the wool is definitely purplish. This is also true of the plant photographed at along the road from Ischilin to Ongamira, but on the other hand the picture taken at Agua Colorada shows a flower with more greyish wool.

.....from M.Kurka

I have seen both buds and faded flowers on *T.purpureopilosus* in January in habitat. The buds and flower tube are densely covered in rusty or chestnut brown hairs but the tube and external petals are brown, too.

.....from H.Middleditch

There is a *Trichocereus purpureopilosus* which was first described by Weingart in the 1930 German Cactus Journal, which was stated to originate from Cordoba. The description of the flower from J.Lambert matches that provided by Weingart.

.....from W.Weingart, Monat. der Deut. Kakt. 1930

Cereus purpureopilosus. Plant 32 cm high and 6-6.5cm thick; central spines lowermost 7mm long, 5mm directed sideways, 3mm directed upwards. Up to 20 radial spines, radiating, those directed downwards and sideways 7mm long, the upper ones somewhat shorter.

.....from G.R.Allcock

Looking at the sprawling *Trichocereus* photographed by R.Hillmann at the southernmost part of the Sierra Ancasti. This is quite the same as my *T.lamprochlorus* which was obtained from Whitestone in 1996. The sprawling stems, the lower rib count, the yellowish colour and greater length of the spines, all seem to match, as does the lighter colour of the epidermis. On my own plant, the green epidermis is quite noticeably shiny - lampro=bright, shiny - but the photograph does not reveal whether this applies to the specimen pictured.

A second and rather similar but somewhat thicker stemmed and even more shining example was received from H.Middleditch some ten years ago, without a name. The subsequent new growth on this plant clearly revealed the spination and shininess of *T.lamprochlorus*. This thicker stemmed, somewhat darker green, and somewhat more broadly ribbed plant is very similar to Fig.234 in Lambert's "Cactus d'Argentine", titled *T.lamprochlorus*, seen in habitat at Los Patayes. Although Lambert's description entails abundant mauvish to greyish hairs growing from the ovary, his photo shows only the latter of these two colours! Lambert also observes that "The characteristic colouration of the wool garnishing the tube has imparted to this species the synonymous appellation "*Trichocereus purpureopilosus*".

.....from M.Winberg.

I would not say that my own plant of *T.lamprochlorus* is especially glossy. It was grown from seed collected in habitat near Capilla del Monte.

.....from H.Middleditch

Compared with the above observations from J.Lambert on his sightings of *T.lamprochlorus*, other observations vividly illustrates how lower growing cacti can sometimes catch and sometimes avoid the attention of different cactophiles when the terrain has a liberal covering of other vegetation, much of it up to or over head height.

The review of the nomenclature of *T.lamprochlorus* in Ritter Band 2 of his *Kakteen in Südamerika* is fairly comprehensive. But it fails to recognise that the very limited choice of a possible habitat for the plant or plants forming the basis of the 1838 Lemaire description. At that time, opportunities for field collection in western Argentina were very limited indeed. Travellers bound for Cordoba, Tucuman, or Mendoza who set off from Buenos Aires risked being attacked on their journey by the wild Indians who roamed over the Chaco. But the Sierra Cordoba itself was outside the area raided from time to time by the Indians. At that date, nobody would venture out from places like Catamarca in order to make field collections - it was too far off the beaten track. But within the Sierra Cordoba the situation was quite different. So there is every probability that the original *Trichocereus lamprochlorus* was found by the side of the road which passes through Capilla del Monte.

.....from R.Hillmann

Trichocereus candicans is a plant that grows in the extensive plains of Mendoza and San Juan, mostly in cold locations. There are several places in the Sierra Grande in Cordoba, in the same type of habitat, where you can find this species. The *T.lamprochlorus* grows in hilly areas with a not too cold a climate. Both species grow in Cordoba, usually on steep slopes and only in rocky places, such as where a road is besides a rocky embankment where it cuts into the hillside. These rocks are overgrown with Bromeliads, grasses, and sometimes with small shrubs and are often frequented with *Lobivia aurea* and *Gymnocalycium mostii*. Such habitats are mostly very small, only a few square metres in area, and there will be only a handful of plants.

.....from R.Senior

My plant of *T.lamprochlorus* same to me in about 1956 from the Charles Darrah collection in Alexandra Park, Manchester. My chief interest lies in trying to grow cacti out of doors in this cold wet climate here in the south-east of England, to see which will survive - or even thrive. This *T.lamprochlorus* was put out of doors and it came through one winter when the temperature fell to minus 10°C, but it expired in the following winter.

.....from H.Middleditch

As observed above by R.Hillmann, *T.candicans* can be found growing in cold locations such as the plains of Mendoza and San Juan, whereas *T.lamprochlorus* grows in a not too cold a climate. There are also various reports above, of sightings of the latter species, which are only from locations which lie at a relatively higher altitude than the plains, which are likely to clear of the winter season inflow of cold polar air which by its nature will follow the plains and not climb more elevated ground (see *Gymnocalycium stuckertii*).

Consequently it is hardly surprising to read of the experience of R.Senior in trying one of these plants out of doors for winter.

.....from R.Hughes

But the expiry of the plant tried out of doors by R.Senior will hardly be surprising since the winters in this country are not only cold but also wet, whereas in its natural habitat the winters are more likely to be dry.

.....from F.Strigl

The picture in K.u.a.S. 49(4)1998 of the *T.candicans* in my collection must certainly have suffered 0°C on at least one occasion, but here in Austria we have the benefit that the cold winter air is very dry. Since being exposed to the low temperature the plant has not become damaged and has now put out a flower.

.....from R.Samek

Travelling from Uspallata to Mendoza city, we stopped at some 15-20km from Uspallata, possibly at about 1800m altitude, and again about 15-20km before we reached Potrerillos, at about 1500m altitude. At both stops we saw large mats of what we took to be *T.candicans* which were some 1 - 3 metres in diameter of closely-packed stems which would be not more than 25-30cm high.

Previously I had only been told of seeing these plants growing as clumps of a few relatively tall stems with each stem being clear of the adjacent stems.

.....from K.Gilmer

Between Mendoza and Uspallata we came across a compact cushion of *T.candicans* with over fifty heads, each head being about 12-15cm. in diameter and about 20-25cm tall, all heads somewhat similar in height. The plant grew on fairly level ground which was made up largely of sand and stones with patches of humus in places. The base of the cushion was covered in sand.

.....from G.Charles

Going north from Mendoza city on the way to Villa Vicencio we came across some big clumps of *T.candicans* with short stems which were growing on slatey rock. We saw more of these plants in the vicinity of Villa Vicencio at about 1800m. altitude.

.....from R.Hillmann

In the mountains at a place called Agua de Pinta, which is near Zonda in Prov. San Juan, at 2300m altitude, we came across *Trichocereus candicans* and *Lobivia huascha*, as well as hybrids between the two, growing on a rocky slope in company with *Soehrensia formosa* and *Tephrocactus darwini* with little in the way of accompanying vegetation other than grasses. The *T.candicans* grew in the form of very flat cushions of up to about one metre across.

.....from H.Middleditch

Would this cushion form be the effect of growing at the lower temperatures associated with the higher altitudes of the eastern slopes of the Andes in this part of Argentina?

.....from H.Kallenowsky

Starting off from Uspallata one morning, at about 2000m altitude, we saw snow lying on the surroundings including on large plants of *Soehrensia*.

.....from G.Charles.

At GC220 at some 7km west of Manzano Historico we saw a fresh snow fall on plants of *Soehrensia formosa*, *Pyrrhocactus strausianus*, and *Maihuegniopsis ovata*.

.....from H.Middleditch

On the basis of the above observations regarding being able to distinguish between these two species in habitat, it now appears to be quite reasonable to say that these two names are not synonymous. But they are separated not just by physical features, but more importantly by the preference of *T.lamprochlorus* for a less cold winter climate and the ability of *T.candicans* to survive cold but probably dry winters.

DID WE FIND A PTEROCACTUS? From B.Henshaw

On our trip to Argentina we stopped to make camp just to the north of Uspallata, which is on Route 39 to the north of Mendoza, at 2700m altitude. The surrounding area was nearly flat, quite extensive looking north to south and a few km wide between the mountains rising at either side. It was without any tall vegetation but covered throughout by scattered bushes of up to about a yard high - mostly somewhat shorter - which were barely a yard apart in places but usually a few paces apart from each other. The ground was stony, consisting of gravel with stones that were occasionally of tennis ball size.

This was where we found *Puna clavarioides*, quite by accident as we actually camped right on top of one! We spent a little time searching for these plants and probably saw between 30 and 50 plants on an area covering a couple of acres. They had heads which stood barely an inch above the ground, of a colour which merged into their stony background. They had a saucer shaped crown with a thickened margin. Quite a number of heads displayed a wavy margin - even to forming a figure eight. We thought at first that these might be a cristate form. We were fortunate in finding some plants in fruit, which we harvested and brought home. The seedlings are still small at three years old, with just the one head.

There were a few other species of cacti around, but none of them were plentiful - a *Neoporteria* and more *Tephrocactus*. We also found a plant with three short stems, which were somewhat thicker at half height than at the top or bottom. They were of a dark grey-green colour with only a few well-spaced areoles, each with a few short, fine spines, none of which pointed upwards. The tallest stem was about 50mm high and nearly 20mm in diameter. The stems looked as if they had been nibbled by some animal. At the time we were unable to identify the plant, but once back at home, enquiries revealed that it was a *Pterocactus*.

.....from K.Gilmer

Near Tocota in Prov. San Juan we found *P.reticulatus* and *P.gonjiani* growing in exactly the same habitat. At this location it was very easy to distinguish the two species from each other, so we could easily attach a name to whichever plant we found. The *P.reticulatus* had inverted egg shaped stems and *P.gonjiani* had short cylindrical stems. But at Uspallata, which Kiesling quotes as the habitat location for *P.reticulatus*, the plants were not very homogeneous and many of them looked like an intermediary between the two species.

.....from J.de Vries

On our way from Uspallata going north towards Berros, we made a stop on a wide open plain. There was very little in the way of vegetation to be seen – it gave the impression of being almost completely bare, stony ground. The clumps of *Tephrocactus glomeratus* were fairly obvious but certainly not as large as in other habitats where they can reach over a metre across. Far from obvious were the *Puna clavarioides*. There were only occasional clumps of grass, but on taking a closer look at the ground we saw what looked like a few sticks of dried up herbs here and there. And then we found some short stems of *Pterocactus reticulatus* of up to only 4 to 5cm long, standing up out of the ground, with only one segment above the ground. On looking round, there were not many of them to be seen and only a few of them were in flower. The flowers were about 6 cm Across but did not open wide but held their petals more or less vertical.

.....from E & N.Sarnes

Looking at pictures of *Pterocactus* in habitat one can get the impression that they are growing in completely bare surroundings, but they almost always grow in company with some other vegetation. This usually consists of small shrubs and grasses. Sometimes the *Pterocactus* even hide in their shade.

.....from H.Middleditch

My own *Pterocactus tuberosus* will only produce stems that are barely pencil thickness, so I am quite surprised to hear that the *P.reticulatus* seen in habitat by B.Henshaw had stems which were as thick as 2cm. Is this sort of stem thickness to be found on *Pterocactus* in habitat but not in cultivation?

.....from A.Johnston

My own *Pterocactus* have stems which range from those with stems of less than the thickness of a pencil, to others of over an inch in diameter. But not all the specimens of each species are the same stem thickness – the thinner ones, often growing on newly rooted down cuttings, can be only half as thick as the thickest ones, or even thinner. The thickest ones are:- *araucanus* 22mm, *australis* 20mm, *fischeri* 20mm, *gonjiani* 15mm, *hickenii* 25mm, *megliolii* 10mm, *skottsbergii* 25mm and *valentini* 12mm.

.....from E & N.Sarnes

In both habitat and cultivation we have seen *Pterocactus* with stems that reach 20mm and more in diameter. A form of *araucanus* – which we call *conoideus* - is one of these plants, but also *P.hickenii*. For example the plants from Chile, and *P.fischeri*, especially the forms that resemble *Toumeyia papyracantha* can reach up to 3cm. diameter stems.

.....from C.Pugh

On the very first day of our visit to western Argentina, we set off from Mendoza going north along the foot of the Andes and made a stop roughly half way to Villa Vicencio. This was an arid, sandy area, with very little in the way of vegetation to be seen other than waist high bushes. It was here that we found a scattering of *Pterocactus*, mostly out in the open but also growing under the bushes. Many of them had a swelling at the top of the stem, although this was not always very obvious. We took this swelling to be a sign that the plants had set fruit. None of these fruits had split (late November) and we took them to be unripe. We decided to bring some of this unripe fruit home with us. Back home, on opening the bag containing the fruit, it gave me the impression that a cap had come off the first fruit that I looked at. And then I thought that there must be quite a few more fruit caps inside the bag, but in fact it was full of seed. We saw *Pterocactus* at four other stopping places on this trip, but only at this first stop did we find any *Pterocactus* in fruit.

About half of this seed was sown, laid flat on a peaty compost with a covering of eighth inch grit, and germination was quite good.

.....from J.Lambert

Seeds of *Pterocactus* are of course built to be scattered by the wind. The only chance of collecting them in habitat is to find a fruit still unopened. I do not think that the fruits will last from one summer to the next, and indeed the flowering seemed to be over on the plants which we found bearing fruits. Flowering time for *Pterocactus* in habitat is indeed from the end of November to the beginning of December, a little later in Patagonia than further to the north. Flowers were seen on *Pterocactus* at Llanos de Chica on 23rd November, at Rio Malargue on 28th November, and on Serra de Portezuela on 2nd December. From what I observe in cultivation, plants may produce a limited number of flowers within a short period of time; they do not seem to spread their flowering period over any considerable length of time.

.....from E.& N.Sarnes

We have been in the area of Uspallata (to the NW of Mendoza city) several times and seen *Pterocactus* growing there. The stems are an inverted egg shape and the fruit looks very similar in shape and size to the stems.

.....from J.Chvastek, Cactaceae etc., 2008

On the last day of our visit to Argentina, in December of 2000, we made a stop near Caucete, not far from San Juan city, which was occupied by low hills. There were plenty of *Tephrocactus aoracanthus* and *Echinopsis leucantha* there. Our next stop on our way to Mendoza was on a flat expanse of loamy alluvium with bushes growing on low hillocks. Here we found a population of *Pterocactus tuberosus* under the low overgrowth of bushes. These *Pterocactus* were carrying fruits from which seeds were beginning to fall.

It is typical of the genus *Pterocactus* that they flower in early Spring. In nature, segments develop a terminal flower and after fertilisation develop seeds in the apical part of the stem. When ripe, the fruit splits and releases flat winged seeds of about 12mm across the wing. In each fruit there are usually about fifty seeds, which in the wild are scattered by the wind and rain. After the ripening of the fruit, the whole segment withers away. In the next vegetative season, new segments grow from the tuberous base.

.....from M.Kurka.

The size of the fruit on *P.tuberosus* will depend upon the quantity of seeds that it holds, which means how well it was pollinated. In previous years the flowers on my *P.tuberosus* were pollinated just by chance by insects, as I only had one flowering clone of a plant from a particular origin. The number of seeds in any fruit was 20 or less, arranged in a regular column, one on top of the other, the fruit being just a bit thicker than the stem. However, this summer I flowered several clones of *P.tuberosus* from the same locality in Mendoza and pollinated them deliberately with a paint brush, The resultant fruits were just like those in the “Cactaceae etc.” pictures, being about 20mm in diameter on stems 8 to 10mm thick. They contained 50 seeds or more and these were arranged rather irregularly, filling the fruit tightly so that when released from the fruits, the seeds were often bent.

.....from G.Charles.

From our stop to the south of Villa Vicencio, I was able to bring back with me one fruit off a *Pterocactus tuberosus* which was unopened when it was collected. It was still unopened when we returned home on 13th December but in early January the top of the fruit split open, to reveal the seeds stacked neatly in a pile.

.....from K.Preston-Mafham

A trip was made to parts of Patagonia in the middle of December. The peaks of the Andes were covered in snow and at their foot we found a great many *Maihuenia*; there were hundreds of ripe fruit on these plants, but only one of them was in flower. There were black swans to be seen on the Laguna Blanca, between Neuquen and Zapala. There were lots of *Pterocactus* to be seen, but only growing in sand – it may have been *P.hickenii*. Evidently the fruits would root down and form new plants, although the fruit does look rather similar to pieces of the stem. Quite a lot of fruit was found and cut open, but in every case there was some mushy pulp between and around the seeds. It was very windy out there – every afternoon the wind would get up and quickly become forceful. It would blow the dust up off the ground into the air and whip it into ones eyes, making things really unpleasant.

.....from J.Lambert

The idea that a fruit from *Pterocactus* would root down does not seem to be very likely.

.....from E.& N. Sarnes.

We have often rooted down fruits of many different species of *Pterocactus* quite successfully. It is really the portion of the stem left attached to the underside of the fruit that actually roots down.

.....from A.Johnston

All the fruits on my own species of *Pterocactus* form in a similar manner. The flowers, of course, appear terminally on the stem and it is not possible to see any real difference between the stem itself and the pericarpel of the flower. When the flower opens it is not immediately obvious if any fruit has set.

.....from E & N.Sarnes

Pterocactus do indeed usually flower apically. However, as far as we know, there exist two species with lateral flowers. One is *P.reticulatus* which never normally flowers from the apex of the main stem, flowers always appear from very short lateral branches. The other *Pterocactus* with lateral flowers is a form of *P.araucanus* – we call it “conoideus” - which can be found to the west and south-west of Zapala, in Neuquen. The original *P.araucanus* from Gualjiana, Chubut, looks a bit different and flowers from the apex.

.....from A.de Barmon

The new fruit on my *P.tuberosus* – and other species with slender stems - freely releases its seeds in July, with the top half of the ripe fruit lifting up. But my *P.australis* has fleshy fruits but even in August they are not dried out when I cut them open. It will take them between one to two years to dry out.

.....from E.& N.Sarnes

The fruit on our *P.hickenii*, *australis*, and *araucanus* does not ripen and split open with the top half of the fruit opening like a lid.

.....from K.Gilmer

The time it takes for the fruit to ripen depends very much upon the influence of the weather. When it is hot with plenty of sunshine, the fruit will ripen in 3 to 4 weeks, but if it is cool and overcast, it can take six or seven weeks for the fruit to ripen. If a fruit is opened before it is fully ripe, the seeds will stay in situ as they are not quite dry. When the fruit is ripe, the fruit splits equatorially and the lid opens. This mode of opening is similar on each species and allows the seed to escape. In Argentina I have seen mature fruit which has opened by splitting in this way. But in our greenhouses the conditions do not match those under which the *Pterocactus* grow in habitat and so it sometimes takes several months – or even into the following year – for the fruit to become fully mature.

.....from U.Eggli

The time taken by the fruit to ripen in cultivation may depend upon the species in question, but it might well be influenced by the weather and growing conditions.

.....from H.Middleditch

Do these last observations suggest that if any fruit on cultivated plants fails to dry up within a few weeks and then fails to split so that the top opens like a lid, is reflecting the growing conditions in cultivation and not the natural characteristic of any particular species?

.....from K.Gilmer.

In habitat most *Pterocactus* flower very early in the Spring, before the rainy season starts and about three or four weeks after they have flowered, the rainy season starts. This means that the seeds probably germinate fairly quickly - that is, in the same season that the plants flower. It is very easy for the seed to spread in habitat with only a little wind, but in these places in Argentina where we saw *Pterocactus* growing, there is quite a strong wind which blows every day so that it will be quite effective in dispersing the seed.

.....from U.Eggli

As far as I have seen, flowering in the lowland populations of *Pterocactus* in San Juan must be November or early December, but at higher elevations and from the south of Mendoza, flowering could be later. The fruits which I observed near Mendoza in mid January of 1995 were still closed, but seeds were ripe and fertile. In this same area I also observed an interesting plant with light yellow fruits, whose identity has not at present been resolved. In this connection, I do have difficulty in separating some of the taxa of this genus on the basis of the material that I have seen so far, and consequently my observations on fruit are not yet easy to interpret.

.....from A. Johnston

Looking at the photographs of these plants taken by K.Gilmer, they show the fruit on *Pterocactus* splitting to expose the seeds, but without the lid, or top of the fruit, breaking away. It looks as if the fruit on *P.gonjianii* is a reddish colour whilst that on *P.megliolii* is a yellowish colour.

.....from E. & N. Sarnes

Unripe fruits initially all resemble the colour of the stem of the plant. Fully ripe fruits on *Pterocacti* are the colour of a withered leaf - it could be called a rather beige or yellowish brown, but certainly not reddish.

.....from A. Johnston

I had been growing *Pterocactus* for some years which flowered regularly each year, and eventually a *P.kuntzei* set fruit, later followed by many others. Once the fruit has set it will gradually increase in diameter as the seed ripens, as the seed becomes larger than the diameter of the stem. From first noticing the fruit, or the swelling at the top of the stem on *P.kuntzei*, the fruit took three weeks to open. There was no recess on the top of the fruit representing the base of the flower remains, as would be expected, instead the top of the fruit was crowned. Eventually the fruit on my *Pterocactus* will split horizontally about half way up its height, the split extending at least half way round the fruit. After a while the top half of the fruit will swing open like a lid hinged at one side. Sometimes it is held there by the interlacing spines on the upper and lower halves of the fruit.

Once this lid is open the seeds are exposed to view, standing like a pile of plates projecting up above the walls of the lower half of the fruit. The seeds must have exerted quite a pressure on the lid as there does not appear to be enough room inside the fruit to accommodate all the seeds. When I took the *P.kuntzei* off the shelf to photograph it, two of the seeds just floated away off the top of the fruit. I think that I was fortunate to have that plant where there was no wind or draught, otherwise I might have found an empty fruit and never known that there had been seed in it. The slightest breeze would blow the seed away which suggests a quick seed dispersal in habitat. Each seed is surrounded by a very thin wing, roughly circular in outline and about 10mm across. The wings are not quite flat but have an undulated surface with small black specks. On each seed the wing has a split from the outer edge to the seed in the centre. There is a slight overlap between the two edges of the split, not a gap.

.....from K.Gilmer

It will be a few years ago since I was successful in being able to set fruit on some of my *Pterocactus*. My own experience is that self-pollination is not possible with *Pterocactus*, as fruit can only be set by cross pollination. Flowers were cross pollinated on two different clones of *P.kuntzei* and fruit was set on both of them.

.....from A. Johnston

I had quite often tried to pollinate one or other of the flowers on my *Pterocactus* but had never succeeded in getting a fruit to set. Then a terminal flower appeared on both of my plants of *P.kuntzei* which came from Scheck in Austria; one of them was a cutting from a Papsch field collection, the other a cutting from an ex-Hoffmann plant. This time I tried cross pollinating; usually the end of a stem carrying a flower will start to shrink shortly after the flower withers, but on these two plants that did not happen. Within a week the end of the stem did expand a little which made me fairly sure that it had set fruit - and indeed it had.

.....from H.Middleditch.

On the photograph received from A. Johnston of the ripe fruit on his *P.kuntzei*, with the open fruit, it is quite astonishing that the diameter over the wing of the seeds is greater than the diameter over the body of the fruit. Perhaps the wing of the seed spreads out a little as the fruit splits, or does the body of the fruit shrink slightly?

.....from E. & N. Sarnes

Especially in *P.tuberosus* and *P.megliolii* we noticed that the seeds in the open fruit looked larger in diameter than the fruit itself. This phenomenon is caused by the drying process of the seed after the fruit has opened. The wings lose their softness and expand to their final shape. When enclosed in the fruit, the seeds are soft and compressed. This effect is limited to species with a complete, broad wing.

.....from K.Gilmer

Although the photograph taken by A. Johnston of the fruit on his *P.kuntzei* shows the diameter over the wings of the seeds to be greater than the size of the fruit, this was not the case on my own *Pterocactus*. In particular, the diameter of the fruit on my *P.megliolii*, *reticulatus*, and *gonjianii* is larger than the diameter over the wing of their seeds.

.....from U.Eggli

Fruiting has occurred sporadically throughout the *Pterocactus* cultivated here in Zurich and this may

possibly have been the work of bees or other insects. The fruits are indeed usually circumscissile but often not completely, or do split lengthways in part as well. This might depend upon the water status of the plant, and I have also observed that fruits of the same plant can be thick and turgid, i.e. much wider than the stem, or meagre and flaccid i.e. about the same diameter as the stem. Although I have not observed seed lying in an open fruit, as in the photograph taken by A.Johnston, I do find it very difficult to believe that the seed diameter can exceed the diameter of the unopened fruit. The walls of the opened fruit shrivel quickly and that might be responsible for this observation.

.....from H.Middleditch

Has any of the seed from fruit which was set in cultivation been sown in order to establish if indeed it does germinate readily when fresh?

.....from P.Femenia.

Growing *Pterocactus* from seed, in my experience, yields only about 20 to 25% germination. Over the first winter the seedlings are too small to keep them for safety in the cold greenhouse, exposed to frost, but 4 to 5°C is enough. But they do not need a sunny position over their first winter.

.....from A.Johnston

Some of my own seed has been sown by pushing it vertically into the compost with a little less than half the wing exposed above the surface – these have germinated quite well. They were sown in May and by December already have nice tubers under them. Some of them seed which did not germinate in May was resown in plastic bags and germinated in early September. This shows that you should not give up too easily when *Pterocactus* seed has not germinated

.....from W.Phillips.

It is more years than I care to remember that I read somewhere that seed of *Pterocactus* should be sown by pushing it down edgeways into the compost, not by laying it flat, so that is my usual practice. On the first occasion when I grew some *Pterocactus* from seed, I used a container which would possibly be 2 or 3 inches deep, which had proved to be quite satisfactory for raising a great many other sorts of seed, but when I came to remove the *Pterocactus* seedlings from their container, I found that they had grown a long, thickish root which had curled up round the inside of the bottom of the pot. So I resolved to use a much deeper pot when I sowed any more *Pterocactus* seed.

Seeds of both *P.gonjani* and *P.kuntzei* were sown in March in deep pots. They were repotted a year later, when the seedlings had grown a rootstock of which the top half was just the same diameter as the aerial stem – about pencil thickness. The lower part of the root was not much thinner. On average, the *P.kuntzei* had a stem about 3 inches long and a root about 4 inches long, whilst the *P.gonjani* had a 2 inch long stem and a 3 inch long root. The *P.gonjani* had not yet developed its tuberculate epidermis. The most bristly spination could be felt on *P.kuntzei*, but not on *P.gonjani*.

.....from K.Gilmer

I have sown seed from my own *Pterocacti* in two different ways, by pushing it down vertically into the compost for the full depth of the wing, and by laying it horizontally and then covering it with some of the seed compost.

.....from W.Phillips

A few years ago I obtained some seed of *Pterocactus kuntzei* from Joël Lodé (Cactus Adventurers) and of *P.gonjani* from Mesa Garden. When I came to empty the resulting seedlings out of the pots in which they had been sown, I noticed that the tubers of *P.kuntzei* were quite large, and that the segments of the stems were larger than those of *P.gonjani*. I could feel the bristly spines on the *kuntzei* but not on the *P.gonjani*.

Two years later I tried stripping all the thin and straggly stems - apart from the main stem - which were arising from the top of the tuber of one of the *P.kuntzei*. It produced three new stems, two with flowers and one which produced a profusion of new shoots from its tip, rather than a bud. Another plant of *P.kuntzei*, received from R.Geissler, was similarly pruned and this, too, produced three new stems, two with flowers and one with a proliferating tip to one of the new stems.

The remaining half dozen *P.kuntzei* were not pollarded in this way and none of them subsequently produced any buds, whilst stem growth has been slow and minor. I understand that in habitat few of the stems from any one year last through the dry season, the new growth from the main stem appearing at the beginning of the following growing season. I believe that this is the clue to flowering reluctant species such as *P.kuntzei* and so I am intending to prune all my *P.kuntzei* back to the main stem in autumn. I am reluctant to do this with my other species of *Pterocactus* until they are a lot larger, so that I can root down several replacements in case they happen to be needed.

.....from H.Middleditch

Presumably this pollarding process would only be tried out on those *Pterocactus* which do tend to produce a crop of new stems each year from around the top of the tuber, and not applied to those species of *Pterocactus* which produce segment like stems as these may not display the dying-back tendency.

.....from K.Gilmer

On my own plants of such as *P.kuntzei* which tend to produce new stems each year, I do trim off all but one or two of these stems each year. They will then grow some fresh stems and nearly every new stem will produce a flower. But if I leave them alone so that they have perhaps 10 stems at the end of the second year, and perhaps 15 stems at the end of the third year, they will only produce one or two flowers.

.....from W.Phillips

When I am removing the thin straggly stems from my *P.kuntzei* I leave alone the main stem as this merges into the tuber in a somewhat tapered manner like the top of a wine bottle. But my plants have nothing like the two fairly long cylindrical stems joining the tuber to the swollen inverted pear shaped growths as on

the Kiesling drawing of a *P. reticulatus* in Chileans No.42
.....from H.Middleditch

On that Kiesling drawing there are indeed two slender cylindrical stems rising up from the tuber which terminate in what are apparently the overground growths. What brings about this difference in the stem form? Is it possible that the two relatively thin cylindrical stems are actually to be found under the surface of the ground, whilst the much fatter segment-like growth form is above ground?

.....from R.Gillman

My *Pterocactus* grow in full sun but their branches seem to become detached very easily, especially at the end of the growing season. One of these detached branches had evidently fallen down into a large pot holding an Agave, which was on the floor below the bench, where it did not receive as much sunlight. It would have been there for no more than about two years, I would think, when I discovered one day that it had not only rooted down and also produced a large tuber, but that it was also carrying a flower.

.....from K.Gilmer

When we were near Tocota in province San Juan, we dug up both a plant of *P. reticulatus* and one of *P. gonjiani*. On each plant the top of the tuber was several cm below the surface of the ground and each was connected by a cylindrical stem to the aerial growth. We did find other such tubers with their tops some 5 or 10cm under the surface of the ground and in one instance it was buried 30cm down. This was on a slope where material could have been deposited by running water and so raised the ground level.

In the greenhouse my *Pterocactus* are usually planted with the top of the tuber some 2 or 3cm below the top of the compost, so that a short length of stem can be left showing above the top of the compost. I would normally trim off all but one or two of the new aerial stems on *P. kuntzei* each year and the new growths can produce four or five flowers.

.....from K.Gilmer

The biggest tubers that we saw on *Pterocactus* in habitat were of up to 10cm in diameter, but we do know that they can grow larger in habitat, even up to twice that size. All the *Pterocactus* in my own collection do possess tuberous roots.

.....from H.Sonnermo

My plants of *P. hickenii* and *P. australis* are grown out in the open for the whole year round. Sometimes the outside temperature goes down as low as minus 20°C and also they can get covered with snow – they like being wet! And no losses.

.....from H.Middleditch

Does this suggest that *Pterocactus* grow in their habitat where the climate can be on the decidedly cold side during the winter?

.....from R.Kiesling Cold Resistant Cacti of Argentina. US C&S.Jnl Vol 58

In the western parts of the Chaco – including Mendoza, San Juan, La Rioja, and Catamarca, the absolute minimum winter temperature is minus 6°C in Andalgalá but minus 10°C in other locations. Here grow *Pterocactus kuntzei*, *Trichocereus candicans*, [others listed].

.....from K.Gilmer

I do know that *P. kuntzei* can withstand periods of severe winter frosts for several weeks here in unheated greenhouses in Germany.

.....from J.Frenguelli, Phytogeography of Argentina 1940

An extensive area of arid plains occupies the greater part of the provinces of Mendoza, San Juan, La Rioja and Catamarca, as well as adjacent parts of San Luis. The flora of these basins (which are surrounded by elevated mountain blocks) are under analogous climatic and ecological conditions. In winter the temperature drops quickly at sundown as far as several degrees below zero.

.....from U.Eggl

There is no doubt that sub-zero temperatures do occur during the dry winters at many cactus locations in the southern provinces, at least up to Mendoza. There are *Pterocactus megliolii*, *reticulatus*, and *gonjiani* all recorded from San Juan province. We also came across an unidentified *Pterocactus* in Catamarca.

.....from J. de Vries

Where we found the *P. reticulatus* to the north of Uspallata, these plants sink underground during the winter and live off their tubers.

.....from A.de Barmon

I have tried growing *P. tuberosus* outside during the winter without any protection from the rain. The result was not so good as one big plant rotted and smaller ones survived but were in poor condition and did not flower.

.....from H.Middleditch

Any other observations regarding experience of growing *Pterocactus* in cold winter conditions would be welcome.

FINDING SOME MICRANTHOCEREUS from J.C.Hughes

In early February of 2002 my visit to Brazil started in Jequié, from where we set off on a trip to Morro do Chapéu. Having passed through Icó and Brejões, We spent the morning at a couple of sites near Lagedo Bordado. At our first stop I was able to see my first *Micranthocereus* in habitat. As the main flowering season is rather later than the time of our visit it was rather surprising to find quite a few plants in flower. These plants were branching from the base, growing up to about four feet high, with spines up to about 3cm long, with pink

flowers with white centres in a thick bunch in the wool of the pseudocephalium close to the top of each stem. This flowering zone appeared to commence at about 8 inches above the base of the each stem. I was told that this species was related to *M.polyanthus*.

Late in the afternoon we were at the Ferro Doido waterfalls, some 18km E. of Morro do Chapéu, where we explored the plateau on which there were some magnificent plants of a *Melocactus oreas* variety. There were plants of *Micranthocereus purpureus* growing both on the upper plateau above the waterfalls and on ledges or in crevices on the rock walls above the falls. One rather splendid population grew on a rock stack which was visible from the falls - it would have needed a mountaineer to climb that stack to be able to get close to them! At this stop the *Micranthocereus* grew up to about five feet tall with 9cm thick blue-green stems, clothed with short, pale yellow spines. By about 6p.m. the flower buds were beginning to elongate and show the purple colour within, the flowers extending to about 1.5cm long at that time. On the plateau there were dwarf bushes, grasses, and herbs growing scattered around, the *Micranthocereus* among them. Although this was the rainy season, there was still some clear rocky pavement between this vegetation so the rain could run off quite quickly.

The next day we travelled to some 20km to the west of Morro de Chapéu, within a National park. This site had a population of *Melocactus albicephalus*, which is a hybrid between *M.ernestii erythracanthus* and *M. glaucescens* and it is the dominant plant here. It was here that we found a form of *Micranthocereus flaviflorus*. There was quite a variation in spine colour on these plants, with shades of yellow to brown. These plants grew up to about a foot and a half in height, branching from the base, the typical pseudocephalium starting at about 8 inches from the base of each stem. There were two areas here where the *Micranthocereus* grew, both on sloping rocky terrain with an interconnecting pathway, passing through more scrubby vegetation including dwarf trees. Both areas were well drained and much of the accompanying vegetation, which was relatively sparse, would die back in the dry season.

The final site that we visited was at the foot of Cerro Morrao the "large hill". At the top of the hill the predominant plant was *Micranthocereus purpureus*, looking much as it had done at Ferro Doido, but here on gently sloping ground. Then I went off on my own to Seabra, where I had been told that *M.streckeri* could be found, but I did not find them, having chosen the wrong hill. Then I set off on foot from Lencois (south of Seabra) and after a long walk I caught a glimpse through the trees of a cactus on a rocky outcrop near the river. There on the black rocks I found my last *Micranthocereus*, which looked like *M.purpureus*, but with generally thinner stems (up to about 5cm. thick) with more of the body visible - perhaps because it had fewer ribs. Because of the nature of the terrain at this spot, I was unable to get close to them.

In 2007 I made another visit to Bahia with the intention of revisiting some of the locations seen in 2002, in order to get better photographs of certain plants. I arrived in Salvador on 12th January, a full month earlier than on my previous visit, but still within the rainy season, from where I set off to go to Morro do Chapéu. First I went to Lagedo Bordado where I once again saw the *Micranthocereus* that I was told was close to *M.polyanthus*. These plants were now in full flower. At the same site we saw *Stephanocereus leutzbergii*, *Pilosocerus gounellei v. zehntneri*, *Leocereus bahiensis*, *Harrisia adscendens* and *Cereus jamacaru*, which I think are all night flowering.

Another visit was made to the site near Lencios that I had visited earlier and on this occasion I was able to climb up to the black rocks and photograph the tall *M.purpureus* and the much shorter *M. streckeri* with its many compact stems which would be about 35 to 40cm. tall. [picture on front cover]. After a visit to Lencios, then came a long and tortuous journey to Bom Jesus da Lapa. We travelled further, crossing a river at Porto Novo. This time we stopped by a farm and the natives allowed us to climb the rocks above their little home. Almost immediately there were *Pilosocerus gounellei v. zehntneri*, which typically topple over as they grow and then sprout other vertical arms. But about twenty feet further up the slope I found some beautiful examples of *Micranthocereus dolichospermaticus*, some of which were up to nine feet tall, growing in bare rocks on the slope. Their pseudocephalia started at about knee height. There were no obvious flowers.

.....from A.Hofacker

We have also been to the site near the Ferro Doido waterfall and the *Micranthocereus* to be found growing there is probably *M.purpureus*. It does indeed grow to more than two metres high.

.....from H.Middleditch

In the article on *Micranthocereus* by Heek and Crieking in K.u.a.s. 38.9.1987, they give a stem length of 70cm for *M.streckeri* and also a length of 120cm as quoted by Buining & Braun. Could the 35 to 40cm. lengths, quoted above by John Hughes, be due to the effect of this particular plant growing in a pocket of soil in otherwise solid rock?

.....from A.Hofacker

The length of the stems on these plants could depend on where they grow. If they grow in an open landscape in full sun, they will be more depressed. If they grow more in shade or between shrubs, they are more slender and longer. It is not unusual to have plants varying in size.

.....from W.van Heek and W.Strecker K.u.a.S 51(1) 2000

The genus *Micranthocereus* created by Backeberg in 1938 was described as "upright branching plants up to 1.25 metres high". Their genus name *Micranthocereus* originates from the Greek words *micros* = small and *anthos* = flower. The species *M.polyanthus* (Werd) Bkbg originates from a plant found near Caetité in Bahia and first described as *Cephalocereus polyanthus*. Ritter named the type locality as Brejinho da Ametistas, about 25km south of Caetité, even though a larger population of these plants lies only a few km from Caetité. The main road from Brumado to Caetité soon passes through an area where the white quartz sand is mined and *M.polyanthus* grows only on this white quartz sand. At the boundary of this opencast mining one can still find

hundreds of *M. polyanthus* growing up to about one metre tall. The cephalium always faces to the north-west. Numerous flowers with red exteriors and white interiors rise out of the markedly woolly flowering zone. Occasionally plants of *Pilosocereus pentaedrophorus*, forms of *Melocactus robustispinus*, and *Pilosocereus pachycladus* are also to be found here. In the vicinity of the Caetité cemeteries, there is a rock formation with hollows full of quartz sand in which isolated *M. polyanthus* grow. Also here are *Melocactus amethystinus*, *Melocactus macrodiscus*, and *Pilosocereus pachycladus*.

.....from W. van Heek & W. Strecker, K.u.a.S. 51 (7) 2000

We were able to see *Micranthocereus violaciflorus* in its habitat as we were approaching Salinas in Minas Gerais. On an open landscape on a high ridge next to the road were scattered patches of rock between grass and low bushes. This *Micranthocereus* here, had slender columns up to about 1 meter tall and only 4cm. thick. Noticeable was the dense white spination, the creamy white hairs and the fox-red colour of the longer bristles in the flowering zone, which formed a pseudocephalium that could extend to as long as 30cm. The tubular red flowers were very succulent and often only a few in number, irregularly disposed along the pseudocephalium. We were able to witness the shining humming birds visiting the flowers on the search for nectar, and presumably also pollinating them. From time to time the habitat was visited by bush fires, as was evident from the charred remnants of plant remains. From the remnants of the roots there grew immaculate new stems.

.....from W. van Heek & W. Strecker. K.u.a.S 53 (10) 2002

Because *Micranthocereus uilianus* should grow in the vicinity of the tiny hamlet of Limoeiro, we ventured into this extremely remote corner of the east Brazilian province of Bahia on two occasions. We were also successful – although with great difficulties. Our first visit was a minor catastrophe. It was not until late in the afternoon that we reached Limoeiro, a spot with a handful of dilapidated huts, deeply isolated in the bush. Quickly we found a diamond collector who knew the place where these plants grew and would guide us there at once.

There was about 15km to go through the bush. Here and there the road was no longer to be seen and we had to set to and with machetes to cut a way for our vehicle. Eventually there arose in front of us a steep climb and the impending darkness urged us to hurry. Only two of our party made the lengthy ascent and it was only a few minutes before dusk that we reached the desired plateau. After some searching we fairly quickly found the sought-after *Micranthocereus uilianus*, growing together with *Discocactus zehntneri* v. *araneispinus* HU 440.

Two years later we undertook a new excursion there. Late in the evening we arrived at Limoeiro where we engaged our same guide. On the following morning we once again had to hack a way for our vehicle through the bush, reaching the foot of the plateau at about mid morning. Then we needed a rest before setting off to climb up to the plateau, as we were not accustomed to the high temperatures. On the way we passed some fine blue *Pilosocereus* and forms of *Melocactus zehntneri*, finally reaching the plateau. Until now, few Europeans could have witnessed this extraordinary habitat, to which access is still difficult.

Growing here in white quartz sand was *Micranthocereus uilianus*, branching from the base, stems growing up to 60cm. tall. The young stems had a handsome blue epidermis. The numerous projecting spines were up to 15cm long, standing needle-like away from the body and going grey with increasing age. The flowering areoles were from a white cephalium with long hairs, typical for *Micranthocerei*. The numerous small flowers were pale red externally and creamy white internally and differ from those of *M. flaviflorus*. The flowers are no larger than 14mm long and 6mm. broad but there are often thirty or more crowded together.

On this same spot there also grew *Discocactus zehntneri* v. *albispinus* with its spider-like spination, drawn down flat into the snow white quartz sand. Some km away, on bare flat rocky hills there grew *Discocactus zehntneri* v. *araneispinus* in larger numbers, confined however to a few cliffs.

The *Micranthocereus uilianus* is of interest to cactophiles as it flowers fairly well at 25cm tall and at the end of the season displays a real picture, the flowers at one side of the crown, facing in a SW direction. In cultivation, a winter temperature of 10°C or more is preferable.

.....from A. Hofacker

In my opinion *M. uilianus* is only a local form of *M. flaviflorus*, because it is only distinct from *M. flaviflorus* or *M. densiflorus* on account of its flower colour. In my experience, *M. uilianus* grows in sand, as does *M. polyanthus* ssp. *alvinii*, whereas *M. polyanthus* can be found growing in gravel or between rocks. Growing on Bambui limestone the only species I have found is *M. dolichospermaticus*.

.....from B. Bohle

I have found *M. hofackianus* growing only in sand, but *M. flaviflorus* growing either in sand, in quartz gravel, or gravel and sand.

.....from W. Heek & W. Strecker K.ua.S. 53 (5) 2002

Micranthocereus streckeri ... the pseudocephalium faces west to northwest.

.....from H. Middleditch

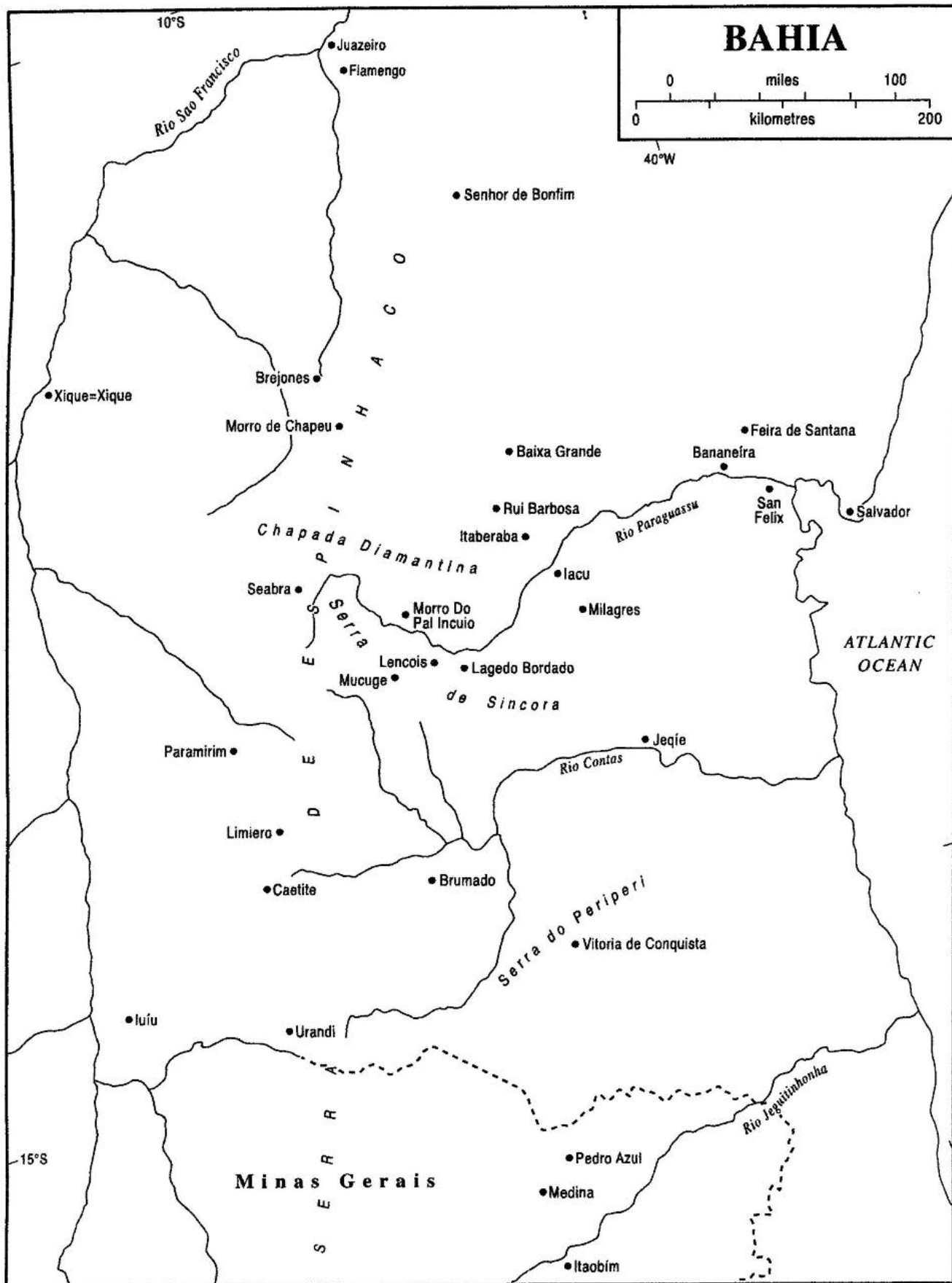
So do the cephalia on *Micranthocereus* face in different directions as between one species and another?

.....from F. Vandenbroeck

To me the cephalia on *Micranthocereus* seem to be directed towards the sun i.e. in a northerly direction.

.....from E. Kluge,

During our visit to Brazil in 2010 we travelled inland from Salvador on the coast to the eastern margin of the Chapada Diamantina, to Mucugé and Andaraí. At either side of the Rio Pinhas the adjacent sloping plateau was a reddish sandstone, very largely without any vegetation cover. The ground water appeared to us to emanate from between the layers of strata and form a small stream that flowed down into the Rio Pinhas. In places the plateau was covered with rooted down vegetation of up to about 10 to 12cm tall, which probably occupied barely 5% of of the area of the sloping plateau. In the patches of ground cover grew a variety of shrub and bush vegetation, including *Micranthocereus purpureus*. Isolated blocks of rough sandstone stood



about 1 to 2m. above the general surface level, their axes lying parallel to the ridge of the adjacent Serra do Capa de Bodge.

The *Micranthocereus purpureus* were not only growing in the sparse patches of bushes and shrubs at the edges of the more thickly vegetated areas, but they were also to be found established in small vertical crevices in the rock and in the horizontal gaps between layers of strata. Young plants of *Micranthocereus* - some only 1cm tall - were seen together with Bromeliads and Orchids. They grew on one side of the small isolated vegetated patches on solid stone and also spread into relatively small fissures in the sandstone that are set transversely to the slope so that the rain water can easily run into them.

Under the dense, pale spination, the epidermis is blue-green. The side-facing cephalium carried the remains of the previous year's fruit as well as new flower buds. The stems on these *Micranthocereus* were only exceptionally up to a height of 150cm. The tallest stems were clearly the oldest ones on the multi-stemmed plants which branched from the base. They were blackish, possibly a result of the occasional burning-off of the vegetation and thinner than the younger branches.

We also saw these *M.purpureus* elsewhere in Chapada Diamantina, at Morro do Pal Incuio and at Riachiao. I have a photograph of these plants which was taken in the late afternoon, shortly before sundown, with their cephalium facing the setting sun. As their shadow of these plants in my photograph lies in the opposite direction to the cephalium, the cephalium would be facing towards the west.

.....from F.Vandenbroeck

During my travels in Brazil through the states of Bahia and Minas Gerais, I saw *Micranthocereus* on several occasions. These plants are usually to be found on flat or gently sloping areas of solid rock, of greater or lesser extent, which appear haphazardly in the midst of tropical bushland – sertao or caatinga. The solid rock may often be largely or partially covered with slabs of rock or with lumps of rock. In places it can be covered with patches of sand. There are usually lots of crevices or pockets in the solid rock, which are often filled with water after a rainfall, so that it is not unusual to see *Micranthocereus* plants actually standing in water. As far as I know, these rock formations seem to consist of Bambui limestone. At these exposed habitats there can usually be a display of a large variety of accompanying vegetation, such as *Melocactus*, *Euphorbia*, *Pilosocereus*, *Opuntia*, *Brasilicereus*, *Discocactus*, bromeliads, orchids, ferns and all kinds of herbs, bushes, and smaller trees.

Some of these habitat locations are quite extensive and others are of a far more limited area and they are usually in the midst of the Sertao. Some of them were visible from the road, others could be spotted at quite a distance away. It was often a struggle to reach some of those places and we had to make quite an effort to find our way through the Sertao and over rough and often rocky ground in order to reach them. Then it often turned out that these open areas were places where cacti occurred but not necessarily any *Micranthocereus*.

Near Porto Novo, west of Bom Jesus da Lapa on the Rio Corriente, where *Micranthocereus dolichospermaticus* grew in crevices in the solid rock, the site was grazed by donkeys, which had caused some damage. They seemed to like to eat the cephalia off the *Melocactus*. This caused the cephalia to sprout and form several heads. At the time we visited these areas, the very extensive bushlands were largely in the course of being transformed into large, monotonous fields for the cultivation of sisal (agave fibre). This devastation of the natural surroundings can be compared with what has been happening in the Gran Chaco in Paraguay and Bolivia where huge areas of natural bush are transformed into cattle raising areas or for the culture of “jojoba” oil plants.

It was in July of 1989 that we found *Micranthocereus streckeri* in a rocky habitat near Seabra, on the northern verge of the Chapada Diamantina. This was the only occasion when we found two species of *Micranthocereus* growing together at one locality - both *M.purpureus* and *M.streckeri*. They grew in company with bromeliads and flowering specimens of the so-called “Canela de ema” (a species of *Vellozia*) a very typical and frequent plant on the Chapada Diamantina. We made a second visit to this same location in December 1995 and much to our surprise we could no longer trace *M.streckeri* there. On the other hand, however, we were so lucky as to find a nice population of *Melocactus paucispinus* in the vicinity, plants which we did not see on our earlier visit.

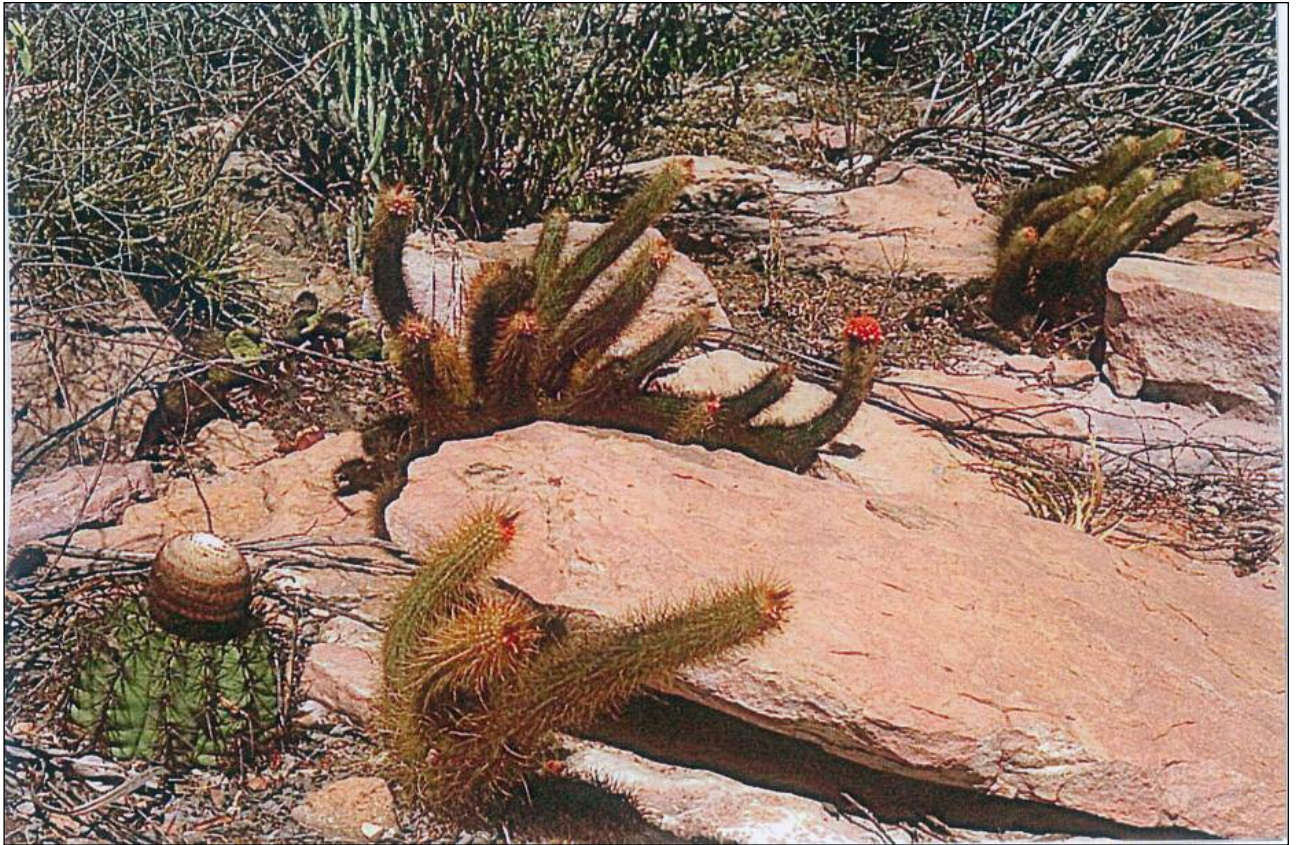
These *Melocactus* grew on flat, sandy grounds, and it was in July 1989 that we unexpectedly and surprisingly came across *Micranthocereus* growing in a flat, sandy plain to the south of Morro do Chapéu. It was accompanied by coarse grasses and small shrubs, together with *Stephanocereus leutzelbergii*. Cows were grazing here. We also found this same *Micranthocereus polyanthus* near Brejinho das Ametistas in southern Bahia growing on flat, sandy surfaces, so it seems that this species prefers to grow on a flat sandy plain overgrown with grasses and shrubs as its habitat.

.....from P.Hoxey

In summer my *Micranthocereus* are kept in the greenhouse, but in winter they are brought into the conservatory which is attached to the house – which has its own heater, controlled to 10° to 12°C by a thermostat, because the greenhouse is kept at only 5°C over winter. My *Micranthocereus uilianus* were grown from Steven Brack seed of HU 439. Five of these seeds germinated and grew on, but two of them later lost their roots, although I was able to re-root them. All have just the one single stem, which are between 10 and 15 inches tall. The three plants which did not lose their roots now have a cephalium which is about 8cm long, near the crown, and this year all of them have produced flowers in autumn. I also have a *Micranthocereus densiflorus* HU 221 which is now 25cm tall and just starting a cephalium. It has a few buds now, at the end of December.

....from S.Ratcliffe

The flowers on *Micranthocereus* tend to appear at one side of the stem and the flower bearing areoles do display spines which are longer than those on the non-flowering areoles. So they form a vertical band of



Micranthocereus flaviflorus West of Morro do Chapéu, Bahia state



Micranthocereus purpureus Lencois, Bahia state

Photos: F. Vandenbroeck

projecting spines, but I would not feel inclined to describe it as a cephalium. On my own plants the stems now flower regularly each year. One of the younger stems on the original plant has now reached the requisite height and is also producing flowers. New stems grew again from the base of the old plant, but no new stems were ever formed from around the top of the broken stumps. Flowering usually takes place in the middle of winter and is quite prolonged, maybe extending up to a month or more, with the lowest flower buds opening first and so on. The flowers appear to be normally borne by last year's growth, maybe by this year's also but to a lesser extent. Perhaps the December flowers on last year's growth and the January flowers on this year's growth?

The *Micranthocereus* are kept along with the *Discocactus*. Typically, the aim would be to maintain 50°F minimum, but in practice the odd night at 40°F or below seems to do no harm. All my plants are allowed to dry out in September/October until the following March/April. All the *Micranthocereus* spp. are watered well about once a week in the summer, as is the rest of my collection. Luckily I do not seem to have had any problem with any of the stems shrivelling up, even with those *Micranthocereus* seedlings which are really in sad need of potting up.

.....from W.van Heek & W. Strecker K.u.a.S. 51 (1) 2000

The cultivation of *M.polyanthus* presents little difficulty. Grafted on *Eriocereus* stocks, overwintering at 12°C they produce flowers after a few years at 25cm, tall.

.....from A.Hofacker

Micranthocereus violaciflorus is one of the most difficult ones to grow among those that I am familiar with. These plants do not make offsets – most plants are solitary. Their habitat is similar to others but they grow more in company with, and under, bushes and shrubs. Others grow in company with few grasses and lots of stones. I do not think that dying off of old stems in cultivation is unusual - I think it is the natural way for these plants to rejuvenate. I do not let them dry out for any length of time in winter. We have been on tour in Brazil in winter and there was a lot of rain at the time we were there, with day temperatures of 25 to 30°C. Sooner or later some stems will die off in cultivation but it can be delayed by giving them a lot of water. In any case it is not a disaster as new stems are always appearing.

JUST TRACKS? ANY GUANACOS? from H.Middleditch

In Chileans issue No.70 there was a photograph taken on the ascent of the Quebrada Remedios in which animal tracks could be clearly seen on the hillsides and these are commonly referred to as Guanaco tracks. However, most visitors looking for cacti in this area report that there was no sign whatever of any Guanacos, so are these animals really responsible for these tracks?

.....from F.Kattermann

I have both heard and seen Guanacos in the Quebrada Remedios.

.....from R.Ferryman

There are numerous Guanaco trails throughout this part of northern Chile. But it is difficult to know how current they are. I have seen these Guanaco tracks above El Cobre and I also followed them for part of the way when I first walked from Izcuna towards El Cobre. The Guanaco were hunted almost to the point of extinction in the northern areas but they have been reintroduced and are fairly common nowadays around Esmeralda. I have also seen them near Iquique in the very north of Chile.

.....from N.Rebmann

When I have been travelling along the coast road in northern Chile I have not seen any Guanacos between Izcuna and El Cobre. However, I have seen them further to the north both at Iquique and Arica, in the mountains.

.....from R.Stanik

I have seen two or three Guanacos on the hill above Paposo but I am far from certain whether they were Guanacos or Vicunas. Surely they were one of the Llama species.

.....from P.Hoxey

The photograph in Chileans No.70 is a good example of the tracks left by Guanacos, and these tracks are quite often seen in this part of Chile. They are most obvious in very dry areas most probably because of the lack of vegetation but also because they are well preserved by the dry climate. With a near total lack of rainfall, once these tracks have been made they will persist even if the animals are no longer around. I have seen tracks as far north as Iquique where the Lomas vegetation is now completely dead above the town and all the way south to El Cobre near Antofagasta. I do not think that Guanaco are living in this region now but they have been hunted in the past so that must have been a factor too in their demise. I suspect that the tracks may have been made decades ago. Once you go south from El Cobre the vegetation of the coast becomes a lot more healthy and the tracks less obvious, but in this region the Guanaco can still be found. The most northerly that I have seen them is on the high mountain ridge between the valleys of Botija and Izcuna. The vegetation is in good condition there, with healthy *Eulychnias* covered in lichens, which I believe is food for the Guanacos. At this location we only saw one animal at a distance but we did find evidence of recent droppings so I suspect that there must be a small population in this area. Further south, between Taltal and Chañaral, and especially in the Esmeralda area, the Guanaco are quite common now and on both my visits to this area I have seen these animals in small groups.

.....from H.Middleditch

There are numerous references in the Schulz Copiapo book to Guanacos eating various cacti in this part of northern Chile.



Micranthocereus purpureus near Mucugé, Bahia state

Photo: E.Kluge



Micranthocereus polyanthus near Caetite, Bahia state

Photo: B.Bohle

The Chileans Picture Library

Previous Chileans issues have included a table of those members who were good enough to have their names and addresses against a specific genus so that they could be contacted by any of our members with that interest. However, the listed members now advise that no such contacts or enquiries have been made. This provision was initially based on slide holdings and then moved on to CDs but it has been observed that it is now not uncommon to access the internet to view pictures of cacti and in consequence of the current situation this listing is now discontinued.

CONTENTS No.71

The source of <i>Gymnocalycium stuckertii</i>	G.J.Swales	41
Finding two sorts of <i>Trichocereus</i>	F.Vandenbroeck	50
Did we find a <i>Pterocactus</i>	B.Henshaw	57
Finding some <i>Micranthocereus</i>	J.C.Hughes	62
Just Tracks? Any <i>Guanacos</i> ?	H.Middleditch	68

The Chileans

Hon. Organiser H.Middleditch, 5 Lyons Avenue, Hetton-le-Hole DH5 OHS
harry.middleditch@hotmail.co.uk

Hon. Treasurer R.L.Purves, 19 Brocks Drive, Guildford GU3 3ND

Hon. Secretary P.C.Bint, 313 Manchester New Road, Alkington M24 1NR