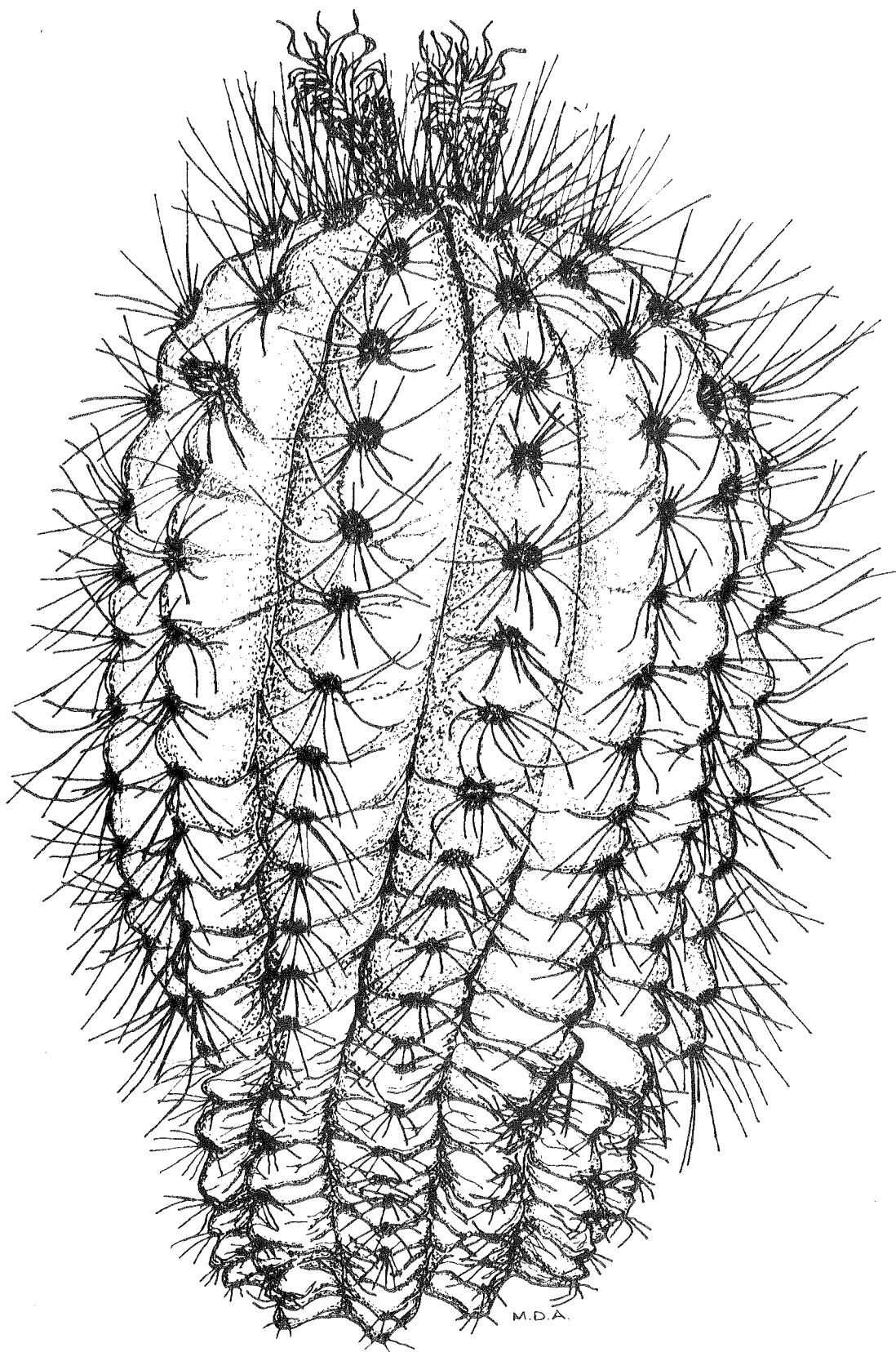


# THE CHILEANS '75

VOLUME 8 NUMBER 30



NOTOCACTUS MUEGELIANUS

The plant which appears in the sketch on the front cover was purchased from among a batch of imports seen at Clive Innes' nursery. There were quite a few plants on the staging that were about this size and shape. I hadn't seen plants with this name previously, but found no particular difficulty in getting it established. It has produced a number of flowers at intervals from May to November.

The plant is 170 mm (7") high; at soil level it is 70 mm broad and 110 mm broad at its widest. There are 13 ribs, about 9 mm deep, with areoles 12 mm apart; the 12 radial and 4 central spines are an orange-red colour, about 12 mm long. The flowers open small and dark, grow larger and lighter as they age, or so it seems, the petals becoming 30 mm long, more or less a pale orange colour and the stigma is the same colour. In November the flowers stay open for three or four days.

Comments on *Noto. muegelianus*

..... from D. W. Whiteley

"Not long before your visit, the Nottingham Branch had been on an outing to Blackburn's nursery. There was a good number of plants of this species in bud which were for sale and I think that most people on the coach must have bought one; I purchased one myself. As you could see, the flower does not seem to differ greatly from that of *N. horstii*, being a similar apricot colour. The stigma lobes are a deep apricot colour and quite long - about 5 mm in length; the style is also a deep apricot colour."

..... from F. Wass

"My plant is one that was purchased earlier this year at Blackburn's and it is in flower now; the flower is a reddish-orange colour. The similar-looking flower appears on *Notocactus horstii* var *erythrantha*, which I obtained from a member of the Nottingham Branch who grew them from Society seed, sown in 1963. It first flowered when ten years old, in the early part of September. It set seed and the wall of the fruit pod was thin and flexible, pale brown in colour. The flower was very much like that of *N. muegelianus*."

..... from H. Middleditch

"At our Brooksby weekend we screened a number of slides of *Noto. horstii* and compared them with the diagnosis; a plant from Clive Innes was shown by J. R. Gooch, and another by Mrs. J. Hobart. Both these were yellowish flowers, with rather long petals, and long stigma lobes expanded just like those on *Eriocactus*. Another slide of a plant in flower from R. Moreton was of a yellow flower but slightly darker at the tips, the stigma lobes being only half-expanded, twisted and pale pinky orange in colour."

..... from A. Johnston

"I have a plant of *N. muegelianus* which came from De Herdt a couple of years ago and it a flower on it at the moment (October). The flower has never opened wide, due to the dull weather, but it seems to be a pale shade of pinky red. The stigma is also red, quite unlike any of the other *Notocacti* I have seen."

..... from I. Le Page

"*Notocactus muegelianus* is flowering for the first time. It carried three buds, the first of which opened Nov. 20th-29th. The flower was 4.5 cm long and 3.6 cm in diameter and of an orangey red colour. I only saw it fully open on one afternoon when the sun was shining brightly otherwise it remained closed with just the tips of the petals parted. When the buds started to develop, I brought the plant into the house and placed it on a south-facing kitchen windowsill, which seems to suit it.

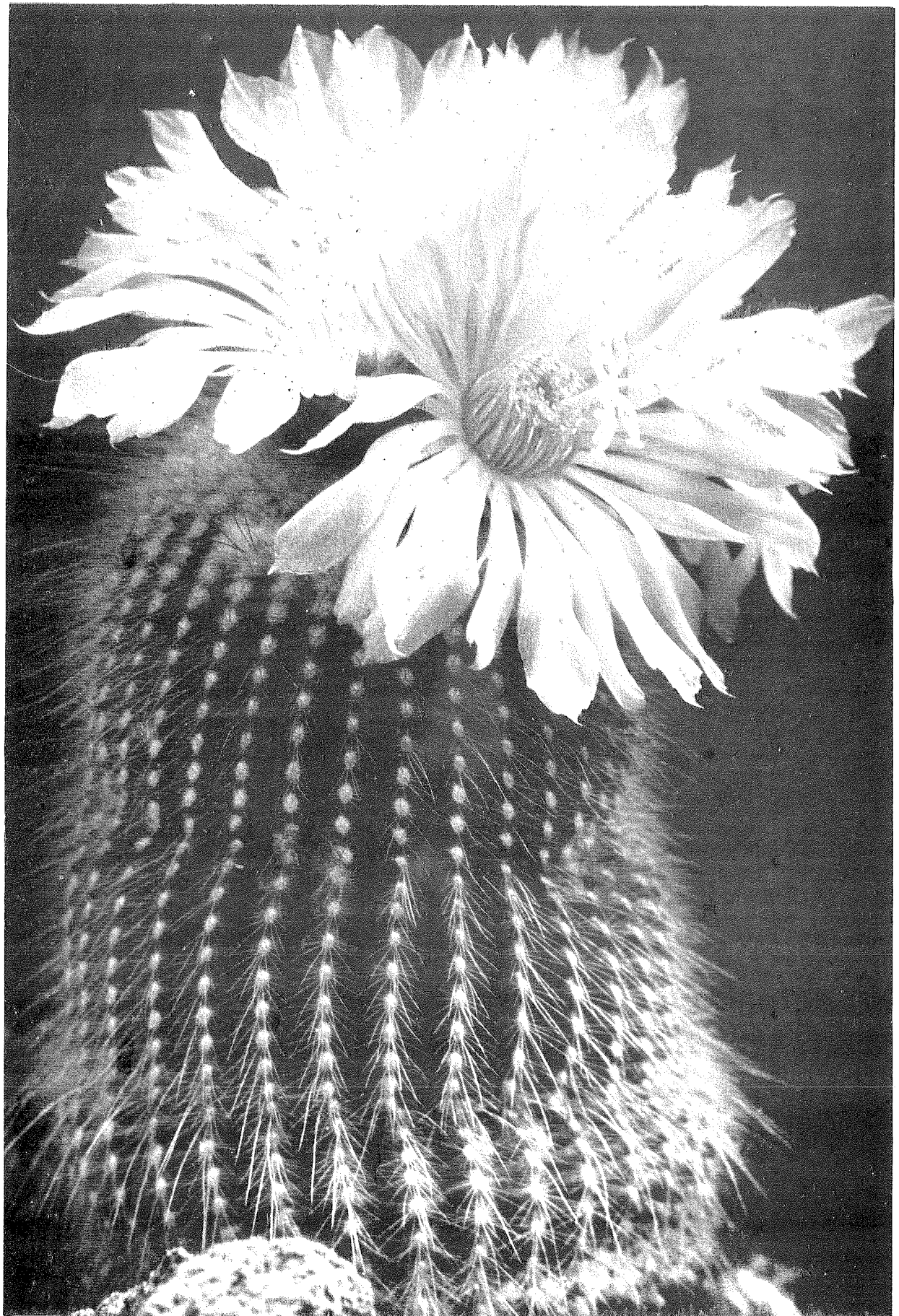
"The stamens are tightly clustered around the style and terminated at the point where the stigma lobes were attached to the style. These lobes were not horizontal, but raised at about 40°; there were nine lobes in all, in three groups of three, about 5 - 6 mm long and of a similar colour to the petals."

..... from P. H. Sherville.

"With regard to the long stigmas in the *Notocactus* and *Eriocactus*, all of the following have been observed exhibiting the long stigmas: *Eriocactus leninghausii*, *claviceps*, *grossei*, *magnificus*, and *Notocactus horstii*, *muegelianus*, *purpureus*. *Noto. herteri* has lengthened stigma lobes but they seem not to be spreading, they remain closed and are white."

..... from A. W. Craig

"On flowers of *Noto. horstii* I find that the stigma lobes open wide, just like *N. rutilans*; and also like *N. rutilans*, the anthers are bunched together round the style. On a flower section there seems to be two groups of



ERIOCACTUS LENINGHAUSII

K.u.a.S. 24.11:73

stamens, one group inserted at the base of the tube, then comes a gap on the inside wall of the flower without any stamens, about half-way up the walls. I find that the petals do not open very wide on these flowers - at least, not as wide as most other *Notocacti*."

..... from J. R. Gooch

"In regard to flowers opening and closing, my *Notocactus horstii* does close up at night, but has a longer period fully open during the day than most other *Notos*. One tends to find *N. ottonis* and varieties open from mid-morning to early afternoon, whilst *N. mammulosus* etc. opens from early afternoon till early evening. On the other hand *N. horstii* tends to be open from mid-morning through to dusk. The flowers also exhibit an increase in size for several days after the first opening. The stigma lobes are pale orange, up to 1 cm long and spread out above the stamens, about 10 in number."

..... from P. Allcock.

"As I mentioned at Brooksby. I was pretty certain that I had taken a slide of my *N. horstii* with two flowers on it, one a day or two older than the other. You can see the remarkable difference between the two flowers, the one that has just opened being about half the size of the other that has been open for a day or two. The difference in colour is quite striking too, the new flower being a rich orange colour, the inside of the petals turning more yellow towards the base, whilst the older flower is a yellow colour, tinged with pink at the tips of the petals. On the new flower the stigma lobes are above the tightly-bunched stamens but the lobes are still upright and only just parting from each other - they look to be a very deep orange colour. On the fully open flower the stigma lobes are spread open, funnel shaped rather than flat; they look as though they have a pinky-red midstripe with a yellow margin.

"You might almost believe that these two flowers could come on two quite different plants. No wonder the slides we saw at Brooksby of single flowers seemed to show so much variation."

..... further from H. Middleditch.

"On the slide received from Phillip Allcock, the stigma lobes on the older *horstii* flower look as though they are longer than those on the newly-opened flower. I wonder if these actually grow in length whilst the flower is open, just like the petals?"

..... from D. Angus

"Some years ago I paid a visit to Uhlig's nursery and bought an imported plant of *Notocactus magnificus*. This year it produced a flower rather late in the autumn so it lasted for well over a week. I certainly did not take any special notice of it, but I am sure that it had almost closed up on one occasion when I was in the greenhouse, and was fairly wide open at another time. I wouldn't have said that this particular flower stayed open all the time, day and night, from first opening to finally closing altogether."

..... from A. W. Mace

"I have had two plants of *Notocactus magnificus* in flower - both keep the flowers open permanently, as do all the other *Eriocacti*: *leninghausii*, *schumannianus*, *claviceps* and *nigrispinus*."

..... further from P. H. Sherville

"With regard to *N. magnificus* closing, we have not found this; even on dull days and at night the flower is at least funneliform - but of course all the *Eriocacti* are completely reflexed in warm sunshine."

..... from Miss E. M. Colley

"When I got home from Brooksby I found my two plants of *Noto. muegelianus* in flower; these were very distinctive, much larger than those of *N. horstii* and more a cream colour with a crimson flush. In the middle of December I had both a *N. horstii* and *muegelianus* in flower, and it being a weekend I could look at them. Both had their stigmas open, but I suspect that the flowers had been open for several days. The flower on *N. horstii* was orange with a pink flush down the centre of the outer petals, the stigmas orange and open at the time of observation, flower length about 1 1/4". The flower tube was pale yellow with downy hairs. The flower on *N. muegelianus* was cherry-pink, shading to orange inside the flower tube, stigma cherry pink and open at the time of observation. Flower length about 2" long. Flower tube more orange than *N. horstii*. This plant also had a second smaller, partly open flower, approx. 3/8" shorter, and the stigma lobes were open. The colour was a bit deeper than that of the more open flower - this seems to confirm P. Allcock's observations regarding the flower getting larger and paler with age."

..... from G. Charles

"There are some interesting problems associated with the name *muegelianus*. It would seem that the pink-flowered *N. horstii* which de Herdt distributed as *N. muegelianus* is not correctly named, but should be called *N. purpureus muegelianus*. The real *muegelianus* has a different appearance altogether with white "fluffy" spines. I have

some slides to demonstrate this point."

..... from K. Halstead

"I have no *Notocacti* in flower at present but on looking at a number of my slides it is quite apparent that the stigmas of *N. horstii* do not behave as those in the *Eriocacti*. They do open fairly wide but less than the *Eriocacti* and although there is an occasional twist it is nothing like that on *Eriocacti*. The flower sizes are approximately 4" diam. give or take ½" and I have recorded an individual bloom that has remained open for seven days."

..... further from H. Middleditch

"Isn't 4 inches across a bit big for a *N. horstii* flower?"



## NOTOCACTUS HORSTII.

ONE FLOWER JUST OPEN - ONE FLOWER NEARLY OVER

Collection - P. Allcock



**ON THE HUNT FOR CACTUS IN BRAZIL** By A. F. H. Buining.  
(Translated by H. Middleditch from K.u.a.S 19.1:1968)

On my cactus study trip, undertaken in company with Herr Leopold Horst from November 1966 to February 1967, we travelled with his eight-cylinder Ford through the province of Rio Grande do Sul towards the north, then through the provinces of Santa Catharina, Parana (with the towns of Curitiba and Ponta Grossa), Bahia (with the towns of Caitite, Feira de Santaha and Juazeiro) and the southerly part of Pernambuco. Later we drove a second time through Rio Grande do Sul and also visited the northern part of Uruguay. From this trip of about 20,000 Km in extend we found many interesting cacti, amongst them some new ones.

Surprisingly we found in such a well developed province of Brazil as Rio Grande do Sul, many parts that still have not been fully explored for cacti. There are still a great many more of the numerous hills and peaks in this fine province that no one has yet searched for cacti. Certainly these hills, often many hundred meters high, are very formidable to ascend and also often hazardous because of the fairly frequent appearance of poisonous snakes. Thus it comes about that up to the present time we know insufficient about the cacti of Brazil - and what we do know needs a fundamental re-appraisal. This has already happened in certain places through the great expert F. Ritter, but I will endeavour in the future to describe some portion of the new species together with species already known for an appreciable length of time.

Leopold Horst and I found one new unknown location for *Eriocactus claviceps* described by Ritter in Succulenta for August 1966. It was very difficult to reach this location from Julio de Castilho. Just as we had found *Eriocactus magnificus* in this province (but in an entirely different direction) on a previous occasion, we had to stop there overnight. The hotel stood on the edge of a very smart "Plaza" in the centre of which stands a memorial to Julio de Castilho. It was a marvellous January summer evening. On the next morning we were away very early and drove at first on a normal road, then on a small lane and finally through the undulating pampas with hills and mountains; over grass, gravel and rocks, and here and there across small streams. Finally, after some hours, we came to a much larger river, which flowed through the mountains, over rocks with little waterfalls.

On the far bank, by using field glasses, we detected on a vertical cliff wall very many handsome specimens of *Eriocactus claviceps*. It was, however, impossible to get to them there on account of the river, so that we had to go further on, to find a spot where we could cross over it. From there we scaled a mountain, which was overgrown with tropical forest. On the peak we found at a suitable spot some large, well-rooted trees, on to which we could attach our climbing rope. Then it was off down the vertical cliff face - with rucksacks and cameras - where here and there a group of bromeliads and *Cereus peruvianus* found places to grow. About 30 to 35 meters further down we arrived at a ledge 60 cm wide, which gave us a spot where we could study and photograph the groups of *Eriocactus claviceps* growing there with a vertical drop of some 150 meters to the river below. We could also collect seeds.

Leopold Horst took the accompanying picture of me as proof that we collected *Eriocactus claviceps* there. The plants grew there on these rocks at the spot where, mainly on account of bromeliads and also lichen, a small amount of humus soil is to be found, that has a very low pH value and is correspondingly very acid. *Eriocactus claviceps* grows as great columns bent downwards with upright heads. As the picture shows, it occurs in a mass at the place indicated. It is, however, very difficult to transport these ponderous plants upwards. We could only haul some up with great difficulty in the rucksack used for the camera.

This interesting plant is, without doubt, as Ritter has also written already, more closely related to *E. leninghausii* than to *E. schumannianus*. This is confirmed by the seed structure, divergent in the case of *E. claviceps* and *E. leninghausii*.

Whether one regards *Eriocactus* as a genus or as a subgenus, is dependent upon which botanical point of view one takes. Personally, I am inclined to place *Eriocactus* in with *Notocactus*, as Buxbaum has also done. In any case it is an interesting, fairly homogeneous group, that has increased in value with this new discovery. It appears to me not improbable that in the future some still more different species will be found. Thus in one or two collections in Rio Grande do Sul there appears an *Eriocactus* which has only 16 ribs and spined a very handsome deep golden yellow. But so far we cannot find it in habitat.

Comments

..... from H. Middleditch

"It is noteworthy that all the illustrations which have been published of *Eriocactus* in habitat seem to show these plants growing in rocky locations - usually on sloping rocky ground. The accompanying illustrations exhibit this particular characteristic and the photograph taken by Buining when he visited the habitat of *Eriocactus magnificus* also shows a sloping, rocky, spot. Several years ago Buining made a lecture tour round Britain and I had the pleasure of seeing several of his slides of *Eriocactus* which had been taken in Rio Grande do Sul. If I recollect correctly, these often

showed these plants growing on the brow of cliff faces.

"Buining himself tells us that access to the growing place of both *Eriocactus magnificus* and *E. claviceps* was difficult as the predominant local vegetation was tropical forest. We usually tend to associate cacti with the limits of vegetation on the edge of deserts, with scrub lands, grasslands, or areas with prolonged dry seasons. Outside the epiphytic cacti, we would not normally associate cacti with the climatic conditions of steady and generous rainfall which alone can sustain the growth of tropical forest. Yet here we find *Eriocacti* growing in just that type of habitat. It appears that, under the micro-climatic conditions generated by the patches of rocky ground, the thin layer of soil lying on or between the rocks will dry out fairly rapidly under the influence of the tropical sun, between the showers or storms of rain. Hence these patches of ground will support only xerophytic vegetation whilst all around lies a sea of dense sub-tropical forest.

"The northern half of Rio Grande do Sul is covered to a great extent with forest vegetation, whilst the southern half is largely grassland, comparable with the treeless grasslands of Uruguay. Not only does the vegetation and flora differ markedly between the northern and southern parts of the province, but there is also a great divergence in the fauna. The pollinating insects associated with the subtropical forest flora of the north will be unlikely to extend into the parts covered with treeless grassland, and vice versa. Hence the long, widely-opening, twisting stigma lobes of the *Eriocactus* flowers are likely to be designed to operate with a different type (or selection) of pollinators than the straight, shorter, half-open stigma lobes of the *Notocacti*.

"It is remarkable that a perusal of the literature fails to unearth any habitat location for *Eriocactus leninghausii* more definite than "Rio Grande do Sul". However, the characteristic stigma lobes suggest that it is a native of the northern forested part of the province, not the grassy southern parts. This plant has been known in Europe since about 1895, so it is likely to grow in more accessible places than *E. magnificus* and *E. claviceps*. Where does it grow, one wonders?"

..... from A. F. H. Buining

"The habitat of *Notocactus leninghausii* is between Corvo and Arroio de Seca. When one goes from Porto Alegre towards Estrela and Lajeado (twin cities) you can go to the northeast to Corvo. From Corvo a road goes to Daltro Filho, but half way there is the village of Arroio da Seca. So between Corvo and Arroio da Seca, quite close to this village, there are on the southeast side of the road mountains with many trees and bushes. On bare places close at the top there grows this species. I have pictures from this place.

"There is a form of this species with longer spines which grows a little way north of the city of Montenegro, north west of Porto Alegre.

"Harry Blossfeld collected this species years ago close to the habitat of Arroio da Seca. Friedrich Ritter asked me if I was ready with the description of the 16 ribbed plants, but I only wished to describe this plant after I had collected it myself in order to judge how great the variation is at the habitat. Ritter does not know the habitat and Warras did not give the exact habitat. I hope that Horst will find this plant some day and then I will hear where the habitat is.

"Pollination occurs in many places in Brazil by ants, bees, and especially the so-called "sweatbees". These are very small bees of a few mm in length. They never sting but they are desperate to drink human sweat and then they bother you around the eyes, the ears, and on all places where there is any sweat. They gather a great deal of honey and bring it to their nests in hollow trees. Besides these insects there are still others, but several flowers are visited by humming birds. They do this during the evening on the flowers of *Melocactus* and during the first rays of the sun in the morning when the night flowers are still open."

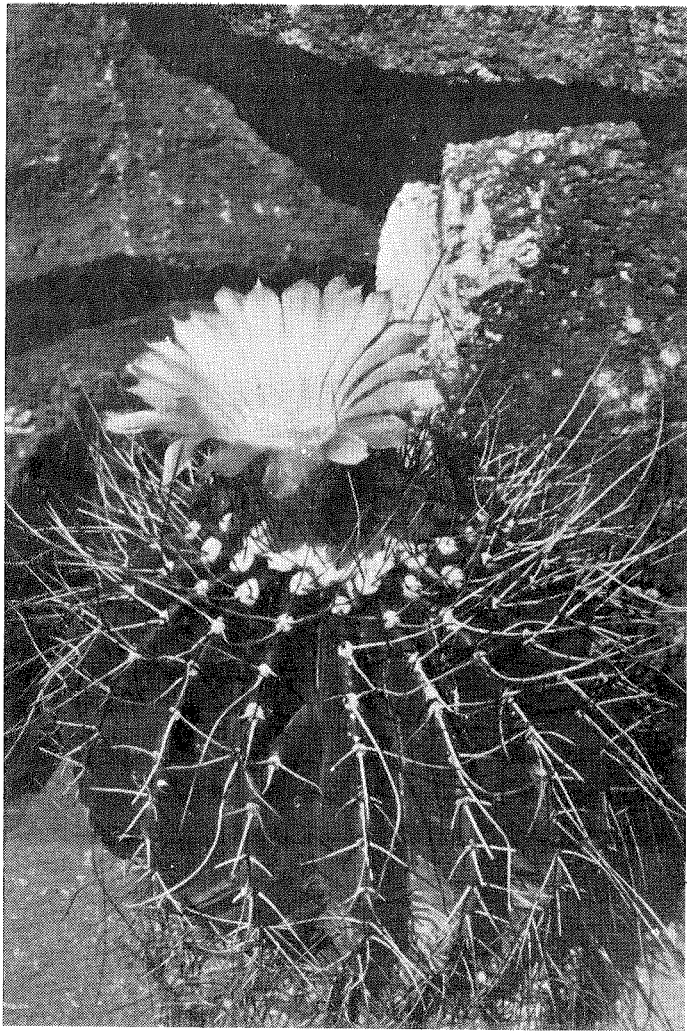
..... further from H. Middleditch

"This comment is indeed most valuable, for it places *Eriocactus leninghausii* less than fifty miles from the old-established seaport of Porto Alegre. Further inland comes Candelaria, habitat of *E. Muegelianus*, then about 150 miles inland there is Julio de Castilho, not far from which both *E. magnificus* and *E. claviceps* were found. All these places are about 50 - 100 miles up into the hills from the Rio Jacui, in the region abounding in subtropical forest. Yet *Notocactus horstii* - and also to some extent *N. purpureus* - exhibit the long, spreading stigma lobes so characteristic of the *Eriocacti*. Do these two species of *Notocacti* come from patches of forest in the predominantly grassland areas of the southern parts of Rio Grande do Sul? Or are they from the central part of the province, where the forests and grasslands merge?

"There is a pretty good answer to this question to be found in Chileans No. 21 p. 115 where Buining tells us that *N. horstii* comes from hills which are "heavily overgrown" - presumably with woodland. In Chileans No. 19 p.212, John Donald is even more specific and locates the habitat of *N. horstii* at Aquelo. In the same article in Chileans No. 21, Buining places *N. purpureus* in the same general locality as *N. Horstii*, and in a comment on p.114 of the same issue, John Donald places the habitat of *N. purpureus* between Santa Maria and Candelaria.

"This information would appear to enable us to place these two species along with the *Eriocacti* as inhabitants of a region which is predominantly forested; by comparison, the greater number of other *Notocacti* emanate from the southern part of Rio Grande do Sul and from Uruguay, and most probably grow in regions which are predominantly grassland.

"Some years ago I acquired a pretty mature specimen of "*Eriocactus leninghausii* var. *longispina*" from



# ERIOCACTUS NIGRISPINUS

Paraguay

PHOTO - BUINING

Succulenta

49.11:70

# ERIOCACTUS LENINGHAUSII

Río Grand do Sul - Brazil

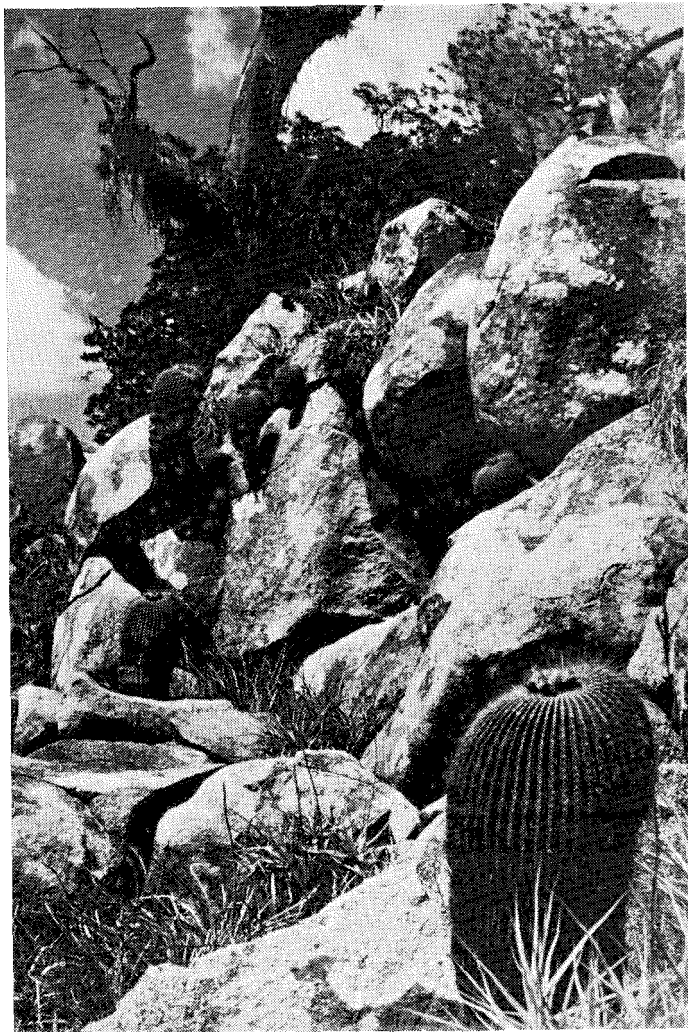
PHOTO - BUNEKER

Succulenta

12.1957





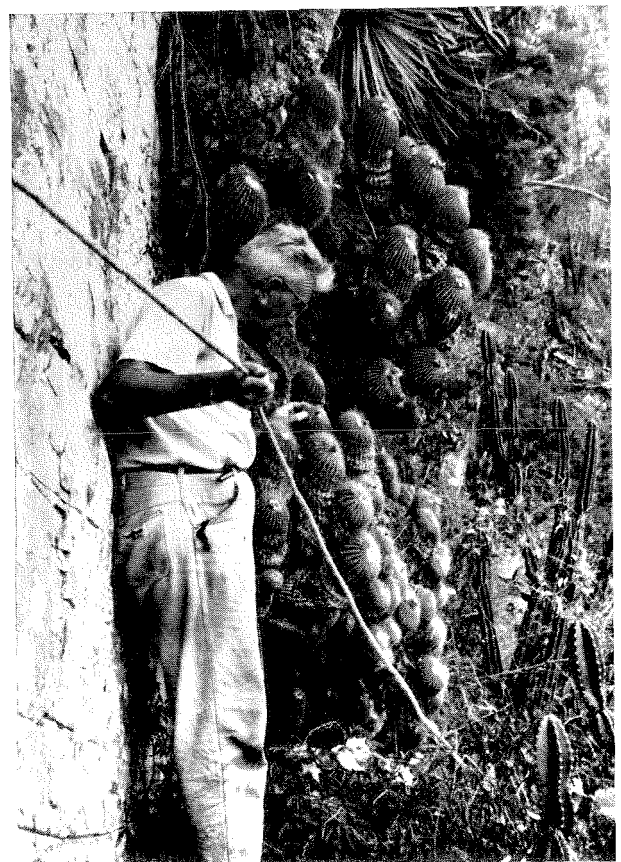


ERIOCACTUS SCHUMANNIANUS  
on the  
Cerro Santo Thomas  
Paraguay

PHOTO - BUINING  
Succulenta 49.11.70

ERIOCACTUS CLAVICEPS  
& Mr. Buining

PHOTO - HORST  
K.u.a.S 19.1.68



a collector near Doncaster. Certainly the spines did then - and still do - appear to be a little longer than one commonly sees on this species; they also seem to have a reddish tinge, which on closer examination turns out to be an infusion of red colouration in various and discontinuous lengths on some of the spines. Perhaps this is the variety of *Eriocactus leninghausii* which grows near to Montenegro?"

..... from H. Ewald

"I have an *Eriocactus magnificus* which I obtained from De Herdt as a three year old seedling; I have grown it for a couple of years and now it is putting out offsets. Like *leninghausii* this takes a large amount of water and they can be drowned with water in summer and give no trouble. The *N. mammulosus* are quite different: if they are given too much water they soon lose their roots."

..... response from H. Middleditch.

"*Eriocactus magnificus* and *leninghausii* come from the forested areas of Rio Grande do Sul which receive a fairly generous and regular rainfall. *Notocactus mammulosus* comes from southern Uruguay and central Argentina which has a pronounced dry season. In consequence the *Eriocactus* will be used to receiving frequent and generous amounts of water whilst *N. mammulosus* will only be used to receiving less water, and that for a limited part of the year."

..... from P. H. Sherville

"With regards to the comments by H. Ewald regarding the culture of Noto's, I completely endorse his comments about watering the *Eriocacti*. Mine make heavy water demands throughout the year and soon start to look sorry for themselves if left to get dry. One fellow cactophile I know of keeps a plant of chickweed growing in the same pot as his *leninghausii* and waters the pot as soon as the chickweed begins to flag ! I cannot speak for the *mammulosus* group as I don't have any of these in the collection now."

..... from M. Birch

"I am now growing my *Eriocactus leninghausii* like most of the rest of my collection, in Levington compost, in plastic pots. I am quite sure that this continues to hold moisture well into the winter. I am sure that it is this method of cultivation which has produced a plant growing without any necking at all, whereas in a clay pot with a different compost it would neck at the end of each season."

**ERIOCACTUS CLAVICEPS** Ritter spec. nov. By Friedrich Ritter  
(Translated by H. Middleditch from *Succulenta* 45.8:1966)

*Eriocactus claviceps* Ritter, ab *E. schumannianus* recedit: Corporibus ad 50 cm altis (1.50 m), areolis 3 - 8 mm inter se remotis (7 - 15 mm), spinis tenuioribus, centralibus plerumque 1 - 3 (0 - 1), tubo floralis  $\pm$  20 mm longis ( $\pm$  10 mm), tepalis  $\pm$  22 mm longis ( $\pm$  20 mm), 13 - 15 mm latis (5 - 6 mm), pallidissime sulphureis (aureis), staminibus inferioribus  $\pm$  22 mm longis ( $\pm$  8 mm), superioribus  $\pm$  10 mm longis ( $\pm$  5 mm).

Body green, often offsetting at the base and sideways, growing thickset clublike, when flowerable age 8 to more than 20 cm thick and 10 up to about 50 cm high, crown white woolly, turned to the light and very slanting.

Ribs 23 - 30, triangular in section, with 8 - 15 mm broad flanks and straight, narrow dividing groove at the base, tops of the ribs fairly narrow, with or without tubercles at the most 1 mm high.

Areoles 1 - 2 mm diameter, white woolly, on the underside of the tubercles, in the case of flowering areoles 3 mm diam., round, usually 3 - 8 mm apart.

Spines fine, soft, hardly sharp, pale yellow; radial spines 5 - 8 sideways and outwards, often somewhat curved, the lowermost the longest and  $1\frac{1}{2}$  - 4 cm long, the uppermost the thinnest and shortest,  $\frac{1}{2}$  - 1 cm long; central spines similar, 1 - 3.

Flowers close together at the crown, pretty fragrant, opening by day during the warmest hours, up to 6 cm across and  $5\frac{1}{2}$  cm long.

Ovary yellow, 12 mm long, at the top 15 mm broad, narrowing at the bottom, enveloped in a thick, yellowish white, cotton-wool-like mass, very narrow scales, reddish, long-pointed, only  $1\frac{1}{2}$  mm long and  $1\frac{1}{2}$  - 2 mm apart, with a soft, golden-yellow, bristle-like hair of about 1 cm in length in their axils.

Nectar chamber pipelike, pale yellow, only 1 mm high, about 1 mm broad round the foot of the style, filled with nectar; half closed by the lowermost stamens.

Flower tube funneliform above the nectar chamber, 20 mm long, 25 mm broad at the top, the colour of the interior and exterior like the flower petals, enveloped in a dense, brown, cotton-wool-like mass; narrow scales of 2 mm in length, up to 5 mm above, narrow, pale yellow, long and dark tipped; several golden-yellow soft, bristle-like hairs in the axils.

Flower wide open, petals 22 mm long, 13 - 15 mm wide at the top, narrowing to about 3 mm at the base, apex truncate, very pale sulphur yellow.

Stamens 10 - 22 mm long, the lowermost the longest, the uppermost the shortest, colour like the flower petals; very numerous, inserted up to the brim; anthers very small, darker yellow.

Style 25 mm long, with 12 somewhat outstanding stigma lobes 7 mm long, somewhat exserted above the anthers, somewhat deeper yellow than the flower petals.

Fruit globular, clothed like the ovary, cracking broadly somewhat rag-like at the foot, drying up.

Seed black, 1 mm long, 0.6 mm thick, broadest at the base, testa furrowed very finely lengthways, matt, turned outwards near the hilum; hilum very large, white, oval, at the bottom of the seed.

Type locality - Julio de Castilhos, Rio Grande do Sul, Brazil.

Holotype in the Herbarium of the University of Utrecht.

This species was found several years ago through Herr Leopold Horst. Since early 1964 I have studied them, they bear my number FR 1283. Herr Horst had first sent one specimen to Herr Krainz at Zurich for identification. Early in 1965 I already had all the data necessary for a complete description and was able to make a comparison with the other *Eriocactus* species. Herr Horst requested me to publish this species at that time.

In habit they appear to be so much like *Eriocactus schumannianus* (Nic) Backbg., that one would be able to take them for a variety of that species. Precise comparison has however proved that they are much more closely related to the far more slender *Eriocactus leninghausii* from the same Brazilian province, than to *Eriocactus schumannianus* from Paraguay.

It should nevertheless be worthy of note that this species is an inhabitant of rock faces and boulders just like all the other *Eriocactus* species - even the one variety of *E. schumannianus* from Paraguay would be, even though they are separated from one another by vast extensive plains with two very large rivers. The close relationship with *E. leninghausii* is evident specifically from the following:—

The scales on the flower tube in *E. claviceps* and *E. leninghausii* are long pointed-tipped, in *E. schumannianus* running out to a point, which amounts to  $\frac{3}{4}$  or more of the length of the scales; the flower tube is about 20 mm long in the first two species, in *E. schumannianus* only half as long. Moreover, the stamens in *E. schumannianus* are about half as long as in the other two; the flower petals are about 13 - 15 mm broad and more than 20 mm long in the first two, in *E. schumannianus* barely 5 - 6 mm broad and about 20 mm long.

Concerning the seed, I found not a single difference between *E. claviceps* and *E. leninghausii*, the seeds of both species are similar in size, form, and in the delicate longitudinal grooving; on the other hand the seeds of *E. schumannianus* are shorter and clearly covered with fine tubercles. These differences are taxonomically of much greater importance, than variations in the height of growth, although the latter takes the eye much more.

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#### Comments

..... from J. D. Donald

“*Eriocactus claviceps* is more club shaped than the even cylinder of *leninghausii*. The ribs are quite sharp and similar to *schumannianus*. The central and radial spines are much stiffer than for *leninghausii*, more akin to *schumannianus*. The crown of the plant is very woolly indeed, colour being off white to very pale yellow. The flowers are very similar to those of *leninghausii* and *schumannianus* with copious brown wool on the short tubes.”

..... from P. H. Sherville

"I would fully endorse the preceding comment regarding the spines being stiffer than on *leninghausii* and the colour of the wool in the crown. The wool in the crown of my own plant is not white, as in Ritter's description, but is yellowish to fawn colour. The flowers are also almost identical to those on *leninghausii*, which makes them bigger by a factor of 2x that of the description. I wouldn't have thought the ribs were at all tuberculate (the description says 1 mm high tubercles). Also I wouldn't have said that the spines were curved at all, they are quite straight on my imported plant ex Uhlig. As for the flowers opening during the warmest hours, mine remain open for 24 hours a day, as do those on *leninghausii*. The seed from my *Eriocactus claviceps* is mid to dark brown, not black as in the description."

..... from K. Halstead

"I have had flowers on two plants of *Eriocactus claviceps*: one of these was an imported plant obtained from Uhlig. The stem was long and twisted with a dehydrated appearance but the body was more turgid, globular in shape and the whole plant had an effect similar to that of a meerschaum pipe. Certainly the plant resembled a club with a distorted stem, hence the derivation of its name.

"The size of the club end or body was 10.5 cm high and 10 cm in diameter. The colour of the felt in the crown was white as was the wool in the areoles. There were 28 ribs and the areoles were small (2 mm across) and 8 mm apart. One straight central spine emanated therefrom usually about 2.5 cm long with 4 - 6 straight radials 5 to 10 mm long. All spines flexible, horn or straw colour.

"Three flowers were produced at the crown, being bright lemon in colour with a final diameter of 5.5 cm. The stigma pale yellow with eleven lobes somewhat twisted and exserted 1.5 cm above the anthers. The tube length was 3 cm but there was no apparent fragrance from the flower. This plant produced two flowers in 1969 and three in 1970, according to my records.

"In 1973 the long twisted stem was severed as the plant had to be potted to one side of its container giving the impression that the person who potted it was drunk at the time. The club-shaped head has now re-rooted but the body still has a somewhat unbalanced appearance.

"The new spines are pale yellow compared to the horn colour of the old habitat ones but they are shorter and have a tendency to curve, more so than the original ones. The area of felt in the crown is small and elliptical in shape and is definitely white. I do not agree that the wool is yellow unless the colour varies in plants from different locations perhaps. It is certainly not as extensive as it is in *Eriocactus schumannianus*. The spines on my plant do not appear to be all that stiffer than on *leninghausii*. The short flower tubes have copious brown spiny wool and the flowers are slightly smaller than *schumannianus* and *leninghausii*.

"I have not recorded seed colour and size but this species appears to set seed very readily and I have produced a number of seedlings from the parent plant. Seed is only set when there is more than one flower out at a time. It is quite surprising that this species which so closely resembles *schumannianus* in body form is much closer to *leninghausii* by reason of seed structure and habitat."

..... from E. W. Barnes.

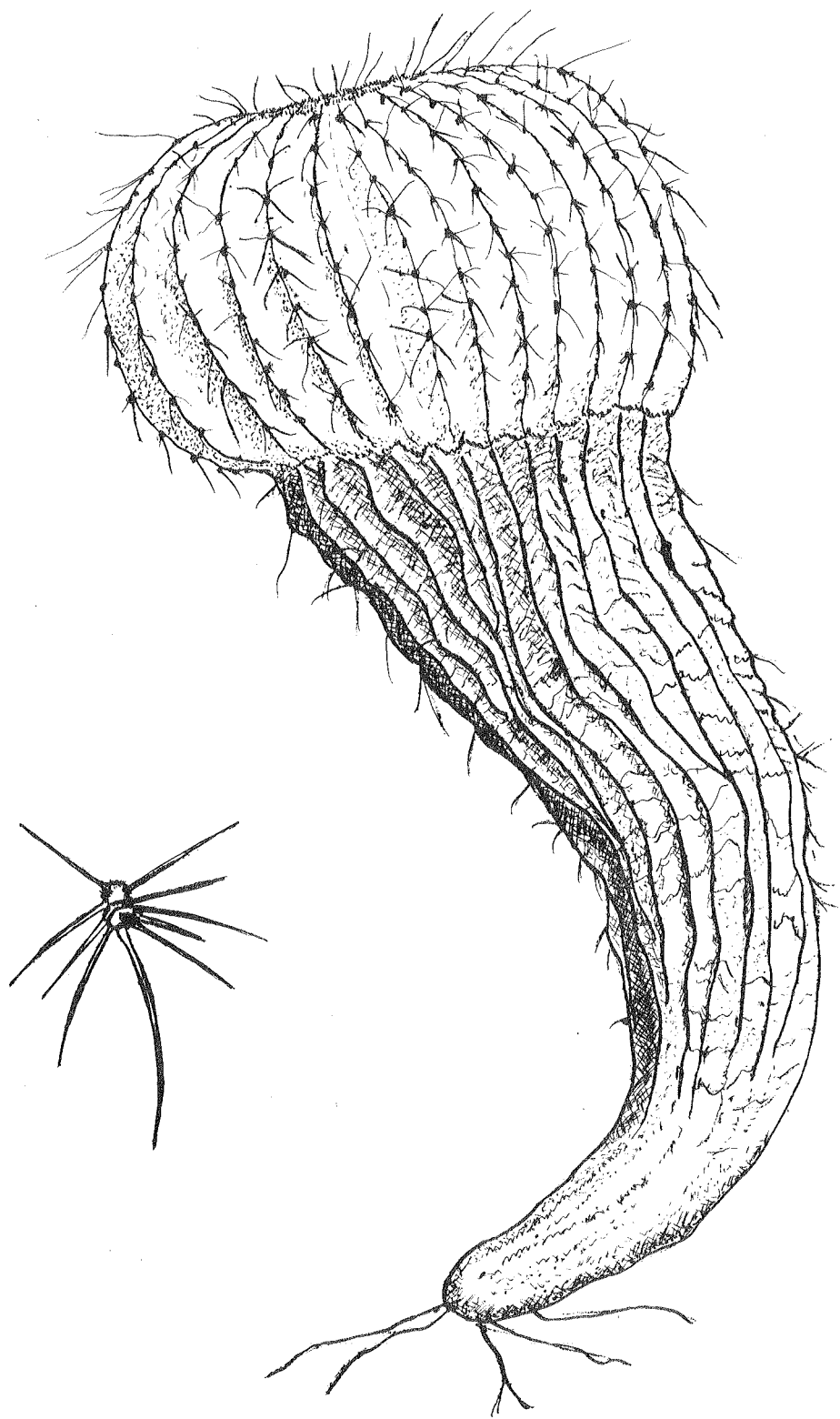
"I also obtained a plant of *Eriocactus claviceps* from Uhlig and it was so dehydrated that I gave it some water all through the winter. About once a fortnight a spot of Born's Kaktiflor feed was added to the water; it all depended on the temperature and so on when I watered this plant. It had 28 ribs which were very slightly notched, with greyish-white wool in the areoles. Mostly there were three pale yellow, straight centrals and about 5 to 7 radials which were the same colour. The longest radial spine is always the lowermost, up to 2½ cm long. It will bend at right angles but further pressure will snap it easily. The radial spines are difficult to distinguish from the centrals. All spines are bulbous at the base."

..... from R. Carter

"My plant of *Noto muegelianus* is only a seedling about 1½" in diameter, but this plant has spines with a definite bulbous base. Now I have had a good look through a lens at the spines on *E. claviceps*: there is a slight swelling at the base but nearly all spines have this anyway, and it is certainly not something that stands out here that you would regard as a definite characteristic."

..... from R. Zahra

"In my collection I have two seed grown *Eriocactus claviceps* and one collected plant which I bought from Uhlig some time ago. The collected plant has even flowered for me. Although I looked really hard at the spines of this species, I cannot say that these are any different from those of other species. All I can say is that the spines of this species are a little stiffer than those of *E. leninghausii* but not so stiff as those on *E. schumannianus*. However, I missed (or could not find) any "onion shapes" at the base of the spines."



ERIOCACTUS CLAVICEPS

ACTUAL SIZE

Collection - E.W. BARNES



Already known to me for a long time was an Eriocactus which I had taken to be a new species, but I had never published it because the origin was unknown to me. It was commonly called the "15 - 16 ribbed Eriocactus".

Other specialists also sought this plant, but without success. Not long ago Herr Rudi Werner Buneker had the good luck to find the natural growing place in Rio Grande do Sul, so that now I can publish the species and distinguish it as follows:—

*Eriocactus warasii* Ritter spec. nov.

Statura ad. 80 cm. alta, 13 - 15 cm crassa, subprolifera; costae 15 - 16, ca. 2 cm. altae, ad 3 cm. latae, rectae, transversalim subtriangulares, minime crenatae; vertex dense tomentosus, albus, perobliquus ad lucem versus; areolae 1.5 - 3 mm diam., albotomentosae, suborbiculares ad ex longo orbiculares, 4 - 6 mm inter se remontae; spinae ca. 15 - 20, aciculares, molles, plerumque flexae, brunneoluridae, spinae marginales et centrales subaequales, 1 - 4 cm longae, quarum tres infimae longiores; flores crebri, in vertice, inodorati, 5 - 6 cm aperti; ovarium breve et crassum, obtectum tomento albo, squamulis minimis et 1 - 2 saetis longis in quaque areola; tubus nectarifer minimus; receptaculum infundibuliforme, ca. 10 mm longum, ad 12 mm amplum, externe similiter ovario, tomento ferrugineo, squamis supremis ad 5 mm longis, subulatis, permucronatis obtectum; filamenta dense inserta, pellide flava, ca. 10 - 15 mm longa; stylus pallide flavus, ca. 25 mm longus; stigmata ca. 12, ca. 5 mm longa, pallide flava; petala nitide aurea ad citrina, 30 - 35 mm longa, 5 - 8 mm lata, oblanceolata; semina sacculiformia, ca. 1 mm longa, ca. 0.7 mm lata, sed in margine testa 0.9 mm crassa; testa nigra, nitida, minime lineariformiter tuberculosa; hilum basale, album, suborbiculare; micropyle textit Rudi Bueneker. Floruit mens. Oct - Nov 1973. Holotypus Herb. meo. Isotypus HB.

Size up to 80 cm high, 13 - 15 cm thick, somewhat offsetting; ribs 15 - 16, about 2 cm high, up to 3 cm broad, straight, more or less triangular in section, very slightly crenate; apex densely covered with wool, white, very obliquely turned towards the light; areoles 1.5 to 3 mm diam., white woolly, circular to oval, 4 - 6 mm apart; spines c. 15 - 20, acicular, soft, mostly bent, brownish-yellow; radial spines and centrals almost equal, 1 - 4 cm long, of which the three lowermost are the longest; flowers close together in the crown, scentless, 5 - 6 cm open; ovary short and thick, covered over with a mat of white wool, minute scales and 1 - 2 long bristles in each axil; very small tubular nectarial furrow; receptacle funnel-shaped, c. 10 mm long, up to 12 mm broad, externally similar to ovary, covered with rusty coloured wool, bearing scales, the uppermost up to 5 mm long, awl-shaped, with a very short sharp point; stamens thickly inserted, pale yellow, c. 25 mm long; stigma lobes c. 12, c. 5 mm long, pale yellow; petals glossy golden yellow to lemon yellow, 30 - 35 mm long, 5 - 8 mm broad, oblanceolate; seeds sack shaped, c. 1 mm long, c. 0.6 mm broad, but at the brim of the testa 0.9 mm broad; testa black, shiny, with tubercles formed into lines; hilum basal, white, almost round; micropyle (there appears to be line omitted from the original text at this point - H.M.). Flowered months of Oct - Nov 1973. Holotype in my herbarium. Isotype in Herbarium Bradeanum.

This species is dedicated to Herr Eddie Waras, promoter of the collecting work of the Buneker family.

#### Comments

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

"I would agree that there does appear to be a line missing from the end of the original text. The description also states that there are "bristles in each areole" of the ovary but I would feel that axil would be a more appropriate word than areole in this context."

..... from H. Middleditch

"Presumably this is the plant to which Buining refers (in the article appearing earlier in this issue) as the "Eriocactus which has only 16 ribs".

..... from P. H. Sherville

"Recently I paid a visit to Jumanery cacti, having heard that they had just received a fresh batch of imported plants. Amongst these were a number of *Eriocactus warasii*; to me they appeared to be rather similar to *E. magnificus*. Many of these plants were already offsetting, being only about 30 - 40 cm high but having already attained the stated girth of 13 - 15 cms. One plant had about 7 offsets. The number of ribs matched the description but I would not have said that they were triangular in section, more rounded, again rather like *Eriocactus magnificus*. The apex indeed was sloping and densely woolly. The description of the spines fitted beautifully - I would describe them as brownish yellow, acicular, soft, recurved downwards around the ribs but not closely applied to the ribs.

"A point not mentioned in the description was the body colour - the plants I saw were a dark bottle green colour. I think it is true to say that anyone could easily have recognised the plants from Ritter's description.

"I see that Ritter gives the flower as scentless as if this might distinguish it from other Eriocacti: well, I don't recall any scent from any of my Eriocacti but must remember to check each one this year as it flowers."

..... from J. D. Donald

"Eriocactus warasii I would regard as an ecotype of Eriocactus leninghausii. I have seen seedlings of them en masse when I was last in the U.S.A. - Bob Kirkpatrick had thousands of them and I believe sold them to a large number of European dealers. Tony Mace had one of the first plants of this type from Uebelmann - the Kirkpatrick plants were from Waras who collected them later. They are nice bright green golden spined plants with 14 - 18 ribs - usually at the higher end of this range. I would consider it less distinctive from leninghausii than claviceps !"

..... from G. J. Charles

The reference to "15 - 16 ribbed Eriocactus is interesting since neither of my plants has 15 or 16 ribs. The same reference at the end of the article from K.u.a.S by Buining certainly suggests the same plant, which ties in with Ritter's comment about the plant being long known but without a locality.

My two plants were bought as imports in 1975. One plant came from Jumanery and is a clump of three heads, one large, one medium and one small. A comfortable fit in a 6" pan, the largest head is columnar and is 8" above soil level, with a diameter of about 4". The overall impression is of a green-skinned columnar "magnificus" with distinct areoles. The other plant was bought from Uhlig - a single head in a 3" pot.

Ritter description	Jumanery plant	Uhlig plant
Size up to 80 cm	20 cm	8 cm
13 to 15 cm thick	11 cm	7 cm
Somewhat offsetting	Yes	Not yet
Ribs 15 - 16	Main head 12, offsets 13 & 11	14
Ribs ca. 2 cm high	2 cm high	1 cm (young)
Ribs up to 3 cm broad	Up to 2.5 cm	Up to 1.5 cm
Ribs somewhat triangular	Yes	Yes
Ribs slightly crenate	Slightly	Slightly
White wool in apex	Yes	Yes
Crown oblique	Markedly so	Yes
Areoles 1.5 to 3 mm diam.	Yes	Yes
Areoles white woolly, circular/oval	Circular	Circular
Areoles 4 to 6 mm apart	4 to 6 mm	4 mm
Spines 15 to 20	Yes	Yes
Spines acicular, soft, mostly bent	Yes	Yes
Spines brownish yellow	Yes	Yes
Radials and centrals almost equal	Centrals? longer	Some longer than others
Spines 1 to 4 cm	Up to 2.5 cm	Most only 1 cm
3 lowest spines longest	Yes noticeable	3 are longer

I do feel that Eriocacti like their roots kept well moist in the summer when they can grow quickly. Certain forms of E. magnificus put out offsets when young, others stay solitary for many years. I have never noticed scent in an Eriocactus flower.

**A SKETCH OF MY TRAVELS TO BRAZIL AND PARAGUAY** By August de Saint-Hilaire.

(Translated by H. Middleditch from the Introduction to "Account of the most remarkable plants of Brazil & Paraguay" 1824.)

(St. Hilaire left Rio de Janeiro on 26 January 1819, travelling inland to Goyaz and returning to Sao Paulo; he left that town on 9 December 1819, travelling roughly parallel to the coast, followed by a short sea journey along the coast. We pick up his account when he is travelling southwards along the coast, in south eastern Brazil).

I took ship for Garu pava, situated thirteen leagues south of the town of Santa Catherina. This was the first spot on the coast where I began to observe distinctive changes in the vegetation; but, below this latitude, the difference between summer and winter is already quite apparent: it being the month of May, I found scarcely any plants in flower.

To reach Torres, a little way from the river Ararangua, boundary of the province of Santa Catherina, one follows a barren and monotonous shore which exhibits only whitish and arid sand. After Torres and the river Ararangua, I gradually drew away from the shoreline towards Porto Allegre, capital of the province of Rio Grande do Sul.

This province, which extends from 27°51' S. to 33°, is one of those which nature has greatly favoured. Its fertile soil produces, in the northern part, sugar, cotton, manioc; and towards the central part, wheat and all the fruits of Europe; the very fine climate permits the inhabitants of this territory to enjoy good health; the excellent grazing supports innumerable flocks; a lake of eighty leagues and numerous rivers facilitate communications and furnish the means of transport.

Porto Allegre, capital of the province of Rio Grande, is built on a peninsula formed by a hillock which runs north-east to south-west in the Lake dos Pathos. This owes its origin to the four navigable rivers whose waters meet opposite the town and which, dividing their mouths into a large number of channels, form a labyrinth of islands.

When I arrived in the province of Rio Grande, it was the month of June; the cold was making its presence felt; I found no flowers, the insects had disappeared and I was only compensated by the great number of birds which live on the edge of the lakes, the marshes and the rivers. The water often froze during my sojourn in Porto Allegre and, when it was less cold, it rained abundantly.

In the provinces of Goyaz and the Mines, a persistent dryness characterises the winter; here on the other hand, this season is accompanied by almost incessant rain. At this time, the wind from the south-east, called the minuamo, after having surmounted the high Chilean cordillera and crossed the pampas, comes to cool down the atmosphere.

I have indicated the extent of the various products of the colonies in part of the province of Sao Paulo, situated to the west of the high Brazilian mountain peaks. One finds plantations of manioc and sugar as far as the neighbourhood of Porto Allegre, but this town, situated at 30°2', must be considered as the inevitable limit of these plants in the eastern part of South America. As for cotton growers, they extend to about a degree and a half more towards the south.

In order to travel from Porto Allegre to the town of Rio Grande San Pedro do Sul, I follow that narrow tongue of land which separates the Lake dos Pathos from the ocean, and which exhibits only few sandy pastures studded with clumps of trees, and interspersed with lakes.

Rio Grande de San Pedro is built at about three quarters of a league from the sea on the edge of the channel which provides a link between it and the Lake dos Pathos. Nothing is more dreary than the situation of this town, since, on all sides, one may observe nothing else but water, marshes, or sands. The latter are shifted, in the cold season, by the furious winds from the west and south-west, blowing in gusts, forming hillocks, often finding its way into even the well shuttered houses and finally engulfing them. Rio Grande would formerly die out much more on the west side; the sands have swallowed up entire streets; but, in step with this, the population moved little by little towards the east, by reclaiming ground at the expense of the lake; and the houses which were to be found, thirty years ago, at the centre of the town, are today at its western edge.

I profited from my stay at S. Pedro by going to see, at the charming village of S. Francisco de Paula, those great manufacturies of dried beef (Charquada) which are brought annually from the principal properties in the province of Rio Grande, since most of the cattle have been killed off on the banks of the Rio Plata.

Towards the end of August, the cold did not make itself felt any longer; the peach trees were covered with flowers, fresh green grass started to appear, and already I could find several plants in flower on the turf. For the most part they belonged to European genera, and it is remarkable that many of these which make up the springtime species

at home are the same to which the plants are related which flower first in the country in which I was dwelling at that time. In this way I gathered some *Carex*, an *Anemone*, a *Ranunculus* (or at least a species closely related to that genus), a *Cerastium*, some *Arenaria*, a *Centunculus*, and a *Linaria*, etc.

I left Rio Grande on the 19th September, and in order to go to the boundary of the Spanish possessions, I followed that tongue of ground which separates the ocean from Lake Mirim, a continuation of the Lake dos Pathos. This countryside only exhibits open pastures, studded with some clumps of trees which become that much more scarce as one goes towards the south.

As one leaves Rio Grande further and further behind, the vegetation would seem to be less advanced, and the influence of the climate on the plants becomes more evident. Thus at one degree of latitude north of Porto Alegre, the trees, in the coldest season, would be almost all furnished with leaves; at S. Francisco do Paula, close to Rio Grande, pretty nearly one third of the woody vegetation has lost theirs; and finally, about two degrees of latitude further to the south, towards Jerebatuba and Chuy, only one tenth of the trees retain their foliage, and this would be only the lower growing sorts, such as the *Myrtales*, the *Myrsinas*, one *Onagra*, and one *Nyctagina*, which flowers in the depths of the winter, like *Helleborus hyemalis* back at home.

Towards the latitude of Chuy, the former southern limit of the neutral country (*campos neutraes*), lake Mirim comes to an end. There, I deviated from my route in order to go and botanize in the Cerro do San Miguel, a little chain of hills which one cannot fail to observe in a countryside as flat as that which I had travelled across. Although the trees were no longer clothed in leaves, I found at S. Miguel more plants in flower than I would have expected, and I was struck by their correspondence with the European flora. I collected, among others, many *Vicia*, many *Lathyrus*, *Asphodelas*, a family of which I have found no other species within the tropics; a *Helianthemum*, a *Carex*, a *Berberis*, a Plantain, various *Paronichyus*, many *Caryophyllales*, a *Poa*, a *Euphorbia*, etc.

The palms appear to reach their limit in this part of America between the 34th and 35th degrees of latitude, which corresponds fairly closely to the limit which they have been found in New Holland (Australia - H.M.).

Soon afterwards I entered the Spanish possessions, and began to travel across the magnificent countryside which was, before the war, so rich and so prosperous, and which has been called the paradise of the east coast of America. Nowhere else perchance does there exist better grazing; the ground is everywhere fertile, and the cattle are by far the finest in the Portuguese possessions.

I visited the towns of Rocha, San Carlos, and Maldonado; I went botanising in the little hills called Cerro Aspro, Pao de Assucar, Cerro dos Animos, and I came to Montevideo.

The capture of this town and of the surrounding countryside by the armies of Portugal has brought peace to the right bank of the Rio Plata.

The pleasant region which extends from Montevideo as far as the mouth of the Rio Negro presents an extensive rolling plain where, however distant the view extended, hardly anything but grassland was to be discerned. The grass there reaches the same height as in similar dry parts of the middle of France, but is finer than that of our praries; it is also composed exclusively of *Gramineae*, amongst which the *Stipas* predominate; and there are no dispersed bushes or short shrubby trees whatever, unlike the interior of Brazil. In this countryside not one tree is to be seen; but the larger streams run between two ribbons of trees which consist of only a small number of species, and from the middle of which there rises a willow as elegant as it is picturesque. These trees exhibit none of the sombre shades of the forests of the torrid zone; the green of their leaves is perhaps more delicate and more pleasant to the view than those of our vernal groves; a luxurious grass grows under their shade, and the peaceful capybara comes to play almost at the feet of the traveller, whilst the cardinal, *Loxia cuculata* Lin., sings in the branches.

In the neighbourhood of Rio de Janeiro, as well as in other parts of Brazil, flowers are to be seen all year round, but one never finds a great number of them at any one time. On the other hand, at Montevideo, on the banks of the Rio Plata and in Uruguay, the flowers appear, just as at home, over a very short space of time and are very abundant then. The months of October and November are the season in which most are to be found; in winter the vegetation is in suspense, and, during the summer, the countryside is dried up by the heat of the sun. At the end of November, the plants near Montevideo already no longer present the same freshness; eight to ten days later, the grasslands would have that yellowish colour which is presented by our praries at hay making time; finally, on December 25th, when I arrived at the Rio Negro, the grass in the fields was entirely dried up, and if I caught sight of some plants in flower, it was only on the edge of the streams.

From the fort of S. Theresa, located at 34° latitude, to Montevideo, and from that town as far as the mouth of the Rio Negro, at 33° and some minutes latitude, I collected about five hundred species of plants, at first following the coast and subsequently the Rio de la Plata, then the Uruguay; and, concerning this quantity of plant material, it is worthy of note that there were only fifteen which did not relate to any of the families which compose the flora of France. These are: two *Loasa*, one *Malpigia*, one *Passiflora*, three *Turnera*, two *Calycera*, one *Sesuvium*, two *Bignonia*s, one *Commelina*, and one *Gesneria*.

Some European plants, such as one of our *Anagallis*, *Leonurus cardiaca*, and one of our *Chenopodium*, are almost naturalised in the neighbourhood of Rio de Janeiro. The number of species emanating from Europe is already greater near the towns situated in the elevated parts of the province of the Mines; thus, for example, one finds at Villa Rica (Ouro Preto - H.M.) our *Vervain*, one of our *Menthes*, *Poa annua*, etc.; and one sees at Tejuco (Diamantina - H.M.) *Verbascum blattaria*, *Urtica dioica*, one of our *Xanthium*, etc. The number of European plants increases once again in the neighbourhood of Sao Paulo; *Marrubium commune* and *Conium maculatum* grow even in the streets of this town; *Polycarpon* vegetates on the walls of the gardens which it surrounds. Further away to the south, Porto Alegre has received many of our species; thus one commonly sees in some of the less frequented streets *Alsine media*, *Rumex pulcher*, *Geranium robertianum*, *Conium maculatum*, *Urtica dioica*, etc. But nowhere do European plants multiply with such abundance as in the countryside which extends between S. Teresa and Montevideo, and from that town as far as the Rio Negro. Already the violet, the bourrache, some geraniums, *Anethum foeniculum*, etc., are naturalised around S. Teresa. Those plants which, in their homeland, are found only singly, occur in communities in the vicinity of Montevideo. They attach themselves to the feet of man, so to speak, surrounding his homes and taking over the grasslands which he traverses most often. The roads are bordered by two broad ribbons of flowers of a purple blue, *Echium maritimum*; *Avena sativa* is just as common in some grasslands as if it had been sown; one finds on all sides our Mauves, our *Anthemis*, a species of *Erisimum*, our *Marrube commun*, etc. A *Myagrum*, whose very first appearance was ten years ago below the walls of Montevideo, today spreads almost on its own over the whole of the area which extends between that town and its suburbs.

I had hoped to find many plants on the Serra dos Montevideo, the only hill which adjoins this town; but a fort has been built on the top; the soldiers march to and fro there continually, and its vegetation, at the present time nearly all artificial, belongs for the most part to the flora of Europe. However, no species is distributed in the countryside of Rio Plata and the Uruguay, well beyond the Rio Negro, as widely as *Carduus marianus* and above all our cardon, *Cynara cardunculus*. As the countryside had been, before the war, covered with innumerable cattle, which are very partial to the young shoots of the cardon, the plant would thrive less often and would multiply quite slowly; but since the herds have been destroyed, it has spread out at an alarming rate; today it covers an immense area of ground; rendering it useless for cattle and for the horses impeded by its spiny leaves; it will be an indestructible monument to the civil disorder which has afflicted this fine country.

Beyond the Rio Negro the countryside is much more lightly populated than between that river and Montevideo; it becomes more difficult to travel across country and I have pleasure in acknowledging that, without the various services which were afforded me by the officers of the Portuguese troops and of the Brazilian cantons on the banks of the Uruguay, it would have been impossible for me to continue with my journey.

If one excludes the small gardens planted by the Portuguese soldiers, I did not see, in the space of over fifty leagues, but a quarter of ground under cultivation. I visited the catadupes of Uruguay, called Salto Grande and Salto Chico, and I reached Belem. Between this place and the Missions, my journey became more laborious than it had ever been before; I passed thirteen days in a wilderness where I would encounter neither a single habitation nor a trace of a road, which is populated only by innumerable jaguars and immense herds of deer, of ostriches, of wild horses, and where the only human beings I saw occasionally in the distance, on the other side of the river, were the Spanish insurgents, enemies of the Portuguese.

It was in this wilderness, on the banks of the Santa Anna river, that I all but died with two of the men who accompanied me, poisoned by some spoonfuls of honey from the wasp called lecheguana.

In the months of December and January, the heat had been excessive; the thermometer would indicate regularly 24 - 29° between two and five o'clock in the afternoon, and I finished up by finding no more plants. However, towards the last days of January, it rained abundantly, the dried-up fields of grass came back to life with remarkable alacrity, and there would have already been many days on which I saw flowers once again, when I came into the province of the Missions.

The further I left the Rio Negro behind me, I observed less affinity between the flora of this country and that of Europe; once again I began to find an *Inga* and a *Melastoma* in the catadupes of Uruguay; the willow, so common around Montevideo, had almost disappeared by the time I entered the province of the Missions; and when I finally arrived



there, it had already been some time since I had seen any plants belonging to other European genera; but, in their place, I once again saw many species which I had already collected in the campos gerais and also in the elevated parts of the province of the Mines. If I now review in their entirety the plants which I had collected between the mouth of the Rio Negro, at 33° and some minutes of latitude, and Ibicui, the boundary of the Missions, at 29° and some minutes of latitude, I will find that, of 295 species, there are 21 of them which have no relationship whatever to the families of our French flora; namely, two Calycera, two Palms, two Bignonias, two Malpighias, two Menispermata, two Sapindaceas, two Melastomas, one Nyctagina, one Cissus, three Commelinas, one Turnera, and one Gesneria.

One is aware that the Missions, called of Paraguay, consist of thirty villages, of which twenty-three are located between the Parana and the Uruguay, and the other seven are on the left bank of the latter. The first-named had been reduced to ashes during the disastrous war which Artigas waged against the Portuguese and his own fellow citizens; the others, which the Brazilians had taken over in 1801, are the only ones to exist any more; they in fact carry the name of province of the Missions, and it is those which I have visited.

The traditions which are still maintained in this fine territory and the ruins which spread over it, demonstrate effectively what has been portrayed without exaggeration of the prosperity which it enjoyed in former times. Since 1768, the Guaranis have been entrusted to men who only turn to them as a means of making a quick fortune; ere long the countryside became impoverished and finally fell into decay. The Portuguese treat the Guaranis even worse than they had been by the Spaniards. In 1768, the population of the seven villages, now Portuguese, was upwards of 30,000 inhabitants; when the Spaniards retreated in 1801, they left behind only 14,000 souls; in 1814, there were already no more than 6395 there; lastly, I myself helped in the census which was taken in 1821, and in the whole of the province, there was only to be found an Indian population of 3,000 individuals. The best grazing lands have been taken from the Guaranis, their cattle have been consumed or taken away into the Portuguese properties; the villages have fallen into ruins. Hardly any of the old men preserve a tradition of arts and crafts, and I have seen the poor wretches who are consumed with hunger on the ground which belongs to them and which produces two harvests each year. In a word, the province of the Missions, not long ago so prosperous, today presents a picture of all the miseries which afflict our species.

The most southerly part of the Missions, included between the Ibicui, the Uruguay and the Camacuan, affords excellent grazing. But, as one leaves S. Francisco da Borja further and further behind, the woods become more widespread, the grass loses its quality, and at San Joao and San Anjo, one is obliged, in order to maintain livestock and above all the cows, to feed salt to them, as in the country of the Mines. In recompense, the land in the north of the province is very suited to cultivation. Without ever being burned, it gives, as already indicated, two harvests per year, and yields, with an equal abundance, wheat, cotton, maize, rice, beans, manioc, melons, vegetable marrows, water melons, and generally the European fruits and vegetables. By choosing the best protected spots, even sugar cane can be planted with some success.

Chiefly in the northern part, the overall appearance of the vegetation has much in common with that of the surroundings of Curitiba, which is not very far distant from the Missions - only two degrees to the north. There is however, this difference that one never sees any *Aurucaria* trees in this latter province.

I crossed over the Serra da San Xavier, which is but a continuation and almost the extremity of the grand cordillera (Brazilian highlands - H.M.) and I found myself once more in the province of Rio Grande.

At that time it was the month of April, I saw no more insects, nor plants in flower, and I was continually impeded by the abundant rainfall and by the river crossings. Since I had left the province of Santa Catharina, I had gone about six hundred leagues, and I had traversed a country divided by numerous rivers; one part of this country is rich and flourishing, and yet I had seen not a single bridge, sometimes I had not even found any canoes on the river banks. When that happens, the local inhabitants fetch a raw hide, they tie a knot at each of the four corners and in this way form a sort of round boat (*pelota*), to which they tie a leather thong. Whoever wishes to cross the water, sits himself in this kind of canoe, and stops still whilst a swimmer, holding the thong between his teeth, pulls until he has reached the other bank. I have often had transported in this fashion a most cumbersome baggage; but it is easy to imagine that the naturalist cannot see the fruits of a long and painful labour put to hazard in this manner without qualms.

Having arrived at the town of Rio Pardo, I embarked on the Jacuy and, after some days of navigation, I found myself once more, at the end of almost a year of travelling, at Porto Alegre.

The three-masters can get up as far as Porto Alegre, and there one constantly sees more than fifty vessels of various sizes in the port of this town. However, sailing on the Lake dos Pathos is far from being without danger; terrible winds are met with there; there is shelter to be found at only two different places; lastly, its waters spread out over a large area, leaving only a narrow channel for the passage of shipping, which has not even had the attention of marking

it by buoys.

Having found no mode of transport by land, I decided to embark for Rio Grande, and from there to Rio de Janeiro, which I reached without accident.

#### Comments

..... from H. Middleditch

"The Missions, to which reference is made by St. Hilaire, were originally established by the Jesuits under the patronage of the Spanish crown. The Jesuits were expelled from all their Missions in New Spain by order of the Spanish monarch in 1768, including those in the territory visited by St. Hilaire. These particular Missions were nominally in Spanish territory, reached overland from Asuncion; with the break-up of the Viceroyalty of La Plata in 1810, the Spanish colonists at Asuncion declined to join the newly independent Argentina. Asuncion thus became the effective capital of Paraguay and because the Missions on the borders of south-eastern Brazil were reached from Asuncion, these particular missions became known as the Missions of Paraguay; they are identified in this manner by St. Hilaire. The territory on the opposite bank of the river Uruguay, where St. Hilaire observed a few "Spanish insurgents" eventually became the recognised Argentinian province of Misiones.

"St. Hilaire makes reference to the growing of manioc in Rio Grande do Sul; this is also known variously as manihot, mandioca, cassava and yuca. It is not to be confused with the Yucca, which is one of the Liliaceae. Manioc is a plant with an edible root - a caudiciform succulent, perhaps?

"The first discovery of *Gymnocalycium denudatum* was made by Sellow during his collecting trips in Rio Grande do Sul; the available evidence would suggest that the plant came from the southern half of this province. It appears from the various accounts of this region that the southern half of Rio Grande do Sul province represents a transition between the forest lands to the north and the treeless grasslands of Uruguay - a countryside not only of open grasslands, but also with savannah, or grasslands with bushes and low trees, with patches of woodland, and with more dense woodland near rivers and streams. We appear to lack completely any information on the vegetation local to the growing places of *Gymnocalycium denudatum*. But we do know that the climate here is no longer tropical, for St. Hilaire tells us that it is precisely at this latitude that deciduous trees begin to make their appearance.

"Although all *Gymnocalycium* grow within that part of the continent which is subject to temperatures below zero in winter months, it would appear that *Gymno. denudatum* is the species growing closest to the tropics where winter frosts do not occur.

"*Notocactus orthacanthus* was also collected by Sellow during his visit to Uruguay and plants were sent back to Europe."

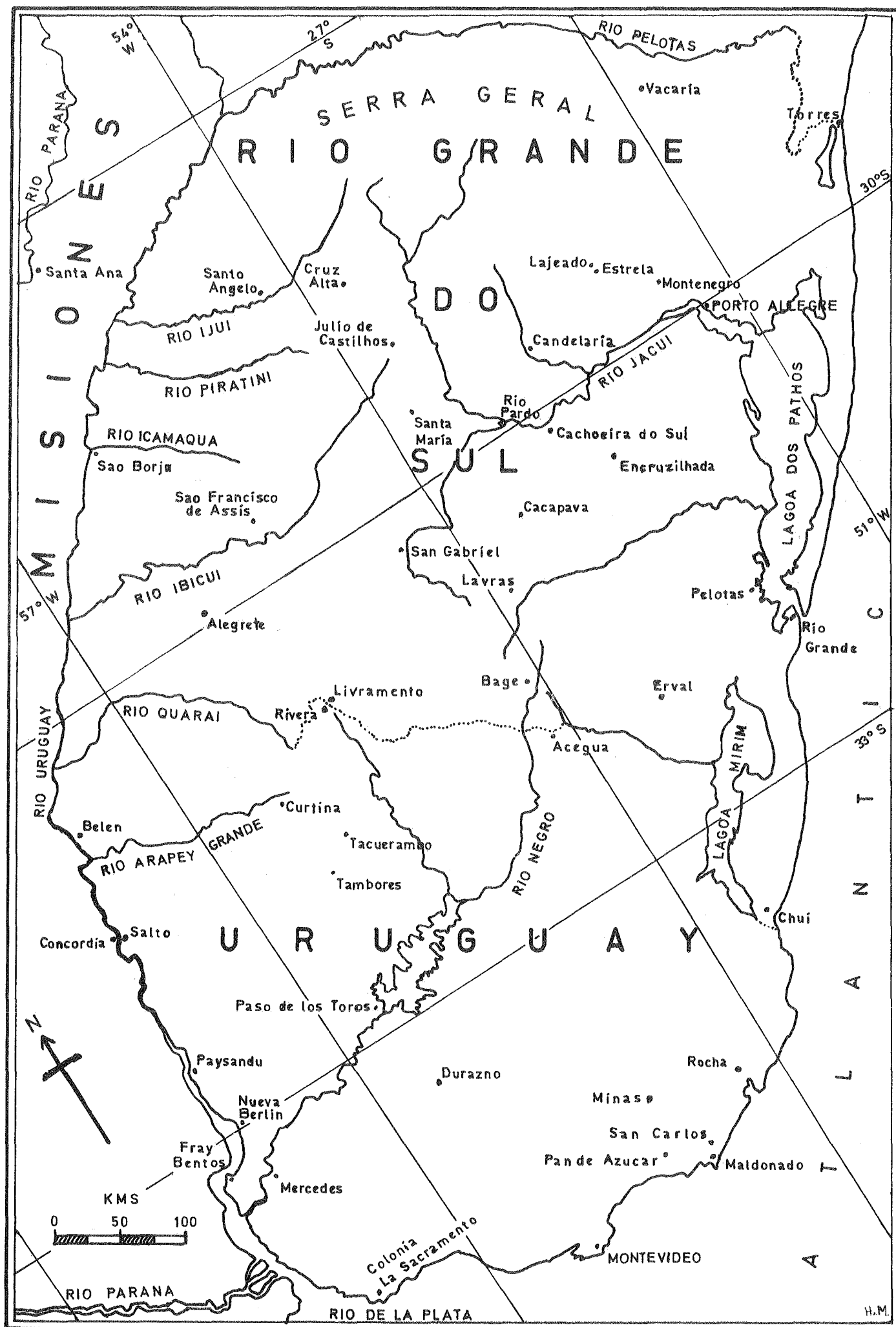
#### SOUTHERN BRAZIL AND URUGUAY

On the accompanying map, which covers the States of Rio Grande do Sul and Uruguay, will be found many of the place names which appear in the articles in this issue. The habitat locations of the various Brazilian Eriocacti, of many *Notocacti*, and of *Gymnocalycium denudatum* and *G. horstii*, are plotted on this map.

A number of the names of places and of rivers are a Spanish or Portuguese rendering of the native name. In addition, a French or English author can impart his own spelling interpretation to a name, especially if (as in the early 19th Century) he had perhaps only a phonetic rendering to guide him. Thus we find alternative spellings of the same place or river, such as Chui or Chuy; Pan de Azucar or Pao de Assucar; Rio Icamagua or Camacuan; Rio Jacuy or Jacui; Herval or Erval; Yaceguay or Acegua; Rio Quaraim or Quarai; Rio Ibicuy or Ibicui; Rio Yjuhy or Ijui; Rio Piratini or Piratiny.

The principal geographical feature which dominates the Brazilian coastal zone from Bahia in the north for many hundred of miles to the south, is the Great Escarpment - but this feature terminates in the latitude of Torres, on the northern boundary of Rio Grande do Sul. It is replaced by a broad, low lying coastal plain covered with large and small lagoons, backed by gently rolling hills. To the north of Rio Grande do Sul and inland of the Great Escarpment is the Parana plateau, which is comprised of a great lava bed of a similar formation to that in Iceland and in the Indian Deccan. This lava bed extends over a very large area, including the northern part of Rio Grande do Sul. The southern boundary of the lava bed lies on a line running roughly east to west from Torres via Santa Maria to Sao Francisco de Assis, thence southward through Livramento and as far as Durazno in Uruguay. From here the boundary of the lava bed turns back to Salto on the Rio Uruguay, thence following approximately the line of this river for some way. The lava bed covers the Argentine province of Misiones and the adjacent part of Paraguay across the Parana river.

Where the Rio Uruguay crosses the lava sill, there are falls which prevent the passage of river traffic; hence the river provides only disconnected stretches of water as a highway, unlike the Paraguay/Parana which provides clear access from Buenos Aires to well beyond Asuncion. The tributary rivers which run into the Rio Jacui from the north have cut through the lava bed and exposed the underlying sedimentary strata. These same sedimentary beds also appear to the



south of the Rio Jacui and Rio Negro. Between Pelotas and Cacapava the geological structure is in the form of a dome, from which the younger sedimentary strata has been eroded away, exposing the ancient crystalline rocks beneath.

In the north and west of Rio Grande do Sul and in the north-west of Uruguay is to be found the red soil produced by weathering of the diabase lava. Soils of quite a different nature occur on the hilly uplands, in the coastal zone, and on the ancient crystalline rocks. It is quite clear that the hilly uplands formed of sedimentary strata carry a fairly wide variety of cactus flora. Only on the basis of negative evidence is it possible to suggest that the red earth of the diabase lava, the low-lying coastal plains facing the Atlantic, and the soil covering of the ancient crystalline rocks of south-eastern Rio Grande do Sul, do not support any cactus population.

**ECHINOCACTUS DENUDATUS SP. NOV.** By Link & Otto  
(Translated by G. J. Swales from *Icones plantarum rariorum*, 1828.)

*E. caule subgloboso virente, costis 6 - 8 obtusatis, spinis 5 - 8, omnibus patentissimus, calyce involucri phyllis paucis. Habitat in Brasilia australi.*

(From the Latin). An Echinocactus with a green, almost spherical body, six to eight blunt ribs, 5 - 8 spines, all of which are very widely spreading, and a flower tube with a few scales. Habitat in Southern Brazil.

Body 3 - 4 inches high, 3 - 4 inches wide. Ribs with distinct projections, bounded by shallow grooves on either side and having narrow (cross-) furrows. Spines 5 - 8, all  $1/3$  -  $2/3$  inches long, very widely spreading and almost adpressed, twisted, surrounded by short wool. Growing point depressed and lacking wool. Flowers arising from the ribs near the growing point, amongst the spines, 2 - 3 inches in height. Receptacle cup-shaped, with scattered scales, often arranged in a circle, small, blunt, oval in shape; higher up the scales are more numerous, longer, more pointed, finally merging into the corolla. Corolla with white, acute, linear petals. Stamens numerous, much shorter than the corolla. Style bearing many stigma lobes, scarcely longer than the stamens. Fruit not seen.

Sellow clearly sent this plant because of the unusual nature of the flower tube.

(From the German). The plant body is 3 - 4 inches high and 3 - 4 inches wide. The ribs have distinct projections, are flattened at the sides, very blunt, and with narrow (cross-) grooves. The spines are in groups of 4 - 6 - 8, are  $1/3$  to  $2/3$  inches long, very widespreading so that they almost touch the plant body, bent to and fro, and bearing a little wool (at their base). The growing point is sunken. The flowers appear on the ribs near to the growing point, amongst the spines. The pericarpellary region is cylindrical and has on its outer surface small, oval, blunt scales, often arranged in a circle. These scales increase in number upwards towards the top, becoming longer and more sharply pointed and finally changing into the flower petals. These are linear, pointed and white. The stamens occur in larger numbers, shorter than the petals. The style is about as long as the stamens with numerous stigma lobes. We have not seen the fruit.

These striking cacti were obtained from Southern Brazil by Herr Sellow and we had the pleasure of seeing them flower in the same year. The flowers opened in May and June producing a very pleasant and delicate scent, and they persisted for several days. On sunny mornings they opened, closed again by the afternoon and remained so until the following day.

The plant likes a dry location, warm and sunny, like most cactus species. A soil mixture with sand, loam and limestone is beneficial to them; propagation must take place by seeds.

#### Comments

..... from H. Middleditch

"This particular description is very useful and interesting, especially the short reference to the tube (the pericarpellary region) being cylindrical. This would suggest that the plant with the tall flower and the slender tube is the type which Sellow originally discovered.

"From the very last remark in this description, one may perhaps presume that the grower did not have an opportunity to see a specimen which was offsetting.

"Although the description refers to the habitat of the species being in Southern Brazil, at the time of discovery and first description of this species, the present territory of Uruguay was an integral part of Brazil. To obtain a more accurate idea of where this plant was actually found, it would be necessary to trace the itinerary taken by Sellow on his collecting trip, to track down the field collection number for this particular species, and so determine its place of discovery."

..... from Gordon Rowley

"A book which you will find helpful in your search for the origin of plant names is: Smith I.L.L. and Stearn W. T., "A Gardener's Dictionary of Plant names", 1972, - a fount of useful and little-known facts. The entry for Sellow reads:—

"Selloi, sellovianus, sellowii. In honour of Friedrich Sellow (1789 - 1831), German traveller and naturalist, who made extensive collections in Brazil and Uruguay. The family name was "Sello" but when in Brazil he altered it to "Sellow", hence the varied spelling of epithets of South American plants commemorating him"

..... from Dr. H. J. Hilgert, Schloss Ricklingen.

"Concerning your search for publications about F. Sello, I am afraid that I cannot be of much help to you. The only information I found in my literature was a note on p. 716 of the book "Zander, Handwörterbuch der Pflanzennamen," edited by Encke and Buccheim, Stuttgart, 1972, which reads:

"Sello - Fritz Sello, later written Sellow. Potsdam 1789 - Oct. 1831 drowned in the Francisco river, Brazil. German gardener, botanist and plant collector. From 1815 - 17 he accompanied the Prince zu Wied on a travel to central Brazil. Named after him the genus *Selloa* H.B.K. as well as the journal 'Sellowia', 1954."

"Perhaps one of the Editors could help you."

..... from Dr. G. Buccheim, Hunt Botanical Library, Philadelphia.

"You requested some information about Friedrich Sellow: today I am able to send you a copy of an account by Ign. Urban in Vol. I Part I of Martius' "Flora Brasiliensis". The text is in Latin but it gives an excellent description of all the localities visited by Sellow; I do hope this will serve your purposes well.

"..... from Martius "Flora Brasiliensis" Vol. I, Part I:

"Sellow, Friedrich. 1789 - 1831. Drowned in the Rio Doce in the Autumn of 1831."

..... from G. J. Swales

"I have now had an opportunity to see, for the first time, the sketch of *Gymno. denudatum* which accompanied the original description by Link & Otto. It now seems to me that the illustration of this species which appears in Schumann's book (and is reproduced in this issue of *The Chileans*), was traced from Link & Otto's original illustration. The split in the epidermis near the bottom of the plant is identical in both pictures and on checking spine by spine I find that both are indeed identical. The original picture is hand coloured and on it one may distinguish the stamens which just appear at the top of the flower, but these are omitted by Schumann in his illustration. The body shading in Schumann's picture gives the impression of angular ribs whereas in the original Link & Otto Plate the highlights on the ribs show them to be round and glossy. The roots which appear on the original are obliterated by a addition of a soil surface on Schumann's sketch.

"I wonder how Schumann comes to attribute the sketch in his book to "Original - T. Gurke"?"

"There is another illustration of this species in Osten, *Notas Sobre Cactaceas*, Lam XLVI, which once more has a long slender flower tube rather like the flower in Schumann's illustration. It is also like Schumann's illustration in having pointed petals and as in the description by Link & Otto the stamens are shorter than the petals.

"The areole sketch which is attributed to the Berlin herbarium is very close to the areole included in the original illustration from Link & Otto. As the original plant was grown by the Botanic Gardens in Berlin, it is possible that the flower section and the areole, attributed by Herter in his "Flora Uruguayensis" to the Berlin herbarium, were indeed from the original plant."

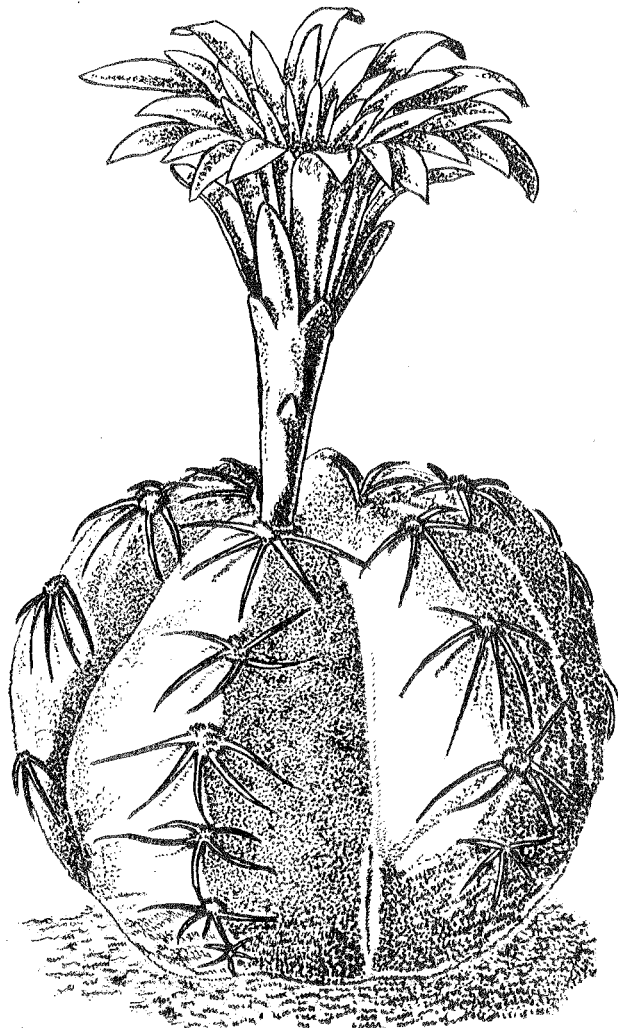
#### **GYMNOCALYCIUM DENUDATUM** By Dr Bohumil Schutz.

(Translated by E. W. Bentley from *Friciana Rada* VI 1966)

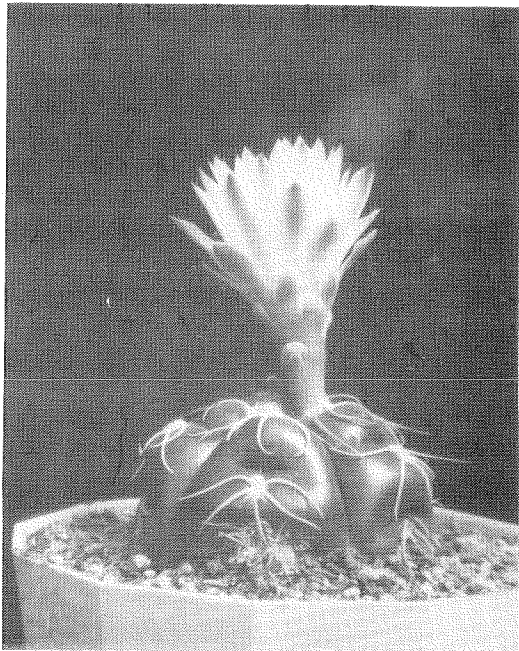
A fairly extensive account of *Gymno. denudatum* and its numerous varieties was published by me in *Friciana* No. 30. If I now write again on this theme I have an important reason for it, it is because I have at last managed to obtain the long-sought account of Dr Hassler's journey. And therein is to be found, as I had previously opined, the Latin diagnosis of *Echinocactus paraguayensis*. It is an important thing to be able to finally answer the question whether this species had been described or not.

*Gymnocalycium denudatum* was first described in the year 1828. Forster stated in 1846 that the plants were 10 to 15 cms in diameter and of similar height. They were 6 to 8 ribbed. At that time, a five-ribbed form was not yet known. The ribs were round, somewhat humpy; humps large, very confluent. Areoles oval, yellowish, later grey-felted. Spines 5 - 8, lying close (to the body? - H.M.), short, at first yellowish, then white. The plants were then fairly variable. Their general characteristics were: rounded ribs, felted areoles, and spidery spines. These same characters we find described in Schumann. Also the flowers were similarly described by both authors: tube long and snaky, flower colour pure white. Such denudatums are seen in the illustration in Schumann's *Gesamtbeschreibung* and in Alwin Berger's photograph.

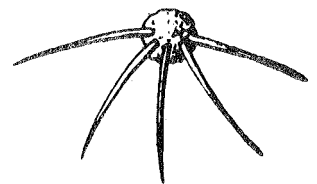
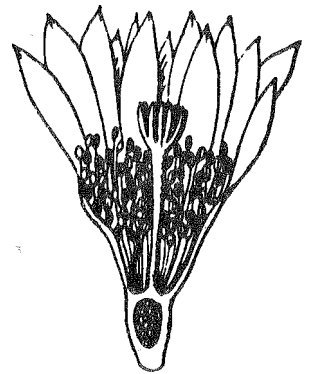




Schumann 1898



Mrs. L. E. McIntosh



Berlin herbarium

GYMNOCALYCIUM DENUDATUM

In our collections there is a different form with deep clefts between the areoles, plump humps and short, thick-tubed flowers. The flower colour is dirty white. They are obviously suffering from viruses and there is the possibility that this circumstance could be the origin of the flower mutation. This question can be answered by controlled seed sowing. Wild plants of *G. denudatum* were pictured in Van Osten's book "Notas sobre Cactaceas." They are 5 - 8 ribbed forms from material collected in the year 1922. Habitat data: Rio Grande do Sul, near Pelotas. They are very similar to the ones that Backeberg offered as "first re-introductions" in 1937. According to Backeberg then, no *denudatum*s had been imported since the year 1825. In the meantime very many hybrids had been produced. Many are from very similar mother plants e.g. *denudatum* X *megalothelos*. One must therefore be very careful in studying variability. In 1965 original plants and seeds were again brought in from South Brazil. Here also there are 5 to 8 ribbed forms. It is noteworthy that all seedlings initially possess 5 ribs and a central spine.

#### Comments

..... from H. Middleditch

"I am rather intrigued by this last comment that all seedlings of *G. denudatum* initially possess a central spine. Could this be referring to the habit of this *Gymno*. (and others with adpressed spines) of putting out new spines in the crown which are not adpressed but, on the contrary, stand upright and by the time they have grown out to about the shoulder have curved down close to the body? In addition, a single spine will often be found growing by itself at the newer areoles close to the growing point, to be followed by two further spines, and then as the areole moves out more towards the shoulder, it is joined by two more. Is Schutz describing the solitary upright spine in the newest areoles as "initially a central"?"

"It is interesting to see that any *G. denudatum* which has a short tube or in any other manner fails to match up to the original description, is not an example of natural variation but is suffering from a virus."

**FRIEDRICH SELLOW** By Ign. Urban.

(Translated by F. Fuschillo (Biography) & E. W. Bentley (Travelogue) from Engler's *Botanische Jahrbucher* XVII Vol. 3. 1893.)

Friedrich Sellow was born on the 12th March 1789, son of the Royal head gardener in Sans Souci, Carl Sello. His grandfather was an official in the Royal Garden at the Havel Residence, and two of his uncles were employed as official head gardeners, so for young Sellow - who in 1796 had lost his father, himself a dedicated horticulturalist - the way was prepared.

After he had learnt gardening with his uncle John William Sellow, in Sans-souci, he took an assistant's position at the Berlin Botanical Gardens with the then Director and organiser Prof. Willdenow, renowned for his great flair and interest in botany. At that time Willdenow was intimately involved with the handling of the plants collected by von Humboldt and Bonpland from their expedition in tropical America and he was putting in order those which they frequently sent him.

When Sellow moved to Paris in 1810, he was highly recommended by Willdenow to Alexander von Humboldt, to whom he was permanent assistant during his stay in Paris 1810 - 1811, and to whom he was indebted for the constant warm advocacy of his interests with the Prussian administration. Also, the incumbent Prussian Ambassador in Paris, General von Crusemark, took an interest in him and gave him a monthly allowance. With his immediate requirements being looked after in this manner, he could concentrate on his study of the rich field of garden plants. Under Desfontaines and A. L. Jussieu he began his botanical studies and read natural history from Hauy, Cuvier, Lamarck, Geoffroy and others.

In the year 1811 he moved to England via Holland with financial assistance from von Humboldt. In England he made use of the great library of Sir Joseph Banks and at the same time met the famous English botanist Robert Brown, curator of Bank's Library and collections, and spoke with many other distinguished scientists. In addition, he worked daily in the herbarium of Dr J. Sims, who ran the *Curtis Botanical Magazine*, and for this work used new plants from the nearby London gardens. He owed much of his expanding knowledge of Zoology and Mineralogy to his friendship with Dr Leach and Dr König of the British Museum. He did not pass over the chance to study in the Linnean Society collection and the Bullock Museum.

In London in 1813 Sellow made the acquaintance of the envoy G. H. von Langsdorf who was going to Rio de Janeiro as Russian consul. This stimulated in him the idea of an exploring expedition to Brazil. At the time there was the iniquitous war of independence and it would have been hopeless to seek support for such a trip in his homeland, so he accepted from Sir Joseph Banks and Dr Sims an advance against anticipated collected material and set out in the spring of 1814, splendidly prepared in every respect for his task ahead.

The emigration of the Portuguese Royalty to Rio de Janeiro in the year 1808 brought about a complete reversal of internal and external relations in the State of Brazil. Prior to this auspicious occasion, a scientist seeking the abundant produce of this foreign land, which up till then was closed, would, on his arrival be at once surrounded by soldiers and anxiously put under guard, but at the present time this oppressive system and the barrier of secrecy had been discarded. The liberal minded King and his knowledgeable minister Conde da Barcu, allowed foreign travellers not only entrance but even supported their research in the most generous fashion, and gave them papers and letters of introduction to the Captains-General of the different provinces of Brazil. Indeed, the Government even promoted their studies through a regular annual allowance to them, for which they asked for nothing beyond the provision of some copies of their work on Natural History to be deposited in the National Museum in Rio, and at first not even that.

The forward looking policy towards the European student and the traveller did not change when the King appointed his son the Crown Prince Dom Pedro as Prince Regent of Brazil in 1821. In the following year the complete severance of ties with Portugal and the elevation of the Regent to King was solemnly proclaimed. The presence of the Portuguese Royalty injected new life into the country regarding exports and commerce with the outside world. Foreign countries sent envoys and consuls and selected such persons as their representatives who indulged in the natural scientific studies. As we observed above, in 1813 the Russians had sent Consul (later Consul-General) von Langsdorf; the Prussian representatives followed - the Ambassador Count von Flemming, and in 1817 came the qualified naturalist von Olfers as Legation Secretary; from Sweden came Consul-General Westin; in company with the French Ambassador the Duke of Luxemburg, came Augustine St. Hilaire, later deemed so deserving because of his "Flora of Southern Brazil". Austria took advantage of the marriage of the Archduchess Leopoldine to the Crown Prince Dom Pedro in the year 1817 to send an Embassy to which the botanists Mikan, Pahl and Schott were attached. They had at first the two botanists from Bavaria, Spix and Martius as well, but later they went their own way as they wanted to gain more knowledge of the fauna and flora of this most plant and animal-rich country in the world.

The focus for the naturalist was the open house of Dr. von Langsdorf, the scientific companion of the first Russian round-the-world Expedition under Captain Krusenstern (1803 - 07), whose estate lay at the foot of the Sierra d'Estrella. Here Sellow found refuge, advice and assistance at a time when Prussia had no diplomatic relations with Brazil. During his first year in Brazil 1814 - 1815 all of his field activities were carried out in the neighbourhood of the capital, the Orgel mountains and the Sierra d'Estrella. His production of insects and dried plants were so significant that by sending them to Sir Joseph Banks and Dr Sims he cancelled his debt to them.

At the beginning of November 1821 Sellow left Rio de Janeiro and after a 13 day sea journey arrived at Montevideo. Here, for the time being, he collected in the vicinity of the town. From January to April 1822 he made a short trip from the mouth of the Rio de S. Luzia to its source, across to the source of the Barriga-Negra and down this stream to the confluence with the Arroyo Malo, from there by another route to Villa de Minas and then past Maldonado and S. Carlos back to Montevideo, a route that crossed the chief mountain range of the province twice at different levels.

Since it is unfortunately not possible to set out in detail the full results of the Sellow journeys with respect to various fields of Natural History, there might be quoted here from a letter to Count Flemming what he collected during the one year stay in Montevideo and in its neighbourhood and shipped to Europe. Three boxes contained ca. 300 minerals and stones, one with 700 species of dried plants in samples of 4 - 6, one with seeds and one with living plants, four boxes and one cask with 2,300 insects, 223 birds of 116 species, some mammals, including a male and female jaguar, skeletons of the capybara and of white deer, some 20 fish, snakes, intestinal worms (Olfers's speciality) and some other preserved specimens for the anatomical show-case. He sent another nine boxes with a similar collection to the museums of Lisbon and Rio de Janeiro.

In explanation of the fact that he stayed a comparatively long time in Montevideo and yet had collected comparatively few plants, he wrote "I beg you graciously to bear in mind that at present, as I am journeying alone, I must give thought not only to botanical and ornithological collecting but also to entomological and geological specimens; on our recent journey through Minas and Sao Paulo, Herr von Olfers was almost exclusively occupied with these latter. Collecting mountain species makes it necessary however to travel with watch and compass in the hand so I would be regularly prevented from gathering plants while on the march and, in order to obviate this disadvantage, frequent 'halt days' would be needed. Because of this the whole journey would proceed only by slow stages. Further, even a superficial sorting and division of the collection into three parts, in which I can enlist no help from any of my men, demands a great deal of time, especially as sufficient space for this work is lacking. Finally, would Your Excellency graciously remember that in this latitude a significant winter reigns almost from May to September during which the vegetation rests and that consequently I would have quite failed in the main object of collecting the plants of the country by undertaking a journey at this time of year."

In November 1822 Sellow left Montevideo and turned first to Colonia del Sacramento. After a small side-

excursion to Buenos Aires he went from Colonia to Salto Grande in Uruguay (9 Dec. 1822 to 5 March 1823) and from there straight through Uruguay and Rio Grande do Sul to Porto Alegre at the northern end of Lagoa dos Patos where he arrived at the end of May 1823.

At the end of August 1823 Sellow set out on a new journey, first to Jacuhy and then on to the town of Cachoeira from which he made short excursions, particularly to the Taquary in the north; he then turned (mid-December) from Cachoeira south again to Cacapava, Bage, on the Rio Negro down to the Serra de Yaceguay and from there via Herval to Villa Grande do Sul, which he reached in March 1824. (It had been the special wish of the Brazilian Government that Sellow should present a description of the gold-rich mountain ranges near Cacapava and the old silver mines near Yaceguay).

Soon after he had the misfortune to break his collar-bone through a fall from a horse on the bank of the Lagoa dos Patos and to lose a part of his collection in the town of Pelotas through the overflow of the river of the same name. The winter there he spent in S. Francisco de Paula (between the two lakes of dos Patos and Mirim). Then on 9th January 1825 he returned to Porto Alegre after a ten-day journey on the Lagoa dos Patos.

During the winter months in this southern province, the impossibility of indulging in collecting activity was justified once more by Sellow in the following manner: "During the wet winter months a journey is as inexpedient as it is uncomfortable for the collector; for all watercourses are then swollen and through more than 15,000 square leagues one finds but a solitary bridge, and very few boats for ferrying on main rivers. Whoever cannot swim over must let himself be pulled over in an oxhide tied up at the ends which a swimmer ties to the tail of his horse by means of a strap or takes between his teeth. However, who would put at risk collections, especially heavy boxes of minerals, in this way? Very little flowers, and the drying of the natural history specimens - especially skins - becomes that more difficult in the cold and damp air because one only seldom comes across a house where one can spread out one's collection with safety, since in these parts so little regard is paid to domestic comfort that one not infrequently finds even rich landowners in houses that the most humble of our buildings would put to shame.

From Porto Alegre Sellow made a second journey westwards to Uruguay and the Missions, to which he was especially attracted by the news reaching Porto Alegre of colossal fossil bones (two mammoth skeletons) that had been found at Arapey chico. He set out on 17th September 1825 and, furnished with new barometer and sextant, went for the second time via S. Barbara da Encruselhada to Cacapava, from there (25 Dec.) westwards beyond S. Gabriel to the boundary river, the Rio Quaramim. At that time, however, there were troops fighting in this area. (The Banda Oriental - Province Cisplatina in botanical works - became independent of Brazil in 1828 and was recognised as an independent republic under the name of Uruguay).

Sellow received a military escort from Colonel Bento Manoel Ribeiro so that he could press on unmolested in the last days of January 1826 into Banda Oriental to Arapey chico and visit Uruguay, going up as far as Belem from where he turned back to the camp in Rincon de Catalan. From here he went (again in the Rio Grande do Sul) northwards to Alegrete and in May 1826 on the Ybirapuitan down past Ybicuy up into Uruguay up to the Missions between the rivers Piratiny and Yjuhy. He left these on August 14th, went through the northern part of the province to Cruz Alta, Mata Portuquez, through the Campos da Vaccaria and on October 26th reached the border of the State of Santa Catharina; from there, where the upper part of the Uruguay is called Rio Pelotas, to S. Victoria and arrived again on November 10th in Porto Alegre. The "mammoth skeletons" were mounted together at that place on a metal frame and were claimed by the Museum at Rio, while the drawings made by Sellow in the Abh. d. Kgl Akademie der Wissenschaften at Berlin have been published by Weiss.

Soon afterwards he began once more a journey through the Rio Grande do Sul, clearly at the direct instance of the Emperor of Brazil, who was at that time in Porto Alegre and who wished to have minerals of the province that he could send to the Empress. He traversed the Rio Pardo, Campana, Cacapava as far as the region of S. Gabriel, turned from here to the source of the Rio Cambay and S. Sepe and arrived back via the Rio S. Barbara and Cacapava in Porto Alegre at the end of January 1827 - a stretch of over 100 German miles that he had covered in about a month.

The trip from Montevideo to Sao Paulo (Uruguay, Rio Grande do Sul, Santa Catharina, Parana & Sao Paulo 1821 - 1829) yielded 6019 habitat locations and identities, with the season after a succession of numbers, of which the first half (from Uruguay and Rio Grande do Sul) were distinguished with a prefix d., for example d. 1216. Habitat location and date are almost invariably lacking with the plants. Concerning the numbers 1201 - 4097, 4114 - 5559, 5580 - 6019, there exists a catalogue published by Sellow with a record of the family, genus and habitat locations of the foregoing specimens, to some extent also with dates and a short description of the plant.

Unfortunately this latter only appeared when I had already ascertained the most important points concerning

the relationship of the numbers to the particular provinces in a very laborious fashion from the diaries and reports to Altenstein - unfortunately too late for the systematic literature, in which the plants will be recorded either only with the identity number, without any reference to the foregoing, or to some extent following the erroneous entries in the Knuth herbarium, where for the larger part the d-numbers have been quoted on his labels with Uruguay as the land of origin.

They were in fact collected:—

- d 1 - 740 in the southern part of Uruguay (1821 - 22)
- d 744 - 1200 in Uruguay and Rio Grande do Sul on the trip from Montevideo to Porto Alegre (1822 - 23)
- d 1204 - 1292 in the state of Rio Grande do Sul from Porto Alegre to the Rio Taquary (Aug-Sept. 1823)
- d 1293 - 1503 Ibid. to the Rio Pardo (Rio Jacuhy) (Sept-Nov 1823)
- d 1504 - 1853 Ibid. from Rio Pardo via Cacapava to Bage (Dec 1823 to Jan 1824)
- d 1854 - 2166 Ibid. from the Yaceguay via Herval, Cerra doa Tapes, to S. Francisco do Paula (Feb - March 1824)
- d 2167 - 2438 Ibid. S. Francisco do Paula and Villa Rio Grande do Sul (Oct - Nov 1824)
- d 2439 - 2818 Ibid. Porto Alegre and Serra do Herval (Jan - Sept 1825)
- d 2819 - 2993 Ibid. from Porto Alegre to Encrusilhada (Sept - Oct 1825)
- 2994 - 3330 Ibid. from Encrusilhada to Cacapava and Rio S. Barbara (Nov - Dec 1825)
- 3331 - 3623 Ibid. via San Gabriel into the northernmost part of the Uruguay back again to Allegrete (Dec 1825 - May 1826)
- 3624 - 4097 Ibid. from Allegre via the Missions through the northern part of the State to Porto Alegre (May - Nov 1826)
- 4098 - 4239 Ibid. from Porto Alegre to S. Victoria (Nov 1826 - May 1827)
- 4240 - 4479 in the State of Santa Catherina (May 1827 - March 1828)

(His trip through Uruguay was followed by further travels in Sao Paulo and Minas Gerais). With his death by drowning in the Rio Doce in 1831 there perished the indefatigable traveller at the age of 42 years.

#### Comments

..... from H. Middleditch

"In the course of reading a number of books, I had acquired various disconnected fragments of information relating to the change of Government in Brazil in the early 19th century, together with occasional references to the early botanists who visited this country. Prior to reading this sketch of Sellow's biography, I had but a vague impression of the knowledge which was possessed by Europeans of Brazilian Natural History prior to that time, and I could not understand why so much more field work commenced in the decade from 1810 to 1820. It is now far clearer how these events were related to each other.

"The Napoleonic Wars in Europe had led to so much loss of national territory by the Portuguese to the invading French armies, that the Royal family fled the country in 1808 in anticipation of the fall of the last remaining bastion - the capital, Lisbon, and its surroundings. It was evidently this move which led to such a change in the political atmosphere in Brazil, explorers and travellers subsequently being welcomed into the country. The inference is that there had been little or no exploration by other Europeans prior to that time and that precious little was known up until then of the natural history of that country.

"Just as in recent years, the establishment of a newly independent overseas territory has led to the appointment of consular officials from various leading nations of the world, so the establishment of the effective independence of Brazil must have been the occasion for similar new appointments to be made. Indeed, it would be of the greatest interest to European savants & Governments for it offered an opportunity to establish the nature of the wealth which lay within the borders of Brazil. Hence the sudden influx of competent naturalists thinly disguised as Ambassadors or Consuls, or under their patronage. At the actual time of the change in political atmosphere in Brazil, all energies in Europe were bent towards the conclusion of the Napoleonic wars and hence it is only after the year 1812 that we find great attention devoted to the possibilities of exploring Brazil. Sellow himself arrived in 1814, so placing himself in the vanguard of a tide of naturalists arriving in Brazil.

"We have already discussed the fortunes of the first effective plant collecting expedition to South America by von Humboldt and Bonpland in 1801 (Chileans No. 14 p. 43); these two naturalists brought an immense volume of material back with them to Paris, but it would appear that they relied on the Berlin Royal Gardens and its gardeners to establish and grow on the plant material they had collected. It appears that young Sellow would have played his part in cultivating these new discoveries in Berlin.

"Turning now to the plants which Sellow collected, and in particular the cacti, we do know that he was responsible for collecting and sending back to Europe *Gymnocalycium denudatum* and *Notocactus orthocanthus*.

"The original description of *G. denudatum* was published by Link and Otto in 1828 and in their description they make reference to the plant flowering in the same year that it was received from Sellow - flowering in fact in May - June time. To be able to establish the plant and to flower it after its none too brief sea journey from habitat, could hardly have occupied less than two or three months, so presumably the plant would have been received in Germany either in January or in early February. Allowing ten to twelve weeks for the sea journey, this means that the shipment in which the plant came to Europe can hardly have left Rio Grande do Sul later than the early part of November 1827.



"If there was no great delay between the observations being made on the plant in flower and the publication of the new species description, then the plant would have been collected on Sellow's last round trip through Rio Grande do Sul, which occupied the period May to November 1826. This would only just allow time for the plant to travel by sea to Germany, to be established, to flower in May/June 1827 and subsequently to be described in the 1828 publication. This particular trip took Sellow via Cacapava and San Gabriel into the southern half of Rio Grande do Sul and it would seem that this was the possible discovery area of the original *Gymnocalycium denudatum* - the same region in which *Gymno. horstii* was found at a much later date."

..... from G. J. Swales

"My own conclusions regarding the time and place of the discovery of *Gymno. denudatum* by Sellow, are somewhat different. The original diagnosis of this species did not appear in a journal or magazine which was published at set intervals, but in a book which appears to be a selection or collection of descriptions of new species - covering many plants besides cacti. These plants could have been in cultivation not just for several months, but for several years, prior to the date of publication of this particular book. Thus I do not think it is possible to draw any firm conclusions from publication date, month of flowering, and sailing time from South America.

"We do have a specific statement of the date of receipt of this plant from Sellow, which appears in Schumann's book "*Gesamtbeschreibung der Kakteen*"; here we are given the date of 1825 for the receipt of the first *Gymno. denudatum*. This same date is also quoted much later both by Schutz and Pazout, who may perhaps have been relying on the material in Schumann's book. I can find no reference to the date of collection, in either of Labouret's or Salm-Dyck's publications.

"If the plant was received in 1825 and, as Link & Otto tell us, it then flowered the same year, then we can work on the same basis as that suggested above by H. Middleditch and conclude that the plant could not have left Rio Grande do Sul after November 1824. Between March and October of that year, Sellow was incapacitated from a broken collar-bone resulting from a fall when out riding; there are no plant collection numbers recorded for this period. His first collecting trip after this period was evidently restricted to the locality of the town of Rio Grande do Sul and occupied parts of the months of October and November. If he collected the first *Gymno. denudatum* on that trip, it would have reached Europe in 1825 (as stated by Schumann) and could have flowered the same year (as stated by Link & Otto).

"I would therefore conclude that Sellow found this plant in 1824, at a place not far distant from Rio Grande township.

"It is perhaps possible to suggest an even more specific finding place for this species. In the "*Notas Sobre Cactaceas*" of 1941, by C. Osten, we find an illustration of several plants of *Gymno. denudatum* which were collected from habitat; this illustration was reproduced by Schutz in No. VI of the Czech Journal *Friciana* for 1966, and in the accompanying text we are told that these plants were collected in 1922 at Pelotas, in Rio Grande do Sul. Now the town of Pelotas is not very far distant from the town of Rio Grande do Sul and it is not unreasonable to suppose that the short journey made by Sellow in Oct.-Nov. 1824 took him some way in the direction of Pelotas. It would seem to me, therefore, that the very first *Gymno. denudatum* was probably collected by Sellow not too far from Pelotas."

..... further from H. Middleditch

"If our *Gymno. denudatum* does indeed originate from the southeastern corner of Rio Grande do Sul, does the *denudatum*-like *Gymno. "sp. Rio Negro"* come from the uppermost reaches of that Rio Negro which rises in these same parts & then crosses the breadth of Uruguay?

"Do we have any record of this species being collected outside the south-east quarter of Rio Grande do Sul?"

..... from Dr. Bohumil Schutz

"I have checked through all my articles in *Friciana* and do not find there any observation that Sellow found *Gymno. denudatum* in 1825. I have only said that this species was discovered by Sellow and in the year 1825 he had sent it to Europe. This was taken by me from the statement made by Schumann in his *Gesamtbeschreibung*, p. 414.

"When these plants were actually found is not stated in any literature available to me. Probably it was towards the end of the year 1824, for Sellow returned towards Porto Alegre in 1825 and apparently brought along with him the plants which he sent to the Botanical Garden in Berlin.

**GYMNOCALYLCIUM DENUDATUM** By M. Broekhoven  
Translated by H. Middleditch from "*Cactus*" (Belgium) 3.3:71)

*Gymnocalycium denudatum* is one of the oldest known species and one whose area of distribution is particularly widespread. More specifically, it is to be found in the south of Brazil, in the basin of the Rio Grande do Sul, in the north of Uruguay in the vicinity of Tacueralto and of Rivera as well as in Argentina in the neighbourhood of Misiones and of Santa Anna.

When one bears in mind the views of certain botanists one must conclude that the species has been established for an appreciable time and that, under the influence of ecological factors (conditions of the elements: sun, climate, etc.) different forms of it must have come into existence in the course of time. That is indeed what one may ascertain in this particular species but is it a question of varieties, local forms, or of intermediate forms? If, on the other hand, one considers collected plants, the degree of variation is again far ranging. One cannot overlook that this plant has been grown commercially for a considerable time nor that from it has been propagated numerous specimens more or less crossed with other species, even hybrids, to the extent that one may ask oneself who now owns a plant of a pure strain? One may thus understand how the illustrations of it which one comes across in literature vary appreciably.

Do not expect me to adopt a formal attitude on the subject of the various varieties of which I am not able to assess the botanical justification; Backeberg moreover claimed that it is impossible to rediscover in the wild the plants corresponding to the descriptions of the varieties. I prefer to adopt the prudent outlook of a moderate amateur who is satisfied to accept that the species is very variable and that the different varieties provide a general idea of the extent of its variability in the wild and in cultivation.

It can always be distinguished quite readily from other well-known species by its particularly broad and flattened ribs, and by the wide spacing between its areoles and its five curved and adpressed spines - one directed downwards and the others in two pairs. Each of its areoles seems a little like a spider, so that it has acquired the common name of spider-cactus. A double title is quite unnecessary as its name is sufficiently clear and well chosen for the more it grows the more denuded it becomes.

Its white flowers are superb and can attain a diameter of 7 cms with a rather thin flower tube. It is precocious and floriferous.

This very typical "Gymno" stands a pretty cold winter (+5°C) just as well as the majority of other species; plants with a free root run do not grow very quickly and ask for a very porous compost and not too much humus; but grafted on *Trichocereus spachianus*, it quickly becomes a very fine plant.

Although I regard *G. denudatum* as interesting precisely on account of its habit which distinguishes it from others which are almost always characterised by ribs divided into tubercles, most often in the form of chins, it must however be agreed that this is not one of the most handsome species of the genus because it is too naked.

There exists a yellow form described as *G. denudatum* var. *heuschkelianum* equally well known in commerce and which can make a very fine specimen and looks quite like the dandy of the group of green *Gymnocalyciums*.

#### Comments

..... from H. Middleditch

"The various varieties of *G. denudatum* were listed by Pazout in his article dealing with this species which appeared in K.u.a.S. for July 1963, as follows:—

- v. *andersonianus* (Hge. jr.), grows upward, has 7 ribs and straight spines.
- v. *bruenovianus* (Hge. jr.), broad plant with 11 - 12 cross-grooved ribs with sunken areoles.
- v. *de laetii* (Hge. jr.) 8 ribs with large prominent thick woolly areoles, 3 to 4 spines.
- v. *heuschkelianus* (Hge. jr.) 5 - 6 strong ribs.
- v. *flavispinus* Hort. with yellow spines.
- v. *meikeljohnianus* (Hge. jr.) 7 straight ribs with adpressed spines.
- v. *octonogonus* (Pos) with 8 ribs.
- v. *roseiflorus* (Hildm), a valid variety of *G. denudatum* with pink margined wavy inner petals.
- v. *scheidelianus* (Hge. jr.), 10 slim ribs, divided up by notches, spines straight.
- v. *wagnerianus* (Hge. jr.) 6 and more ribs, areoles with thick wool, 2 - 3 strong spines.
- v. *wieditzianus* (Hge. jr.), 7 cross-grooved ribs, usually 3 spines.
- v. *paraguayensis* (Hge. jr.) a broad plant with sharply cross-grooved ribs and white spines.
- v. *fulvispinis* (Mundt.)
- v. *nigrispinus* Hort.
- v. *golzianus* (Link & Otto)

"Most of these varietal names were originally referred to *Echinocactus denudatus*, hence their mode of ending.

"At the time of the original discovery of these plants, only a small part of the territory of Uruguay had been brought under cultivation, whereas there are very few parts of the country nowadays left outside the influence of agriculture. Much settlement has also taken place in the surrounding lands of Misiones and Rio Grande do Sul in the

intervening years. This involves rooting out the "weeds" for crops or grass and it does seem that it could well be impossible to rediscover many of the forms known previously, just as Backeberg himself suggests."

..... from Mrs. L. E. McIntosh

"I have several *G. denudatum* varieties; most of them have pink flowers and all have six or more ribs. However, I sowed seed in 1969 received from the Chileans seed pool as *Gymno. sp. nov. Rio Negro* (no other details). These have turned out to be five ribbed *G. denudatum*. Last year (1971) at two years from seed it produced one flower. Now in November the smaller of my two seedlings has also flowered true to the pattern of the larger one which has five buds still to open. When you read the description you will realize how silly they look for the plant is not any larger than a halfcrown piece.

"Body bright shiny green, 35 mm diam., five rounded ribs, areoles large and woolly, spines five, at first spreading over body, later all pointing down, 15 mm long.

"Flower - tube bright green, very long (3 cm) and slim, scales sparse and small (10 only). Outer petals 3 cm long creamy-white tipped pinkish brown and green dorsal banded, next row creamy-white with faint green midstripe, innermost row creamy-white. The inner rows are shorter than the outer and make the flower look double. Stamens and anthers are cream, pollen yellow; stamens as long as inner petals, stigma with 10 medium size lobes are also cream, low down in the throat and well below the stamens. All petals are long and narrow with pointed tip.

"Our season is just into its fling and should the other plant flower again I could still get seed from my two plants.

"The black and white sketch ex Schumann's book is definitely the *sp. nov. Rio Negro* - the body in the sketch is very much blown up of course, but the flower is not. My seedling was just over an inch across and produced a flower as large as the one in the sketch. The older plant is now about 2½" across and 1½" tall and I find it has two off-sets at soil level on the lower areoles. The thing that pleases me most is it having only 5 ribs, as everyone I have discussed this with has been very sceptical that this is verification of the early descriptions.

"The accompanying photograph was taken before the flower opened wide, to let you see the length of the tube. This was taken in midsummer with temperatures around 100°F. I suppose the heat may have something to do with the flower opening sooner - I have discovered that the flower tubes are longer in spring than in summer."

..... from Mrs. M. Jones

"I have a plant of *G. denudatum* which has bloomed for me, but the flower is much shorter tubed than in Schumann's illustration and the inner ring of petals seem to be absent. The bud appeared in early April and the flower opened on the 30th June:—

Perianth - white, light brown-pink edges to the outer tepals.

Stamens - pale yellow anthers, white filaments, all coming from near the base in two layers, one clustered round the style low down, the other (higher) layer just below the style.

Stigma - lobes clustered to a point at first, very pale yellow.

Height app. 4.9 cm, diameter 6.5 cm."

..... from H. Middleditch.

"I am interested in the reference to the two series of filament insertions in Mrs. Jones' flower of *denudatum* - this is a feature to be found in other *Gymnos* and also in various other cacti outside the *Gymnos*, but I do not recollect having come across any reference to this feature occurring on *denudatum*, before now."

..... from Mrs. L. Glass

"I have a plant of *G. denudatum* which came from Gunther Moser in 1971; he had raised it from imported seed. I have no note of where the seed came from, but in a way that's a puzzle because most of his plants are Paraguayan, emanating from Friedrich. This plant was 6 cm in diameter on receipt and is now 8 cm diameter and still no sign of any offsets at all. It is very distinctly flattened and is probably less than 4 cm tall. The chin is so clearly demarcated, it looks as if one had dug a nail into the body, or even chiselled it out!

"One point I would particularly draw attention to - it has not got the spines adpressed in the typical spidery fashion. Some are relatively close to the body, others project a fair amount. They are also what Backeberg ought to mean by his eternal "horn-coloured"; they are also stouter, sharper, and more rigid than the spines on my second plant of *denudatum*.

"My first plant produced a single bud in 1972 but this aborted; in 1973 it produced two flowers, which opened on July 3rd. As to flower opening times, this can be unrepresentative with my lot, because I have a frame on each of my south-facing balconies. Because they are roofed-over balconies this has the unfortunate result that I get proportionately less summer sun because of its altitude in the sky, quite apart from when it peeps round other buildings. In mid-summer, no direct sun gets on to any plant until after midday, and it can be as late as 2.00 p.m., so this tends to distort the time of opening of any flowers. My recollection (not based on anything written, alas) is that the flowers did not open for a good number of days when the weather was indifferent. Then they partly opened one day. Two days later, the petals

were fully reflexed in the hot sun and I tried to make a sketch of the flower, but had to abandon the task as the balconies get very, very hot! By the time my photographer arrived home just after 5.00 p.m. the sun was still shining and the flowers were less widely open, as you can see from the slides (now in the Slide Library - H.M.). Certainly some of the *Gymnos* do start shutting up their flowers whilst the sun is still on them e.g. *G. horridispinum*, and *G. bruchii*.

"My second plant of *G. denudatum* also came from Gunther Moser and was labelled by him as "type". It was almost 5 cm diam., and had a long tap root. It is quite distinctly different from plant No. 1 in appearance, on a number of counts:- Firstly, in profile it gives a more "straight-sided" impression, so that it would fit better into a rectangle than an ellipse; but flattened, yes, and 4.5 cm tall. Secondly, the spines are nearly all really clinging to the body, like all the illustrations of this species! Colour pale yellowish, and you couldn't prick yourself on them if you tried. There is still the very distinct sharp chin, as on the other plant, but not quite such an artificial chiselled look about it."

..... from F. W. Fuschillo

"My two imported plants of *G. denudatum* are very much like the two colour slides, but the spines are entirely different. Plant 80 mm diameter, 7 ribs, 8-9 spines, 6-8 mm long, horn coloured dark tipped, stiff, straight, no central, radiating.

"If you compare the drawing from Schumann's book with Abb. 1635 in Backeberg's *Die Cactaceae*, you'll find that the plants look entirely different from each other, but the flowers are very much alike. Illustration 1634 in *Die Cactaceae* resembles the photograph by De Cocker and the flowers are also very similar."

..... from R. Ginns

"Concerning *Gymno. denudatum*. I don't know whether you have access to Backeberg's *Die Cactaceae*, but there are two figures of this species, both with the same type of flower as in Schumann's sketch. I can't remember details of the flowers on my plant but the one in Lamb's plates has the short, fat tube that you mention. My German is very rudimentary but I understand Backeberg to say that the species is very variable and probably hybridised. A species that has been in cultivation for over a century is inclined to deviate from the first published description, either by selection or by hybridisation.

"It would be interesting to have a translation of Backeberg's comments."

..... from E. W. Putnam

"My *G. denudatum* v. *backebergii* plants flower extremely well and produce long narrow flowers whose tubes are so long as to look almost comic arising from the small plants. I don't think they have several rows of petals though. Must look more closely next time! Other *Gymno. denudatum* I have are not very free with flowers: as I recall the flowers of these are still long but not so pronounced in this way as the var. *backebergii*."

..... from W. Withers.

"My plants of *G. denudatum* carry their flowers on quite long tubes which are of a very light green colour. The seed pod is very similar in colour to the plant body and it splits vertically; almost all the seed remains in place in the fruit when it splits."

..... from C. Walker.

"My HU 28 *denudatum* has pure white flowers, 4-5 cm diam., with a relatively long, narrow tube."

..... from I. Le Page

"But I see from the 1972 Chileans Year Book that HU 28 is said to be *Gymno. artigas*. My two seedlings of HU 28 look very like *artigas*."

..... from R. Carter

"The fruit on *denudatum* is of a bluish-green colour with a bloom on it, only one or two scales which are the same colour as the fruit but with paler margins; there is no change in the colour of the fruit when ripe, splits develop along the full length of the fruit. The fruit is 1¼" long by ½" in diameter."

..... from C. Webb

"I do agree that *G. denudatum* is a difficult plant to identify. I have checked my (admittedly rather meagre stock) of published literature on this subject and all the pictures I can find show the well-known type of *G. denudatum*, dark glossy green, broad rounded ribs numbering 5 - 6, spines flattish, appressed, normally curving, yellowish. Flowers large and white. Photos in the *American Journal* Vol. XLIII No. 4 p. 155 & Vol. XLIV No. 3 p. 100 are typical here, though the illustration in *Britton & Rose* Vol III p. 155 Plate 163 shows a plant with rather angled ribs.

"I have four plants originally labelled *G. artigas* which Geoff. Swales and I both considered to be 'good' *denudatums*, flowers large and white with no rose coloured throat, seed true *macrosemineae*. Ribs 5 or 6, broad, dark green, three of the plants being glossy and one rather dull (almost matt). Spination is a bit variable, some very appressed and twisting, one with the spines almost straight but still appressed rather than radiating.

"The two named varieties I have are *G. denudatum* v. *pentacanthum*, an imported (collected) plant via Uhlig, unfortunately with no habitat details and two examples of *G. denudatum paraguayense*. The variety *pentacanthum* has a fresh pale green body, not glossy, and quite stiff mostly straight spines, mostly 5 radials (two horizontal either side, one directed downwards) but some areoles have one or two extra, shorter, spines, more bristle-like and inserted like centrals. This plant, still in a 3½" pot, has not yet flowered but has produced one offset from beneath the soil.

"Variety *paraguayense* (slide of one in flower enclosed) is typical of most plants seen under this name. Spines are much stouter and usually straight. Flowers large and white.

"On the question of curved or straight spines, I note that the description given in Britton & Rose Vol. III p. 155 (presumably extracted from the original), gives the spines as "usually only 5, sometimes 8, all radials, appressed, slender, sometimes curved". Note the 'sometimes'! Flowers are given as "white or pale rose".

"My own 'rule of thumb' for identifying *G. denudatum* is that if it looks roughly right, but either has spines with deep coloured bases or tips, or if the flowers have a deep coloured throat, I instantly remove the 'denudatum' tally and consider it as either some other species or possibly a hybrid."

..... from H. Middleditch

"Like Chris Webb, I also have a *denudatum*-like *Gymnocalycium* with a pale-green body, not glossy, spines quite stiff and mostly straight, that has not flowered although most *denudatum* of this size seem happy to flower. It is labelled *G. horstii*.

"The habitat shot of this latter species taken by Buining shows a multi-headed plant and practically all the heads have five ribs. Although my own plant has not offsetted, I am acquainted with plants in other collections which have offsetted from below soil level, whereas *G. denudatum* seems to prefer to offset at just above soil level. Both these characteristics conform with Chriss Webb's observations. Hence I would venture to suggest that his *G. denudatum* v. *pentacanthum* is in fact *G. horstii*.

"The discovery locations for *G. horstii* would appear to fall within the general distribution area for *G. denudatum*, which itself extends over closely-explored ground. The accounts of Sellow and St. Hilaire in this issue bear witness to the relative ease with which this region can be traversed. Hence it would seem quite possible that plants which we now know as *G. horstii* could have been collected years ago in the wild and brought into cultivation. Is this the origin of the *G. denudatum* v. *roseiflora* Hildm. listed in Schumann's *Gesamtb. der Kakteen*? And the "or pale rose" reference to flowers on *G. denudatum* in Britton & Rose?"

..... from G. J. Swales

"Over the last few years I have examined an appreciable number of samples of seed of different species from the Macrosemineae group of the *Gymnocalycium*. These will amount to about 150 different samples and they have come to me from a variety of sources. Practically all the examples which I have received under the names of *uruguayense*, *leanum*, and *netrelianum* appear to match Buxbaum's sketch entitled "*denudatum* seed", on the other hand the seed samples coming to me under the name of *denudatum* are a close approximation to the Buxbaum sketch of seed titled "*uruguayense*". The diversity of the sources of supply of my seed samples, from the European continent, including some from commercial nurseries, from America, from New Zealand, and from my own plants, would appear to preclude the possibility of all the samples being incorrect. I wonder how many samples of this seed group were examined by Buxbaum when he made his seed survey and his seed sketches?

"Although the two Buxbaum seed sketches might suggest that there is a difference in the colour of the hilum, among my samples this colour varies between cream and gingery brown in both sections. The *denudatum* section has a shiny testa and fairly small cells together with a somewhat narrower hilum, whereas the seed of the *uruguayense* section has a dull testa with rather larger cells and a somewhat wider hilum.

"There are some illustrations of seed surfaces seen under high magnification, in the U.S. *Cactus & Succ. Jnl.* No. 4, 1974, among which are seeds with smooth surfaces and a pit at the junction of three adjoining cells, and other seeds with surfaces covered with convex cells, each cell in turn being covered with a large number of minute humps. The smooth surfaced seed will reflect light well and will appear shiny when examined under a microscope, whereas the rougher surfaced seed will scatter reflected light and appear matt. Although I am without the advantage of an electron microscope, I would expect that the seeds in the *denudatum* section would have the smoother, and those in the *uruguayense* section the rougher, of these two seed surfaces illustrated in the U.S. journal.

"There is also an illustration in *Friciana Rada* IV, 1964, of some seed of *G. uruguayense*, which appear to display the wider hilum that I associate with this section.

"It may be as well to point out that the sketches of the series *Denudatum* and series *Uruguayense* seeds are drawn to a smaller scale than the sketches of the seed of *horstii* and *buenekeri*. The seed of *G. denudatum* will measure approximately 2 mm tall and broad, which makes this sketch about 15x magnification and that of *uruguayense* will be a similar magnification.

**GYMNOCALYCIUM HORSTII** Buining spec. nov. By A. F. H. Buining  
(Translated from K.u.a.S. 21.9:1970 by G. J. Swales.)

*Gymnocalycium horstii* Buining v. *horstii* Buining.

Corpus simplex, ad 11 cm diam., ad 7 cm altum, viride, radicibus capillaribus instructum; costae 5 (6), inferne ad 7 cm latae, areolis 3(-5) ovalibus, ca. 3 cm inter se remontis; spinae plerumque 5, ad 3 cm longae, rectae, durae, rigidae, divaricatae, pallide luteae vel albae; flores ad 11 cm longi et lati; pericarpium ad 25 mm longum et 12 mm diam., squamulis roseis vestitum; tubus floralis ad 35 mm longus, infundibuliformis, squamulis roseis ornatus; perianthii phylla lanceolata, albida vel lilacino-rosea, stamina pallide lutea; stylus 30 mm longus, ad 4 mm diam., pallide luteus, stigmatibus 9 ornatus; fructus ovalis, 5-6 cm longus, 3-4 cm diam., viridis coerulesco-suffusus; semina pileiformis, 1.3 mm longa, 1.2 mm lata, testa nitida, verruculis subglobosis obsita, hilo tela spongiosa referto, funicula et micropyle subdepressis.

*Gymnocalycium horstii* Buining var. *buenekeri* Buining var. nov.

A typo corpore atroviridi, spinis crassioribus, floribus roseis differt.

Latin diagnosis: *G. horstii* v. *horstii*. Body simple, up to 11 cm diameter and to 7 cm in height, green, with a fibrous root; ribs 5 (6), up to 7 cm wide at the base, with areoles 3 (-5) in number, about 3 cm apart; spines mostly 5, up to 3 cm long, straight, hard, rigid, spreading widely, pale yellow or whitish; flowers to 11 cm in length and also in width; pericarpel to 25 mm long and 12 mm diameter, covered with pink scales; flower tube up to 35 mm long, funnel shaped, furnished with pink scales; perianth segments lanceolate, white or lilac-pink, stamens pale yellow; style 3 cm long, to 4 mm diameter, pale yellow bearing 9 stigma lobes; fruit oval, 5-6 cm long and 3-4 cm diameter, bluish green; seed cap-shaped, 1.3 mm long 1.2 mm wide, testa shiny, covered with almost spherical warts, hilum filled with spongy tissue, funicle and micropyle somewhat sunken.

*G. horstii* v. *buenekeri*. Differing from the type species in its dark green body, with thicker spines and pink flowers.

German description. Plant body single up to 11 cm in diameter, and to 7 cm in height. Very old examples sometimes somewhat taller. Fresh green colour; when plants are in full growth, shining green. Fibrous rooted.

Ribs 5, sometimes 6, up to 7 cm broad at the base, blunt but not completely flat, somewhat raised in the middle region, no tubercles or only very weak ones.

Areoles 3 per rib, sometimes a few more, somewhat woolly, oval up to 5 mm long and 4 mm wide, and about 3 cm apart.

Spines hard, rigid, straight, standing out obliquely, not appressed to body, as a rule 5 in number, a pair on either side and one single one below, lacking central spines, pale yellow to whitish yellow, up to 3 cm long.

Flowers up to 11 cm long and just as wide, opening fully in direct sunlight, open from morning until nearly evening. Externally, the pericarpel measures up to 25 mm long and to 12 mm in diameter, while internally, the cavity of the ovary is up to 18 mm long and to 8 mm wide. The outside of the pericarpel is covered with small pink scales.

Receptacle up to 25 mm in length (35 mm in Latin diagnosis — G. J. S.) funnel shaped, green, bearing 12 pink coloured scales. Petals to 6 cm long and up to 14 mm wide, pointed, lilac-pink to creamy white with a deep pink mid-stripe. Outer petals deep pink. Nectar chamber with only one nectary, very small, almost non-existent. Primary stamens inserted close to the base of the style and the secondary stamens further away, distributed over the whole of the receptacle right up to the edge; pale yellow in colour as are the anthers. Style to 3 cm long and to 4 mm thick, pale yellow with nine stigma lobes.

Fruit oval, 5-6 cm long and 3-4 cm in diameter, with 10-12 scales, measuring from 8-12 mm wide, green with a bluish tinge in colour. Flesh of the fruit very watery and pure white. The bloom on the fruit lasts noticeably longer than in the case of the already known *Gymnocalycium* species from Brazil; like them, they split longitudinally.

The seed is cap-shaped, 1.2 mm broad and 1.3 mm high, the testa being faintly lustrous; with small, flattened, round, chestnut coloured projections and black in between. The hilum is filled with a spongy tissue of an ochre colour. The point of attachment of the funiculus, and the region of the micropyle are somewhat depressed.

Place of origin: from a single location near Cacapava, Rio Grande do Sul, Brazil. Very local.

The type plant, under the collection number HU 79 is placed in the Herbarium of the University of Utrecht, Holland.

*G. Horstii* v. *buenekeri*. Differs from the type by way of the larger spines, the dark green epidermis and the deep pink flowers.

Place of origin: from a region of flat rocks near Sao Francisco de Assis, about 200 Km NW of Cacapava, the locality of *G. horstii*. Very local. The discoverer of this plant is Heinz Bueneker, after whom it is named.

*Gymno. horstii* was not at first easy to classify because it appeared to be directly related to *G. denudatum* from the point of view of gross morphology, but the spination with its stiff but strong spreading nature, put me off this. Accordingly my thoughts turned to *G. pflanzii* but it possessed a different flower and fruit structure. Finally the seed was the deciding factor, allocating the plant as a new species in Buxbaum's section *mostiana*.

The species is very free flowering in habitat and also blooms readily here in Europe. It grows on, or at the foot of, the steep slopes of a flat-topped mountain, thereby often somewhat sheltered. The variety grows in the open on flat rocks near to the margins of the grass and for that reason is probably darkly coloured. The type likes to be given a certain amount of protection from the full strength of the sun. It grows together with *Gesneria* and the bright green *Echinopsis multiplex* Zucc., but in habitat does not proliferate to the same extent as it does under cultivation.

It is also interesting that the flowers of the type in Brazil open for a period of 5 or 6 days but those of the variety only last two days. It is widely known that seedlings grown in Europe produce more ribs than the wild plants, something that one must attribute to the more favourable growing conditions.

#### Comments on *G. horstii*

..... from H. Miller

"My plant of this species was purchased from Clive Innes in July 1971. It was a rather large plant of about 3½" in diameter with a long tap root similar to an *Ariocarpus*; it had four offsets around the base of the body varying from 1½" in diameter to just over ½" in diameter. The largest offset was only slightly attached but with a few roots at the base of the offset, the others firmly attached to the body like a *Lophophora*.

"I was a bit worried by the very long tap root which extended about 5" below the body - not straight, but curved, necessitating the use of a 6" plastic pot. I potted up in Bowers no soil compost modified with additional small aquarium gravel to make it more porous. It was stood on a sand bed with bottom heat of 70° F and left unattended and unwatered for two weeks. I may add that I never pot up in bone dry soilless compost, but always slightly damp. After this time it was removed from the pot to see if any roots had started and was found to be going away well.

"It was then repotted in the same compost and put back on the sand bed. As yet watering is only from the base by standing in a dish and allowing water to rise by capillary action until about ½ pint absorbed. Although it does seem to have established fairly quickly I was a bit frightened at the time to go the whole hog and water thoroughly. The plant is now off the sand bed and on the staging in semi-sun, getting about 4-5 hours of broken sunlight per average summer day. The largest "pup" had grown its own roots firmly into the soil by the end of May '72 and was easily removed. It is now growing into a nice plant but without tap root similar to the parent plant. To date the other three pups show no sign of throwing out roots into the soil.

"In the summer of 1972 the plant produced five buds which eventually opened into flowers; the first two did not open fully but the latter three were far more fully expanded.

"Regrettably no fruit was set."

..... from R. Moreton.

"We have recently flowered *G. horstii* - it has the most beautiful peach coloured flower, funnel form, and with a long tube.

"Unfortunately I have been unable to set any fruit on this species despite several attempts. Anyway, *G. denudatum* flower opens wide and becomes rotate, whereas *G. horstii* never seem to get past funneliform. I would not have thought that they were closely related."

..... from V. M. Birch

"I picked up an imported plant of *G. horstii* v. *beuneckeri* on a visit to Clive Innes a few years ago; I selected the smallest one on the staging, which was barely 2" across, because it only had a few marks of damage or corkiness on it. The plant has been grown in full sun and is now about 4" across, growing in a 4½" pot. It produced one flower in 1973 and a flush of three in 1974.

"The petals are shell pink with a thick mid-green tube which has only a few scales with pale margins.



The flowers were crossed with *G. damsii* in order to try and set seed. It is a peculiar flower to say the least of it, for it does not open wide like other *Gymnocalycium*s. It looks a ruffled cupshape, giving the impression of a double flower.

"I find that it needs to be standing in intense sunlight to get it to open fully; the flower first opened at around midday and then closed up at night, but it certainly did not close up fully on the second and third nights for the petals only came partially inwards."

..... from G. J. Swales

"In his description of this species Buining quotes the fruit as 5-6 cm long, which means that it is over 2" high: this is an enormous size for a fruit on a *Gymnocalycium*. However, when I look at the fruit in the photograph which Buining used to illustrate his article, I see that the dead flower remains are not much shorter than the fruit - in which case they must be well over 1" long. Bearing in mind the sort of height to which most withered flowers shrink on *Gymnocalycium*, these proportions do not seem to be quite right."

..... from J. Klavins

"Yes I have a *Gymno. horstii* - I bought it from a chap who was selling plants at the Convention at Kettering a couple of years ago. It was only 1" across at the time. Last summer it produced two buds, first seen on April 7th which flowered May 24th, whitish flowers with a little bit of creamy yellow in the centre, lasted four days. After I lost my greenhouse, it produced one more bud in August and flowered again, and the September bud aborted - it was too late. It has produced one bud already in my garden frame and it is producing two more ribs and a couple of small offsets."

..... response from H. Middleditch

"From the foregoing description I would surmise that our member has been sold a *Gymno. denudatum* under the disguise of the *horstii* name."

..... from F. Fuschillo

"You may have seen the slide of my *G. horstii* in flower that is now in the slide library; the plant is actually labelled *G. horstii* var. *buenekeri*. It flowered in August, with three flowers, about 70 mm in diameter. The first flower lasted for about seven days, but alas ! no fruit."

..... from H. Middleditch

"The flower of *G. horstii* v. *buenekeri* on this slide from F. Fuschillo appears to have a single row of petals fully reflexed, the petals being distinctly more pointed than those on other flowers of this species in the slide library."

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

"But the nature of the plant body with its dull and velvety texture would suggest that it is indeed the variety *buenekeri* and not just *G. horstii*. The inner petals on my var. *buenekeri* flower are also pointed, the outer petals being more rounded at the tip."

..... query from H. Middleditch

"Does this mean that the colour print in the U.S. Cac. & Succ. Jnl. XLIII No. 6 1971 p. 250 is of *G. horstii* with a var. *buenekeri* flower, or alternatively that the plant from F. Fuschillo is a var. *buenekeri* with a *horstii* flower ? We appear to have some flowers on *Gymno. denudatum* which have two whorls of petals - like that in Schumann's sketch - and some with only one whorl of petals."

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

"If you look carefully at the illustration of the flower in the U.S. Journal you will see that indeed it does have two rows of petals; it is not impossible that it could be one of the many plants of *G. horstii* v. *buenekeri* which have been distributed under the name of *G. horstii*. On this particular plant the outer petals are again rounded at the tip and the inner ones are more pointed. If you look at the slide from F. Fuschillo of his flower, this also has two rows of petals which are lying close together and so this is not all obvious until the slide is examined closely. However, I do notice that this flower has a fairly long tube, whereas the flower on my own var. *buenekeri* has a fairly short tube."

..... further from H. Middleditch

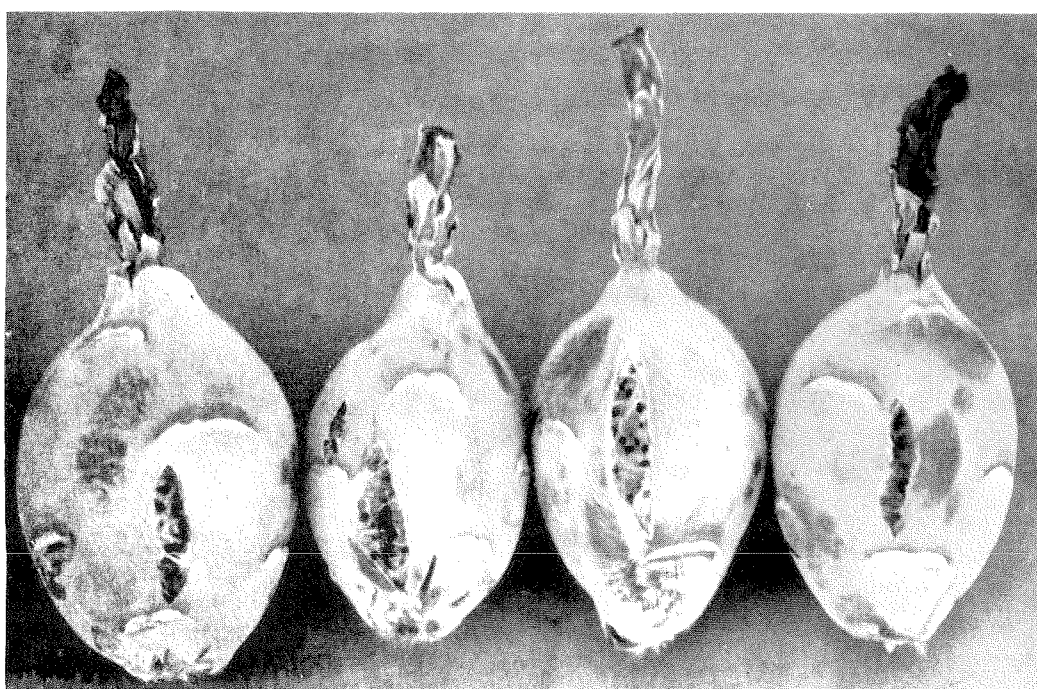
"Do not some plants of *G. denudatum* have a flower with a long tube - like that in Schumann's sketch - and others again have flowers with a fairly short tube ?"

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

"There does appear to be variation between tidy flowers and untidy flowers, in length of tube, and possibly in stigma height in relation to the stamens; certainly there is a clear distinction between the shiny green bodies



In habitat - Photo. Buining



Fruit - 2 inches high - Photo Buining

and the dull matt bodies; but I am beginning to think that there is an even more marked distinction between *horstii* and var. *buenekeri* and that is in the seeds.

"The seed from my own plant of var. *buenekeri* does not have the basic *denudatum*-like shape of the seed of *G. horstii* depicted by Buining. Nor does it possess the arillus layer clearly drawn in and identified on Buining's sketch of the *horstii* seed. An arillus layer is exceptional in the Macrosemineae seed group, but normal in the Gibbosum section of the Ovatisemineae. (This, incidentally, lends a little more weight to my idea that the Macrosemineae and Ovatisemineae are not two sharply divided groups, but that there is almost a gradual gradation between the two.)

"I look forward to seeing the seed from my own plant of *G. horstii* when the fruit finally ripens, particularly to compare it with the illustration accompanying Buining's article. The plant itself came from Uebelmann in 1971 as a seedling.

"The variety *buenekeri* may not be the only *Gymnocalycium* from south-east Brazil with a seed quite different from the Macrosemineae. In the Chileans Vol. 4 No. 16 p. 28, there is a report from the G.O.K. Journal where Bayr describes the seeds of *G. denudatum* v. *pentacanthum* as being much smaller than the typical Macrosemineae and of a different shape. Both on this ground and on the basis of the similarity in appearance, I believe that there is a very close relationship between *G. horstii* var. *buenekeri* and *G. denudatum* v. *pentacanthum*.

"About a year ago I obtained from Colin Walker a plant of *G. denudatum* v. *pentacanthum* which has since produced two flowers. These flowers exhibit two distinct whorls of petals, the petals in the inner whorl being somewhat shorter than the outer ones. The outer petals also tend to open fully and reflex, whereas the inner petals do not open quite as much. This tends to give the impression of a double flower. The flowers on *G. horstii* var. *buenekeri* do not give the same immediate impression of a double flower, but contain more than a single whorl of petals which lie close together.

"In the same G.O.K. Journal, Bayr describes *G. denudatum* v. *pentacanthum* as producing large creamy-white flowers in abundance. Whether he writes of a single specimen or a selection of such plants is not clear. It is possible that the plant purchased by J. Klavins may be some such plant."

#### **GYMNOCALYCIUM BUENEKERI (Buin.) Swales comb. nov.**

Synonym — *Gymnocalycium horstii* var. *buenekeri* Buining.

In the August of 1971 I purchased a plant from Clive Innes as *Gymnocalycium horstii* var. *buenekeri*, which didn't give the impression of being a seedling plant but came to me without any habitat data. The official description had only appeared in the German Cactus Journal K.u.a.S. for September 1970 under Buining's authorship.

This plant grew quite well and in the summer of 1974 it put out three flowers, two of which set fruit. These fruits were certainly not as tall as the 2" (5 to 6 cm) height quoted by Buining, but were just over 1" tall. They were elongated, a rather slender barrel shape and the colour was a rich green, more or less the colour of the body of the plant. As the fruit was distinctly smaller than the size quoted in Buining's original description, I half expected that they would be empty and that I would be unable to see the colour, shape, and size of the seeds.

However, towards the end of March 1975 I was busy repotting quite a number of my plants when by accident I disturbed the fruit which had set in the previous autumn on my *G. horstii* v. *buenekeri*, and one of the pods rolled over. This was rather a disconcerting moment. I took the opportunity to squeeze the fruit in order to find out whether, at the end of my six month wait, it had produced any seed. It did not feel very resilient, which only served to add to my impression that it probably contained nothing but air. So, without much hope of finding anything, I squeezed the fruit harder to split it and expel any seeds that might be present.

Imagine my surprise when the contents of the fruit turned out to be a watery jelly - and it did contain seeds! However, the fruit on the *Gymnocalycium* from Uruguay and Rio Grande do Sul - the Macrosemineae - usually have the seeds embedded in the fleshy white funicles, and they are fairly readily separated from the surrounding mesh. But my plant had the seeds carried in a sticky semi-liquid in the same manner that one finds in most Microsemineae. Thus neither the appearance of the fruit nor the nature of its contents conformed with the typical features of the Macrosemineae group.

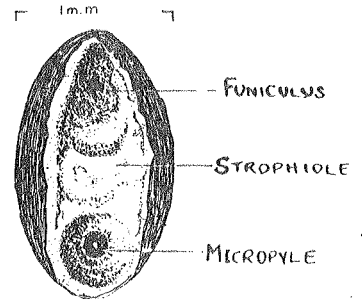
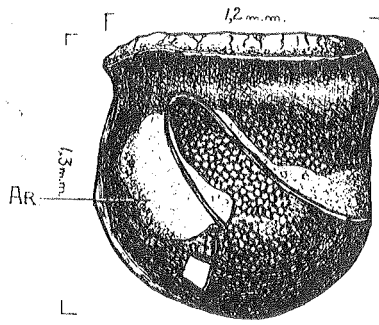
After cleaning the seed with blotting paper, I put it in front of H. Middleditch later that day without any indication of the origin of the seed, nor even the genus of the plant from which they came.

..... from H. Middleditch

"Having almost completed a fruitful discussion with G. J. Swales over a travelogue covering the Sierra Cordoba, the packet of unknown seeds was placed before me as the clock approached 3.00 a.m. My immediate reaction was "Lobivia", and then I mentally checked off various other groups whose typical seed shape I thought I knew. It seemed that they were unlikely to be Neoporteria or Weingartia, almost certainly neither Frailea, Parodia or Notocactinae, and most unlikely to be any *Gymnocalycium* other than the 'one-off' seed type of *G. horridispinum*. They might have been

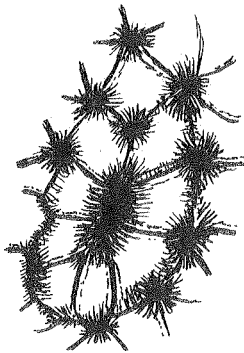


Detail of  
TESTA

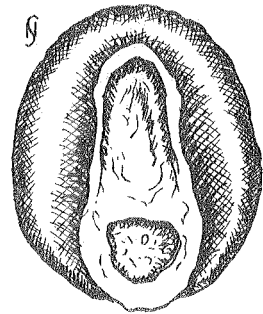
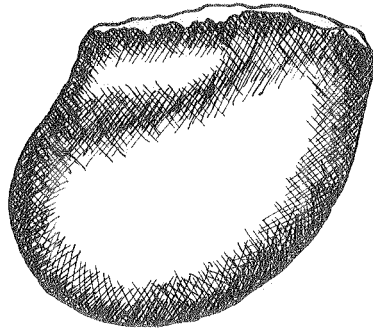


*Gymnocalycium horstii*

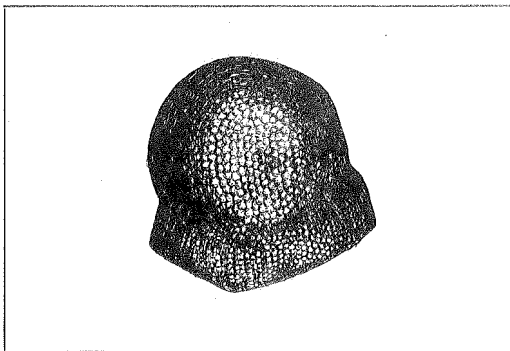
K.u.a.S 21.9.1970



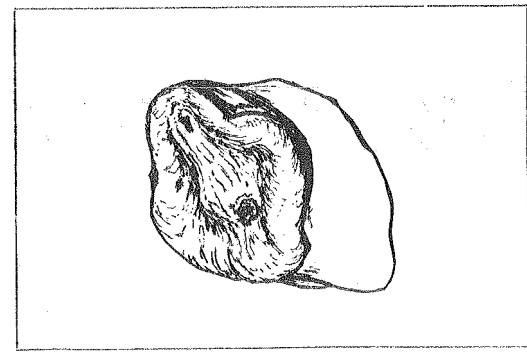
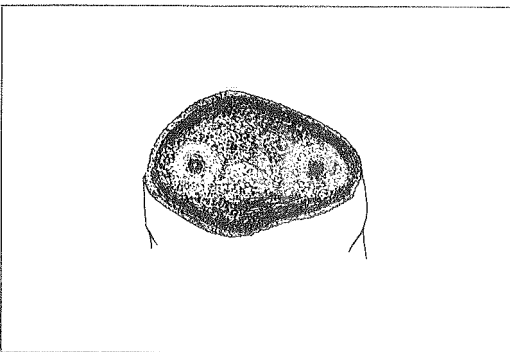
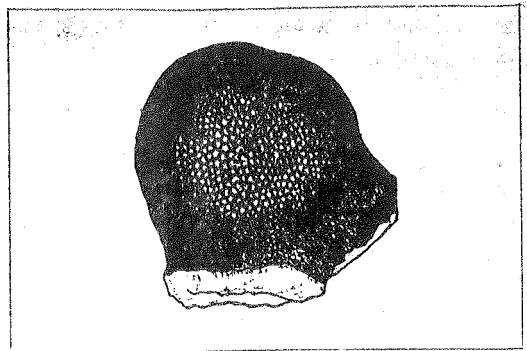
Detail of TESTA



*Gymnocalycium buenekeri*



K.u.a.S  
22.2.71



GYMNOCALYCIUM  
Series URUGUAYENSE Buxbaum  
Series DENUDATUM Swales

GYMNOCALYCIUM  
Series DENUDATUM Buxbaum  
Series URAGUAYENSE Swales

Cleistocactus but I thought that this was unlikely and some exotic Peruvian or Brazilian cactus seemed equally unlikely. This still left a considerable range of genera and species whose seed I did not know. The size and general shape of the seed and the oblique hilum, however, seemed to be reminiscent of John Hopkins' sketches of *Lobivia* seed.

"However, the hilum was very narrow indeed, only about  $\frac{1}{4}$  mm wide; the hilum margin projected beyond the base of the seed like a flare, and the hilum cut-off was not a simple oblique line but in the form of a very shallow vee. Although I was far from familiar with the range of seed form to be found in the genus *Lobivia*, nevertheless these particular features did not seem to quite fit in with what I took to be a typical *Lobivia* seed."

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

"This seed is certainly a newcomer to the ranks of the *Gymnocalycium*. I have felt for some time that we all tend to be mesmerised by the fat (may one even say bloated-looking) shiny green bodies on these plants of *horstii* and *horstii* v. *buenekeri* and our involuntary reaction is to think that they look like *G. denudatum*. But it would seem that although the bodies of these various species do look very much alike, we are dealing with quite different plants. More than that, the seed on my plant of *buenekeri* is nothing like the seed described and illustrated by Buining in his original description of the species *G. horstii*. I have found from cultivating both the type and the plant described as a variety of the type, that they differ most markedly in their like or dislike of full sun. I have felt for some time that we have had here two different species, not just a type and a variety. The wide difference in the seed and the composition of the other content of the fruit certainly seems to confirm this impression."

..... further from H. Middleditch

"In the same way that all spiny plants are not cacti, and all multi-headed cushion-forming clumps are not *Rebutia*, I suppose that we must accept that all cacti with fat green bodies, flat ribs and widely spaced areoles are not necessarily close associates of *G. denudatum*. After all, it is my pet party trick to line up *Noto. crassigibbus*, *Gymno. multiflorum*, and *Neochilenia aspillagai* at a Branch meeting and ask those present to identify "these three species of *Gymnocalycium*".

"The slides received into the slide library of *G. horstii* or of *Gymno. buenekeri* in flower, have displayed a surprising degree of variation, especially if one considers how similar are the flowers on other groups of *Gymnocalycium* species. If we are indeed dealing with two species, rather than with a type and its variety, this variation becomes more readily understandable.

"I wonder if the lengthy stigma lobes betoken the same sort of pollinating agent that visits the *Eriocacti*?"

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

"A fruit has now set on my *G. horstii* and the partially ripe fruit already looks somewhat different to the fruit on my *buenekeri*.

"A typical seed from my *G. buenekeri* is shown in the accompanying illustration, alongside Buining's seed sketch of *G. horstii*. Typical macrosemineae seed are also shown alongside for the purposes of comparison.

"Taking the dimensions which are given on Buining's sketch of the seed of *G. horstii*, together with the size at which it is actually drawn, it appears to be at 30 x magnification; the seed from my plant of *G. buenekeri* has been drawn to the same degree of magnification. The detail of the testa of *G. horstii* appears to be approx. 3 times greater magnification than the complete seed and the detail of the testa on the seed of *G. buenekeri* has been drawn at 90 x magnification in order to give a direct comparison. (The seeds of *G. denudatum* and *uruguayense* are app. 15 x magnification).

"We have already mentioned the illustration in the U.S. Journal showing various different surfaces of seed testa and the smooth nature of the testa cells on *G. denudatum*. The arrangement of the testa cells in *G. buenekeri* also approximates fairly closely to another type of testa surface shown in the same U.S. Journal. The detailed sketch of the testa cells on *G. buenekeri* shows the lacunae (or intercellular spaces) at the junctions of four, five, or six cells and are relatively small, while other larger ones are formed by rings of cells and these have been drawn under the camera lucida, both sizes of lacunae appearing on the sketch."

**NOTOCACTUS ORTHACANTHUS** (Link & Otto) van Vliet comb. nov. By D. Van Vliet  
(Translated from *Succulenta* 49. 11: 1970 by W. W. Atkinson.)

*Echinocactus orthacanthus* Link & Otto in *Verh. Ver. Beförd. Gartenb.*, 5: 427. 1827. *Malacocarpus orthacanthus* (Link & Otto) Herter comb. nov. in "Cactus" 9:41, p. 92. 1954.

Of around 1000 plants that I collected on my journey through a quite small part of Uruguay, are some which necessitate a careful study of the literature. It is always possible that those plants I have taken to be new species have already been described, but for one reason or another have been lost, not rediscovered, and struck off from plant lists of past collections as unknown.

This is, in my opinion, the case with *Echinocactus orthacanthus* (= straight spines, Lat.) which was sent to Professor Link in Berlin in 1827 by Sellow, with a number of other cacti.

In the same year, this plant, together with several others, was described by Link & Otto in "Verhandlungen des Vereins für Beförderung des Gartenbaues im Preuz. Staaten" fifth edition, page 427, 1827. (In all literature it is wrongly stated that Link & Otto published in edition 3) The short description is accompanied - as in the other publications - by a splendid copperplate engraving (Taf. XVIII) which shows the plant details very well. *Echinocactus oxygonus* was published by Link & Otto in the sixth edition of the above society journal in 1830. After the description of this plant, the difference between the genus *Melocactus* and the genus *Echinocactus* as set up by those gentlemen in those days, is dealt with. Under drawings of species described in 1827 - 1830, they still name the new *Echinocactus* species as *Melocactus*. Attention is given to the culture of cacti and the poor quality of the imports, of which the majority was lost during, or directly after the journey. Finally comes the second index (the first appeared in 1827) of cacti appearing in the Berlin Royal Botanical Garden, where Link and Otto were at work. Included in this list are names of species which were lost between 1827 and 1830. They are marked with a cross. After Link & Otto's publication, little more is to be found in the literature about *E. orthacanthus*. Firstly in 1837 Pfeiffer describes it in his work "Enumeratio Diagnostica Cactearum". This description, on p. 51, in Latin comes to the same thing as Link's original. This is evident from the last lines, which, translated, read: "Specimen in Berlin has died. This species is not generally found in gardens". Pfeiffer undoubtedly means Link's type specimen, and this agrees with the cross symbol in the 1830 index. Salmdyck, Forster and Schumann make no mention on *E. orthacanthus* - later references are only incidental as is evident from the following summary of the literature.

Britton & Rose state as follows on *E. orthacanthus* in "The Cactaceae" 3; 138. 1922, under *Ferocactus flavovirens*: "The Index Kewensis refers *E. flavovirens* to *E. orthacanthus* Link & Otto (Verh. Ver. Beförd. Gartenb. 3. 427. 1827; *Melocactus orthacanthus* Link & Otto, Verh. Ver. Beförd. Gartenb. 3: pl. 18 1827) a much earlier name, but the description suggests a very different plant, with 15 ribs and one stout central spine. The original description states definitely that it comes from Montevideo, but the Index Kewensis refers it to Mexico".

This boils down to regarding *E. flavovirens* as a synonym of *E. orthacanthus*, according to the Index Kewensis, and at the same time putting the finding place of *E. orthacanthus* in question. As to whether *E. flavovirens* was known in those days, I leave open. Certainly *E. orthacanthus* was unknown in the Index Kewensis. I will return to this matter later in this survey.

In his article "Florée Illustrée de l'Uruguay Cactacées" in "Cactus" 9: 41, p 92. 1954, Herter takes up *E. orthacanthus* as a new combination in *Malacocarpus*. But he doesn't go further than stating the author's name and country of origin. Presumably he didn't find the plants in Uruguay. Of the species found by him he gives drawings, but not of *E. orthacanthus*. Including *E. orthacanthus* in *Malacocarpus* is also an indication that he didn't find this plant. This will be evident from the continuation of this article.

Finally Backeberg writes of *E. orthacanthus* in "Die Cactaceae" III 1625. 1959, "It seems to be questionable to separate these plants from *Mal. tephroacanthus*. Apparently Link & Otto have described all the forms of the variable species in the imports of the time as separate spp." He suggests also that the plant is a *Malacocarpus*, just as Link & Otto had been mistaken as a result of incomplete knowledge of species, and puts *E. orthacanthus* under "Ungerklärte Namen". This indicates that Backeberg was himself not fully read in the publications of Link & Otto. If he had been, this would immediately have given him the view that several plants have definitely to be considered together. Why otherwise, would he quote Pfeiffer's description and not the original? This always gives cause for misunderstandings. I brought a similar instance to attention in my article on *Notocactus muricatus* in Succulenta I; 5 - 19 1968.

The Index Kewensis, as well as both writers, make it very clear that there can be unnecessary loading of the literature if one takes plants which one knows only slightly - or not at all - and starts to divide into genera and/or subgenera, or brings into relation with other species.

According to Buxbaum's system, *N. orthacanthus* becomes included in the subgenus *Neonotocactus*. By way of explanation it is noted that this concerns the group of plants round *N. mammulosus*. As to how far Buxbaum is justified in extending the genus *Notocactus* to include several genera such as *Malacocarpus*, *Eriocactus* and *Brasilicactus*, I leave out of the argument. Yet it seems strange, afterwards, to note that for clarity he splits the whole genus into a number of subgenera. These names are used by no-one, with the possible exception of specialists.

The original description by Link & Otto in "Verh. Ver. Beförd. Gartenbe" 5: 427 1827 reads:—

*Echinocactus orthacanthus*. Caule globboso, glaucescente, costis 18 obtusatis, spinis 7, centrali majore valida recta, reliquis patentibus. Habitat in Montevideo. Sellow.



Descr. Caulis  $2\frac{3}{4}$  poll. altus  $2\frac{3}{4}$  poll. crassus. Costae prominentis distinctis, latere impressae; sulci angusti. Vertex depressus. Souba maxima  $\frac{3}{4}$  poll. longa. reflinguae 6 lin., omnes canescentes.

This description is accompanied by the following German text:

Body round, somewhat blue-grey, 18 obtuse ribs, 7 spines, central much larger, strong and straight, the rest sticking out. Body  $2\frac{3}{4}$ " high,  $2\frac{3}{4}$ " thick. Ribs have distinct tubercles and are depressed at the sides. Grooves close together. Crown flat, depressed. Longest spine  $\frac{3}{4}$ " long, the smaller  $\frac{1}{2}$ " all grey.

The copper-plate, which, as already stated, illustrates the plant splendidly, agrees with the German measures of those days. An important point that is not covered in the description is the position of the radial spines in the areole, but which are illustrated on the plate above the plant. These radials are implanted to the sides and below in the areole.

I found *N. orthacanthus* in the department Rivera, and initially took it for a new species, which I gave the provisional name *Notocactus aciculatus*. I also distributed seeds under this name, amongst others to the Clichéfonds of Succulenta.

In the table below I shall set out the distinguishing features as given by Link & Otto of their plant, against those of the plants found by me. (Details in the original order of the description by Link & Otto)

	<i>Echinocactus orthacanthus</i>	<i>Notocactus orthacanthus</i>
Plant	Round	Do.
Plant colour	Rather blue-grey	Do.
Ribs	18, obtuse	Do.
Spines	7 (on the sketch also more) central larger, strong and straight.	7 - 10, of which some are sometimes small and glassy. Do.
Finding place.	Montevideo	Dept. Rivera
Plant	$2\frac{3}{4}$ zoll ( $2\frac{3}{4}$ " or 6.88 cm) tall and dia. (Ratio 1:1)	Do. Largest specimen 20 x 20 cm 20 x 20 cm.
Ribs	Clearly divided into tubercles (not illustrated) and depressed on the sides.	Do.
Crown	Flat & depressed	Do and covered in wool
Spine length	The longest central $\frac{3}{4}$ zoll ( $\frac{3}{4}$ " or 1.88 cm.) Smaller radials 6 lin ( $\frac{1}{2}$ " long	Do to $2\frac{1}{2}$ cm long in the largest specimens. Do.
Spine colour	All grey	Light grey-brown, later turning totally to grey.

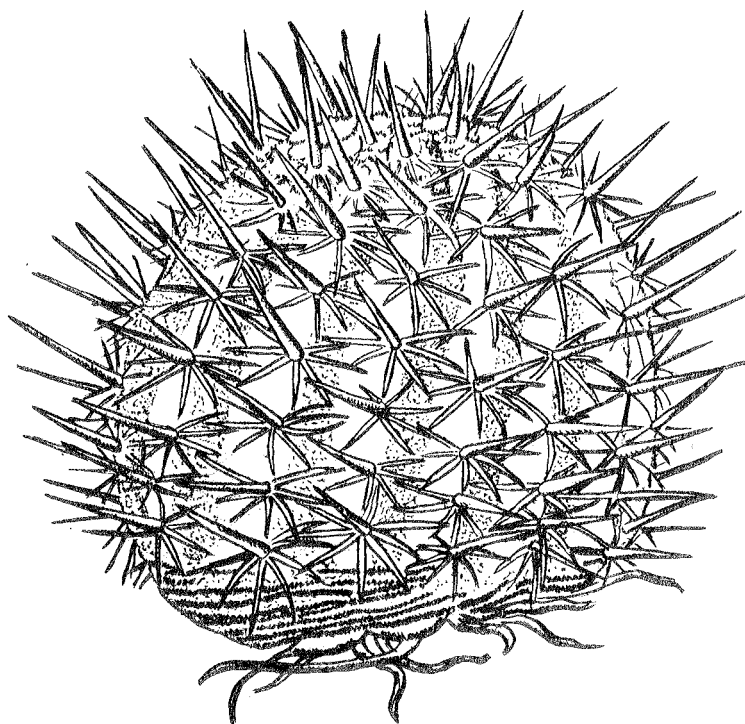
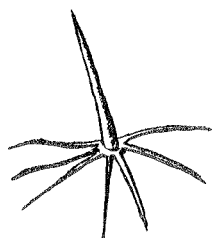
Footnotes to 'table 1. In those days the point of despatch was often quoted as the finding place. Even Spegazzini, 70 years later, committed the same offence. 2. Why the tubercles, which are so emphasised in the description - "ribs clearly divided into tubercles" - are not illustrated in the most carefully prepared engraving, will always remain a mystery.

I will only add to the short but clear description by Link & Otto with the missing details of flowers, fruit and seed. Of these nothing is stated, and I imagine that the plant gave up the ghost before flowering. Flowers bell-shaped to 4 cm long and 6 cm across, close round the crown which is thickly covered with white wool, ovary and tube covered with scales. From the axils of these scales comes thick brown wool and brown bristle-like hairs. The wool is thickest at the top of the tube; outer petals spatular, at the tip somewhat notched, shiny yellow, sometimes with purple centre stripe. Inner ones also spatular, notched and lemon-yellow. Stames inserted at the base of the pistill, forming no nectar chamber. Filaments yellow with pale yellow anthers. Pistil pale yellow, protruding from the open flower with + 10 purple-red stigmas. Self-fertile. Fruit lengthening during ripening, bladder-shaped and growing thin-walled; pale green or pale pink coloured, covered with white wool and a few bristles which appear from the scales; afterwards drying up, splitting lengthways and disintegrating; + 50 seeds per fruit. Seeds hood shaped, tests covered in numerous matt brown lumps, hilum with thick, sometimes slightly wavy edge; in the middle rather sunken, and dark ochre coloured.

On enquiring at the Botanic Garden and Museum, Berlin-Dahlem, Dr. G. M. Schulze, director of that institute, tells me that the herbarium material is not there. It is not known if it was ever deposited by Link & Otto. Their description makes no mention of this, and most of the herbarium was lost due to circumstances of war. Consequently I have deposited a neotype with the Rijksherbarium in Utrecht under no. van Vliet 3. Field no. is D.V.71.

In conclusion I will note that with this discovery, an old species, lost in oblivion, has been reinstated in its proper





*Melocactus orthacanthus.*

*C. Röthig. del.*

*F. Gumpel. sc.*

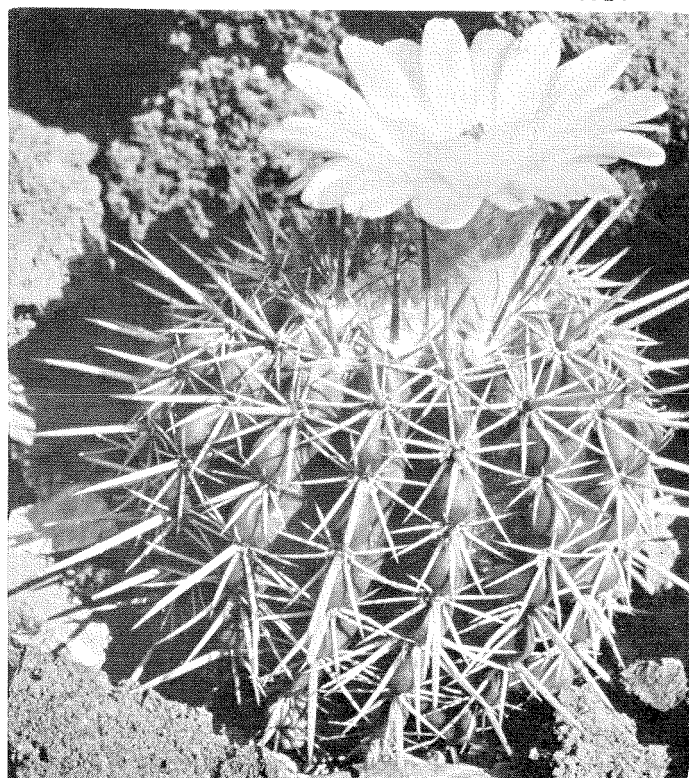
NOTOCACTUS ORTHACANTHUS

LINK and OTTO

Verhandlungen des Vereins des Gartenbaues in den Königs.

Preuz Staaten

1827



NOTOCACTUS  
ORTHACANTHUS

Succulenta

52. 4: 73

Photo - Van VLIET

place, and at the same time the work of Link & Otto is recognised. In the future I hope to be able to reunite yet more "new discoveries" with their original descriptions. It is difficult work, but very rewarding, and gets rid of a lot of question-marks in the literature.

#### Comments on *Notocactus orthocanthus*

..... from G. Charles

"I have one plant of *N. orthocanthus* bought from Holland and grafted. It looks as though it belongs to the mammulosus group.

"My plant is just over 3" in diameter, much wider than it is high, with a depressed crown well supplied with wool. It looks a bit like a *Wigginsia* with prominent humps on the 18 straight ribs, between each areole. The plant body is a dark bluish-green colour.

"The single central spine is prominent, up to about 7 - 8 mm long on the newest growth, very pale colour with a suggestion of red at the base and a dark tint towards the tip, later becoming a pale pinky buff colour and pinky red at the base. Radial spines 10 - 11, about 5 mm long, the three lowermost slightly longer and stouter and somewhat less appressed. The plant flowered last year although I missed it opening. It was obviously yellow and quite large. This only flower has produced a seed pod about 2.5 cm long, spiny at the top. I believe the fruit may be empty and so it may not be typical of a fertile one. It is covered in wool of a brown/white mixture, darker at the top. There is certainly no body of fruit visible through this wool. Although the plant somewhat resembles a *Wigginsia*, the fruit is like that of other *Notocacti* I have seen, not at all pink.

"The areole which produced the flower has grown a central spine much longer than normal on the rest of the plant. Although it is difficult to see, this areole also seems to have produced some extra central spines. I have noticed a more prolific spine growth on flower bearing areoles with other *Notocacti*, notably *N. tenuicylindricus*."

..... from D. Rushforth

"When we paid a visit to Wouters collection in Holland in 1971 he very kindly let me have a number of grafted seedlings as a memento of our visit. One of these was *Notocactus orthocanthus*, but at that time the seedlings were only about between 1 - 2 cm in diameter and they did not really differ much between each other, so we virtually acquired a batch of names. I think that this particular plant had been grown from Van Vliet's collected seed.

"Now that it has grown to about 2½" across (7 cm) the body, it is showing much more mature features. On the older areoles the single central spine was not quite 10 mm long whereas now it is some 15 - 16 mm long and almost 1 mm thick at the base. In the new growth in the crown the lowermost part of the new spines are pale red and the upper parts are dark brown; later the red colour is confined to the base of the spine. Each areole has 9 - 11 radial spines, including 2 - 3 fine spines directed upwards, 7 - 8 mm long, straw coloured, all radiating.

"In the midst of the creamy white wool in the crown a mound of grey-brown wool covered the bud. Superficially there were no bristles to be seen on the bud but when it was examined closely with a hand glass some very dark, slim, bristles could be seen in a cluster projecting about 1 mm above the wool at the very apex of the bud."

..... from H. Middleditch

"I see from the little booklet published by the G.O.K. which lists the Rausch field collection numbers up to 705, that R 372 is identified as *Notocactus orthacanthus* Link while R 372a is down as *Notocactus allosiphon* March. This would suggest that these two plants could have been collected from the same habitat and that they may also be of somewhat similar appearance."

..... from J. D. Donald

"Like all species lists with consecutive numbers the latest definitive list of Rausch's numbers ought to be construed as being in some logical sequence. With field numbers then the sequence is expected to be that of discovery so that adjacent numbers might indicate close proximity of habitat. The introduction of suffixes e.g. an a, b, c, etc. can mean an afterthought or a forgotten or misplaced entry - usually they come about after examination of a batch of plants collected under a certain number which is then subdivided into smaller batches under the number plus a suffix. Only the original collector knows the truth. Let us assume that *Notocactus* R 372 is *N. orthacanthus* and amongst them were some slightly different plants collected at or near the same locality to be included under R 372 which Rausch believes to be *N. allosiphon*, hence R 372a.

"I have *Noto. orthacanthus* from Van Vliet (collected with Rausch) and I have *Noto. allosiphon* also from Van Vliet. I have also *Noto. allosiphon* from Schlosser from Marchesi's locality. All three are distinct but on the other hand I would say they were the same species i.e. *N. orthacanthus*, merely ecotypes of slightly different but close localities."

..... further from H. Middleditch

"I would like to suggest an alternative rendering of the translation from the original Link & Otto

description of "die furchen sehr enge" as "grooves very narrow" rather than "close together" i.e. the sides of the ribs come close together at the base of the ribs, producing a narrow groove between them. Are they actually like this?

In referring to the original illustration of this species, Van Vliet is quite lavish in his praise - a "splendid copperplate engraving" and a "most carefully prepared engraving.". However, a glance at the photograph below this engraving shows clearly that all the central spines radiate outwards from the body and those on the rib most directly facing the camera are pointing either towards the camera or downwards in line with the rib. If we examine the same feature on the engraving we immediately see that all radial spines on the rib in the middle and to the left of centre face sharply left, whereas the central spines on those ribs to the right of centre face sharply right. The artist has failed completely to register the transition in angles which would have been evident to his eye. The assumption must be that he was not very competent in transferring this particular feature to paper, or else that he was simply not a very competent floral draughtsman. If he was capable of misrepresenting this feature, then it is perhaps not so very surprising that he also failed to record the humped form of the ribs between each areole, which puzzled Van Vliet.

"The engraving may well have been most carefully prepared but it would have been preferable to have had a carefully prepared representation of the original plant."

#### **OPUNTIA AURANTIACA — A MAJOR PROBLEM.** From C. Moran.

The cactus, *Opuntia aurantiaca*, is native to South America but during the last century was introduced to Eastern Australia, where it is known as "tiger pear" and to southern Africa where it is called "jointed cactus". It has become a weed of major importance in both countries where this aggressive, invasive plant is costing millions of pounds annually.

For about 40 years reliance has been placed on mechanical control methods and more recently on herbicides. Both methods are unsatisfactory; control efforts are continual and increasingly costly and have failed to eradicate the weed even in restricted areas and it is spreading relentlessly to new areas.

Within the last few years, serious and sustained efforts have been made in the exploration for natural enemies of the cactus in South America - mainly for insects that feed on the plant or on related cacti. Biological control of the weed using these organisms has a real chance of success and there are encouraging precedents in which insects have been successfully exploited for the biocontrol of other aggressive cacti. Nevertheless, the research entomologists and botanists involved in this project are encountering problems in their exploration for natural enemies because they have been unable to discover the exact area in South America which is the original native home of *O. aurantiaca*.

All *O. aurantiaca* infestations in eastern Argentina and in Uruguay seem to be secondary, unnatural distributions in botanically disturbed places, around towns, along fence lines and at abattoirs. In every locality the cactus seems to be a recent colonist and these are not the places in which it would be likely to find the complete fauna of natural enemies which have co-evolved with the plant. *O. aurantiaca* is a xerophyte which also suggests that the plant is a recent colonist in eastern Argentina which is a high rainfall region. In addition, the insects associated with this species of cactus in Argentina are all commonly found on other related opuntias in the same area. Where then is the original native home of *O. aurantiaca*? Clearly, a study of the published literature is important in attempting to answer this question.

*Opuntia aurantiaca* was first described in 1833 by Dr John Lindley, of the London Horticultural Society, who wrote, "A native of Chile, whence it was originally sent to this country, in 1824, by Mr Nugent. It has also been brought home by Dr Gillies whose unpublished *Cactus aurantiacus* it appears to be". As a result of detailed investigations of the biography, letters and exploits of Dr Gillies, we now know that he could not have collected *O. aurantiaca* while he was in South America because this species did not occur in any of the areas he visited. His manuscript description of *Cactus aurantiacus* most probably referred to *O. longispina* which is similar to *O. aurantiaca* and which is common in Mendoza province, Argentina where Gillies collected his plants. *O. longispina* has striking orange flowers which are illustrated in the colour painting in Lindley's original description of the plant. This confusion has been perpetuated in the many published accounts of the plant over the past 140 years. To compound the confusion, *O. aurantiaca* apparently does not occur nor did ever occur in Chile; why Lindley should have said that the plant was "A native of Chile....." is not known. However, with this in mind, a knowledge of Mr Nugent and his travels becomes vital in tracing the origin of this cactus and in the exploration for potentially important biological control agents.

Specifically then, information is required on three questions related to this investigation:—

1. Who was Mr Nugent and where did he obtain the specimens of *O. aurantiaca* that he sent from South America to England in 1824? He does not appear to be listed as a botanical collector and we know nothing of his nationality or occupation. To whom did he send his specimens in England?

2. Where are Gillies' original manuscripts and drawings of *Cactus aurantiacus*? The manuscript was seen and used by Lindley in describing *O. aurantiaca* although Gillies' manuscripts and drawings of many cacti collected in Argentina, were sent originally and exclusively to Professor W. J. Hooker at Glasgow. They are not now to be found at Glasgow, Edinburgh, Kew, the Royal Horticultural Society or the British Museum (Natural History).

3. Lastly, it is obviously desirable to study the fauna and growth forms of cacti which are closely related to *Opuntia aurantiaca* which include *discolor*, *tayapensis*, *pestifer*, *depauperata*, *curassavica*, *repens*, *pumila*, *pubescens*, *pascoensis*, and *taylori*. It is possible that one of these species will prove to be a synonym of *aurantiaca* for their published descriptions are mostly brief and imprecise. In particular we urgently require living plants of two of the species we have not yet seen, namely *pascoensis* and *taylori*. Where can these be obtained?

Any information which may assist in answering these questions would be most gratefully received by the Imperial College Field Station.

#### Comments on *O. aurantiaca*

..... from H. Middleditch

"Having read this rather interesting inquiry, my first reaction was to have a look in Backeberg's *Kakteenlexikon* to see what he had to say about the habitat location for this species. The entry read, quite simply, 'Uruguay'. The next thing was to have a look in his *Die Cactaceae*, and this proved to be a mine of information.

"I had anticipated that all the various species of *Opuntia* which are named above, would be collected together under one group, but this was not the case. In his sub-group "Subcylindricae" Backeberg lists the species *depauperata*, *pascoensis*, *pubescens*, *tayapayensis*, *pumila*, *taylori*, *repens*, *curassavica*, & *pestifer*; all these species appear to have more or less elongated joints and also to have a main stem that tends to grow more or less cylindrical. They range over Mexico, Central America, West Indian islands, Venezuela, Colombia, Ecuador, Peru, and as far south as central Bolivia.

"In an entirely different group of *Opuntia*, according to Backeberg, we find the sub-group *Aurantiacae*. Again, these are all species with elongated joints and some of these species have a main stem which tends to grow more or less cylindrical. Of the five species listed in this sub-group, a fairly recent discovery by Cardenas comes from Cochabamba in central Bolivia, whilst the other four species, including *O. aurantiaca*, are recorded as occurring in Uruguay and north-west Argentina.

"The species in question is titled as "*Opuntia aurantiaca* Lindl. non Gill - Edwards Bot. Reg. 19 pl 1606. 1833". It would appear that Backeberg had already come to the same conclusion as the author of our article viz: that the plant described by Lindley was not the same as that brought to England by Gillies. Britton and Rose also attribute this species name to Lindley but in addition they mention "Gillies's manuscript name, first published in the Botanical Register in 1833". Karl Schumann, in his *Gesamtb. der Kakteen* of 1898 uses the title *Opuntia aurantiaca* Gill., and defines the geographical distribution of this plant as the eastern slopes of the Cordillera in Mendoza, Argentina. The flower is stated to be orange. Thus apart from the specific name of *aurantiaca*, this particular entry would appear to be an authentic record of Gillies' plant. Backeberg also records that "Gillies' plant undoubtedly came from Mendoza, according to Hosseus". However, Pfeiffer did describe *O. aurantiaca* Gill non. Lindl. in 1837, thus separating the identities of these two plants, but unfortunately he gave the flower as yellow.

Thus we appear to have fairly common ground between those authors who have investigated the literature - an *Opuntia* with orange flowers, collected by Gillies in Mendoza province, and another *Opuntia* with yellow flowers described by Lindley as *Opuntia aurantiaca*. This leaves open the question of the habitat/locality of this latter species.

In his "*Flora Illustrada del Uruguay*", Herter notes that this species is of frequent occurrence on the coast of the La Plata estuary and he possessed field specimens in his herbarium under the number H 258. In his "*Cactacearum Platensium Tentamen*", Spegazzini observes that *O. aurantiaca* Gill. has not been observed by him to grow round about Mendoza; he attributes an orange colour to the flower and states that it grows in the hills in the neighbourhood of Montevideo.

"There would appear to be little doubt that *O. aurantiaca* with yellow flowers, as described by Lindley, does grow in the vicinity of Montevideo and has grown there for some considerable length of time. The author of our enquiry however, supposes it to be an introduction and not native to that locality, on account of its confinement to hedgerows etc.

"Over a period of time I have acquired a set of pressed flowers which have been very largely collected from English hedgerows, stream banks, and other scarce and dwindling remnants of the natural English countryside: it is only on rare occasions that specimens can be obtained from cultivated farmland, in hayfields or from meadows. With a few exceptions, these flowers have all been identified from Keble-Martin's work and despite the fact that they are not found carpeting the countryside, I have no reason to doubt that they are all native English flora. Now the open grasslands of

Uruguay have long been used for cattle-ranching, whilst the coastlands round Montevideo have gradually developed into more arable farming; of late, market gardening has been increasing in the immediate neighbourhood of the capital city. Arable farming has spread northwards at the expense of cattle ranching and not long ago the old-established meat processing plant at Fray Bentos closed down as the arable farming frontier marched inexorably past its doors. With the spread of arable farming, and still more so with market gardening, the natural habitat becomes extensively modified; just as it has been modified in England. Hence it is hardly surprising that *Opuntia aurantiaca* is now to be found only in hedgerows and suchlike places on the coast of the La Plata, and that observation alone would hardly seem to constitute good grounds for suggesting that the species is not native to the place.

"When Charles Darwin landed at Montevideo in 1832 he saw near the town "a few hedgebanks, covered with agaves, cacti, and fennel". The ease of travelling in the vicinity of Montevideo would permit any casual visitor to acquire a specimen of *Opuntia aurantiaca*; we know from the account of both Sellow and St. Hilaire (elsewhere in this issue) that the presence of the Portuguese had established a safe climate for visitors and collectors. For a plant to have come to England in 1824 it would probably have been collected in Uruguay round about the same time that Sellow and St. Hilaire were travelling in that country. At that period, the English had strong trade links with Chile and many a boat homeward bound from Valparaiso in Chile, with a cargo for England, would call at Montevideo for mail and provisions, after passing the inhospitable southern cape and the almost equally inhospitable coast of Patagonia.

"A ship sailing for England from Valparaiso in Chile, would carry a Bill of Lading from that port: additional cargo which might be collected en route, at Montevideo, say, would be added to the same Bill of Lading and consequently it is not too surprising that a plant sent to England on board such a boat would be down in the ship's manifest as "from Chile". This appears to me to be the likely origin of *Opuntia aurantiaca* being collected in Uruguay and yet, on arrival in London, being recorded as if it had come from Chile.

"Any crew member of a ship visiting Montevideo, or a temporary resident of the city, would have had little difficulty in strolling to the outskirts of the city and collecting a sample of *O. aurantiaca*, in 1823-4. I would surmise that our unknown Mr. Nugent falls within that sort or category."

..... from G. J. Swales

"Or could Mr Nugent have been a British consular official resident in Uruguay at the time ? like the consular officials appointed by various countries to Brazil at this same period, he may have employed his spare time in a spot of botanising in the vicinity of his posting.

"Now in regard to the suggestion that *Opuntia aurantiaca* is an introduction to Uruguay and not a native plant, because it is found in hedgerows and so on, a comparison has been offered with English hedgerow flora. Many of the plants found in English hedgerows are naturally woodland plants and are there because hedgerows are woodlands in miniature or are there because the woodlands have been felled. A great deal of the present English farmland was once covered by forest and those forest plants which remain have precious little refuge except in hedgerows.

"As Tansley indicates in "British Islands and their vegetation" the hedgerows accomodate plants which would find their ideal habitat in open grasslands but can survive in the conditions of half-shade. The same applies to shade species from woodlands, which will avoid growing, or be unable to grow, in the sunnier places along hedgerows - but they will survive by selecting conditions of adequate shade. Often a hedgerow will contain a relict flora, but nevertheless it is still a natural one.

"Hence I feel that Dr Moran is very rash to conclude that just because *O. aurantiaca* is found in the hedgerows in Uruguay that it is not a natural plant.

"I have had a look at the original illustration of *Opuntia aurantiaca* in the copy of Edwards Botanical Register in the Library at Kew. In this publication the plant is described as the "Orange coloured Indian Fig", but the colour plate accompanying the original description quite clearly shows a yellow flower."

..... response from C. Moran

"I appreciate that the suggestion which you have made concerning the origin of the error about Chile as the native home of *O. aurantiaca*, is very plausible. You have also touched upon the heart of the problem when you ask about the identity of *O. aurantiaca*. I am not a botanist but my contacts at Kew and elsewhere assure me that, although there may be several growth forms of the plant, *O. aurantiaca* is the most appropriate name for the weed which is causing a problem in southern Africa and Australia. They are busy looking at pollen and chromosomes and seem to be bogged down in thoughts about the hybrid origin of the weed.

"What is quite clear and positive, however, is that the plant illustrated so well in the colour painting in Lindley's original description of *O. aurantiaca* looks exactly like the thing that is a weed overseas. Consequently I must concern myself with the origin of the plant that Lindley described. In this regard there is also no doubt that Gillies is a red herring and following him up can be no help. That leaves the mysterious Mr Nugent.

"I have now received a letter from the Hunt Institute for Botanical Documentation in Pittsburgh who inform me that there was a Dr Nugent who was physician at Antigua who discovered fossil wood on the island. Dr Nicholas Nugent published quite extensively on the geology of the West Indies from 1811 - 1819 (on Trinidad, Montserrat, Antigua.). Could this possibly be the man who sent cacti to England in 1824. If so, how would it be possible to confirm

this?

"I have been involved in many visits and letters to places all over the country. In a final desperate bid I wrote to all the 644 Nugents in the telephone directories in the U.K. I have received 83 negative replies, many phone calls from sceptics suspecting a hoax but finally two Nugents came up with interesting information. In a nutshell it seems that the plant was collected by a Nicholas Nugent who lived in Antigua who collected either from the island or from Trinidad or the adjoining mainland and sent the plants to Robert Graham at Edinburgh. I now know a great deal about this man and his movements, training, etc. and on the strength of these findings funds have been allocated for an exploratory trip to the West Indies where we will hopefully find *O. aurantiaca* reduced to rarity by insects or else present but hidden in taxonomic confusion."

..... from Mrs. L. Teare

"Any *Opuntia* is a pest here, but strangely enough you see large clumps in the suburbs here in Adelaide. They only spread in places like Queensland where the hot moist climate encourages any species. Now it is the *Harrisia* that is invading the fields, hence the ban on most columnar species, even *Espostoas* and *Eulychnias*."

**OPUNTIA AURANTIACA Lindley.** (Edwards Botanical Register Volume 19, 1833)

*O. aurantiaca*; articulis linearibus v. lineari-lanceolatis divaricatis apice compressis basi teretibus atro-viridibus, aculeis 2 - 3 elongatis glabris. Gillies MSS

In horto bipedalis et verosimiliter multo altior evasura. Flores solitarii, mediocres, petalis luteis obovatis marginibus inflexis, staminibus albis in cylindrum ordinatis petalis brevioribus.

Joints parallel sided or more or less parallel tapering at the ends, spreading, flattened at the apex, rounded at the base, dark green; spines 2 - 3 elongated, smooth. *Cactus aurantiacus* Gillies MSS.

Two feet high in cultivation, probably much higher in the wild. Flowers solitary of middle size, petals deep yellow, obovate, margins turned inwards. Stamens white arranged in a cylinder shorter than the petals.

A native of Chile whence it was originally sent to this country in 1824, by Mr. Nugent. It has also been brought home by Dr Gillies, whose unpublished *Cactus aurantiacus* it appears to be.

**OPUNTIA AURANTIACA Gillies** (Translated by G. J. Swales from *Enumeratio diagnostica cactearum hucusque cognitarum* 1837; by Dr. L. Pfeiffer. *Botan. regis.* t. 1606. Otto's GZ 1833 No. 44. S. 349)

*O. articulus linearibus, vel lineari-lanceolatis, divaricatis, apice compressis, basi teretibus, perviridibus, circa areolas macula atrovirente notatis; areolis magnis convexis, albido-tomentosis; aculeis inaequalibus, 3 longioribus rigidis brunneis divergentibus, 2 - 3 infimis albis, brevibus, setiformibus.*

Plantae interdum bipedales; rami  $\frac{3}{4}$  - 1 poll. diam., 6 - 7 poll. longi; aculei pollicares et ultra. Folia minutissima acutā rubra. Flores solitarii lutei. Germen breve crassum viride, areolatum. Corolia expansa  $1\frac{1}{4}$  poll. diam. Petala obovata, marginibus inflexis. Stamina alba in cylindrum ordinati petalis brevioribus. Stylus haud prominens, stigmatibus 7 virescentibus.

Joints linear or linear-lanceolate. Spreading, flattened at apex, rounded towards the bottom; very green; marked around areoles with dark green blotch; with large areoles, convex, bearing whitish wool, spines of unequal length, 3 longer ones rigid brown and spreading, two to three at the bottom, white, short, bristle-like. Plants occasionally two feet in height, branches  $\frac{3}{4}$ " to 1" in diameter, 6 - 7" long, with spines 1" long and more. Leaves extremely small, acute and red. Flowers solitary, deep yellow. Ovary short, thick and green, bearing areoles. Corolla expanded  $1\frac{1}{4}$ " diam; petals obovate, margins bend inwards; stamens white arranged in a cylinder, shorter than the petals. Style by no means standing out, with seven greenish stigma lobes.

Comments

..... from H. Middleditch

"This description by Pfeiffer is referred to Gillies's *O. aurantiaca*, but it will be seen how closely it follows Lindley's original description. But whence did Pfeiffer obtain his additional information? Can we be certain that it was from a vegetative cutting from the plant which Lindley used for his description? Or from a plant collected from the same locality?

"Although the spine count differs between Lindley and Pfeiffer, the spine count in the latter description appears to conform to the details visible in Lindley's plate in the Botanical Register, reproduced here."

**OPUNTIA AURANTIACA** (Translated by H. Middleditch from Notas Sobre Cactaceas Argentinas by C. C. Hosseus, 1939.)

*Opuntia aurantiaca* Lindley, which, like the majority of the other species, requires a support to cultivate it well, is indicated by Britton & Rose Vol. I p. 107 as occurring in Uruguay and in Argentina, despite Spegazzini's specific statement that he had no knowledge of it from Argentina, but only from the Cerro de Montevideo in Uruguay. I also know this plant only from this same place. Figure 130 reproduces a joint of this species collected by Rose in Argentina according to the accompanying text. The origin of this joint would have to be established and whether it was a case of confusion in view of the number of species which were collected by Rose in Argentina. In the meantime it is not possible to consider as belonging to the Argentine flora the species *Opuntia aurantiaca* in the sense of the interpretation by Britton & Rose (the species having earlier already been mistakenly recorded from Chile).

But the situation changes immediately following perusal of the literature concerning this species. From it one gathers that there is even a completely different opinion concerning the conception of *Opuntia aurantiaca* Gill. in Lindl. This indicates as the habitat Chile, (for example Foerster 1846) while Schumann found that it was a matter of a species from Mendoza. It might be supposed that the confusion is much older, since the species was sent for the first time to Europe by Nugent in the year 1824, next by Gillies in 1833, this time certainly from Mendoza where the cited author acted as English Doctor, considered one of the finest connoisseurs of plants. I am also acquainted with this *Opuntia aurantiaca* in a completely different form. It has a form of growth like grass, much branched with joints not very compact, very spiny and with orange flowers. This species has also been encountered in the province of La Rioja. A definite judgement can only be reached with more material from the literature.

With this a problem has been posed, which has been overlooked by Britton & Rose.

Comments

..... from J. W. M. Heatlie

"I have been able to obtain some information following your query about Dr. Gillies. I thought that a good point to start would be the old medical registers. Those in the University Library only go back to 1859 and do not help. However in the Library of the Royal College of Physicians I had a look at the dissertation for which Gillies was awarded his Ph.D. From there I went to the Botanic Gardens Library and this yielded an extensive biography.

(... the relevant parts of which we hope to publish in a forthcoming Chileans - H.M.)

..... from H. Middleditch

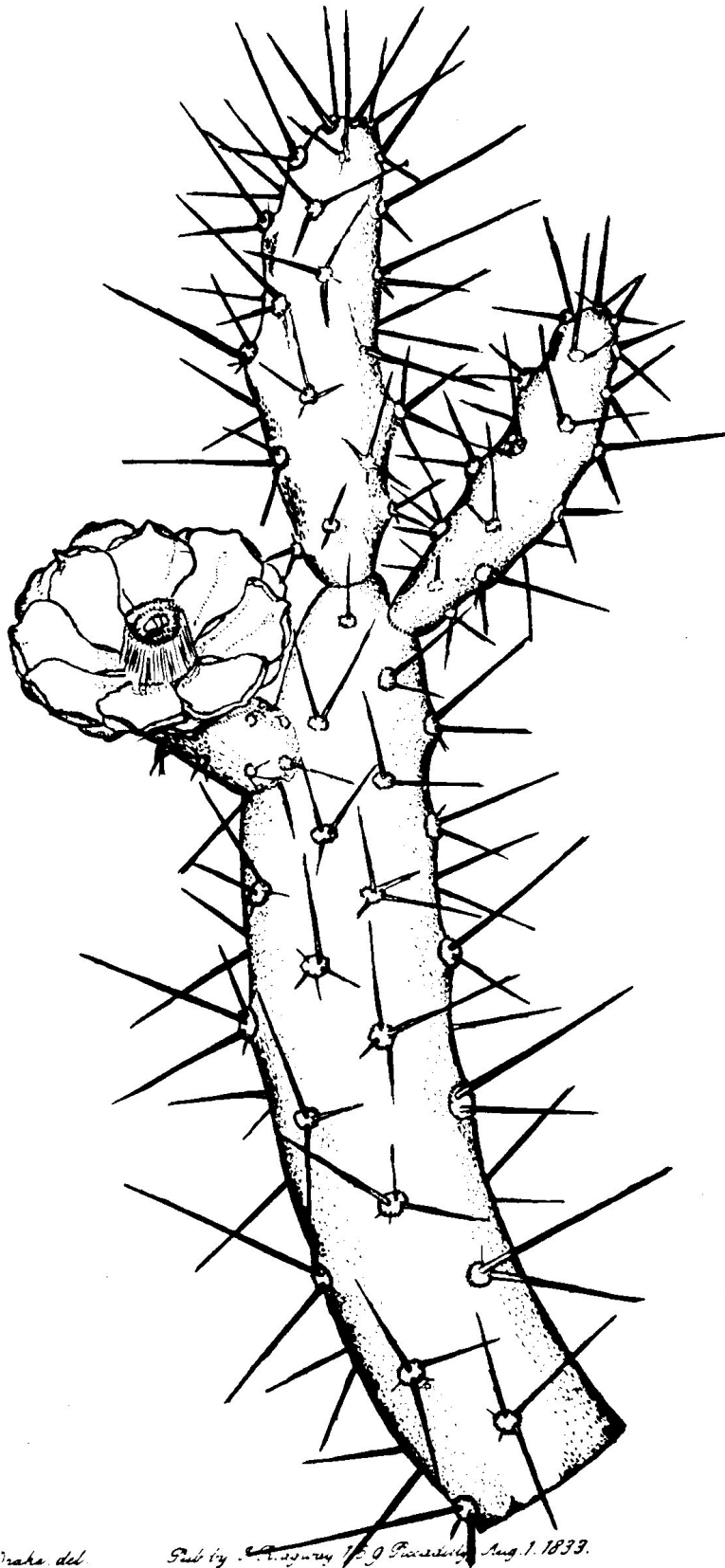
"This account by Hosseus states that *Opuntia aurantiaca* was sent to Europe by Dr. Gillies in 1833 - but this is not correct: it was certainly described by Lindley in 1833, but may well have reached Lindley as early as 1824. It may be as well to remember that Gillies landed in Uruguay en route to Argentina, and it is by no means impossible that he collected his *Opuntia aurantiaca* there and despatched it among his very first consignment of plants sent back to Europe. Without some record of what Gillies sent back home, it will surely be most difficult to ascertain the actual region in which Gillies collected any of his plants."

**A VISIT TO PERU** From J. Medway.

When on a short vacation in Peru some 18 months ago, I first met Karel Knize. He operates a collecting and export business from Lima, and out of the city at Cieneguilla the collected plants are kept in "green-houses". While I was there I purchased a few *Copiacocas*, *Melocacti*, *Discocacti* etc., - not too many as I had to carry them home as baggage. Knize very kindly took us out on two occasions, one to Chosica on the Matucana-Oroya road and on the other occasion to the Lurin valley. As a result I have some passable habitat slides of *Haageocereus*, *Melocactus peruvianus*, *Tephrocacti*, and so on.

We intend to go to Peru for the month of November this year with the intention of spending a large part of this time collecting and photographing cacti. We will spend around ten days this year running north through Ancash and in Libertad, probably into Cajamarca and the bottom of the Amazonas. The Pan American highway is pretty good but the roads are foul once you leave the paved surfaces. Karel Knize considers November the best time for this trip although it is fairly early in the year for the *Borzicacti* flowers, particularly the subgenus *Matucana*. I hope to collect round Lima for *Melocacti*, *Loxanthocereus*, and *Mila* - I will cover this area in day trips from Lima.





Miss Drake del

Pub. by J. G. P. Edwards Aug. 1. 1833.

J. G. P.

OPUNTIA AURANTIACA  
Edwards Botanical Register 1833

At this juncture I particularly regret that I have no formal botanical training; until this last trip I had been a collector in the mechanical sense of the word and for some years a keen grower from seed, something with which I seem to be blessed with great luck. However, I am reading all I can about the Cactaceae of the Pacific seaboard in preparation for this vacation. I am taking plenty of film to record as much of the plants and terrain as possible, also other vegetation, particularly where there would seem to be symbiosis. I intend to collect soil samples (a supply of small flat bottom corked tubes required here, perhaps) and label them and bring them home for analysis. I also intend to take note of pollinators and the activity of humming birds, lepidoptera, and so on.

I did try to get photos of humming birds feeding at flowers of *Neoraimondia roseiflora* when we were near Chosica, but every time I focussed the bird and flower, the humming bird took off. This, by the way, was before the Chileans' articles on humming bird pollination and I never connected that possibility when we were out in Peru.

The humming bird does not seem at all shy - I suppose his remarkable mobility gives good protection, so it will be a matter of try and try again. I shall try using a 135 mm telephoto lens this time.

## TEN YEAR INDEX

On reaching our No. 30 issue, the Chileans will have seen ten years of publication. The existing index which covers Nos. 1 - 18 inclusive will then be in urgent need of some form of supplementary index, or else it will require a complete ten year index to cover all the issues from No. 1 to No. 30 inclusive.

An index covering only nos. 19 to 30 inclusive would supplement the existing index and avoid duplication of the material already contained in the existing index covering Nos. 1 - 18, whilst on the other hand, a single complete ten years' index covering the 30 issues would be quicker for reference purposes.

..... from R. Zahra

"I think you should have an index from No. 19 to No. 28, as these issues could be bound in one volume together with their own index. I think it would be a lot of wasted time, effort, and money to repeat the Index for 1 to 18 when there is already one available. I have already bound up Nos. 1 to 18 with the index into one volume and they make a very handsome book. Because of all this I feel that you should concentrate all efforts into the new index thus helping those who like myself would like to bind these last ten numbers into an interesting book."

..... from A. J. S. McMillan

"Personally I would like to see the index for the whole period in one, as it would be more convenient to use."

..... from G. J. Swales

"For anyone who finds it necessary to refer to an index at fairly frequent intervals, it is a great time saver to be able to cover the greatest number of issues in one search. Some Journals that I have had to search through for references lacked even an annual index and it is a confounded nuisance having to work through each index, issue by issue. Even better than an annual index is one covering several year's issues. From memory, I seem to think it was Curtiss's Botanical Magazine which issued an index to cover a period of about twenty years, in the mid-19th century. Certainly it will be far more convenient to be able to refer to a single index for 30 issues of the Chileans, instead of having to refer to two separate indices.

"Indeed, I wonder why it is necessary to split the Index into three sections? Would it not be far more convenient to have a single index arranged solely in alphabetical order? The illustrations could be identified by the use of italics or some similar method, without having to list them separately."

..... from H. Middleditch

"In regard to the sections of the Index, from time to time I am obliged to use other indices in searching for an illustration, and the various methods of indexing do quite definitely vary in the facility with which one can find what one is looking for. The U.S. Journal 38-Year index fails to index illustrations altogether, so is valueless for this particular purpose. The annual index for Cactus (France) uses a small asterisk to indicate an illustration, so one can read the index for asterisks and identify the plant name against each asterisk until one draws a blank or (occasionally) reaches the plant name concerned. The N.C. & S.S. Journal index used the asterisk for illustrations up to 1969 and then went on to the use of 'bold face' to indicate illustrations. Unfortunately the 'bold type' used is not very bold and can be rather difficult to distinguish amongst the other figures; hence I find this method, as printed, about twice as slow in operation as the asterisk method.

"The annual index for Succulenta also uses 'bold face' type to indicate an illustration. Because of the actual type face used and a better distinction between 'bold face' and the other face, together with a much shorter line length, it is easier and quicker to search for an illustration in the Succulenta index than in the N.C. & S.S. index, although

the identification system is basically the same. The wider line spacing used in the Succulenta index up to 1969 is faster still.

"Up to 1971, the K.u.a.S. annual index included a separate section for illustrations alone, and in practice I have found this to be the most rapid means of tracking down an illustration in a periodical. Because of this experience, the Chileans index was arranged accordingly with a similar separate section for illustrations of plants."

#### CHILEANS FORMAT From D. W. Whiteley

I had been thinking about your remarks which you made at Brooksby regarding the sharp rise in the cost of printing the Chileans and the increased subscription that will be involved in consequence. I have been doing a review of various cactus journal formats and here is the result.

	Approx. number of words per page	Size of page	Number of columns per page
Chileans	972	210 x 300 (European A4) - H.M.	One
American	1080	175 x 260	Two
N.C.S.S.	1242	190 x 245	Two
C.S.J.G.B.	1298	185 x 245	Two (formerly one)
Succulenta	689	158 x 240	One
Kakteen Sukkulenten	660	150 x 210 (European A5) - H.M.	One
Kaktusy	600	165 x 235	two

I think that a change to a double column format with a much reduced type face is now overdue. If the Chileans is printed at the type size of the G.B. Journal on the same A4 paper size, but in two columns, I estimate it would carry 1562 words per page. I also think that the paper used for the Chileans is far heavier than necessary and only adds to postage costs. Perhaps the page size could be rationalised also and a different page size chosen. With the troubles you are having with delays in printing and poor quality illustrations it would be a lot better if you shopped around for a better printer.

I would suggest then that (a) the page weight be reduced (b) the page size be reduced (c) two columns and a much smaller type face used, so in all (d) the number of pages per journal would be reduced for the same amount of material, and finally (e) another printer be found.

(We have increased words per page from about 720 to about 1080: we have also found another printer - H.M.).

#### ERRATA – No. 29

- p. 7 line 39 – for sacle read scale.
- p. 11 line 46 – for 'of tall shrub-like' read 'a tall shrub-like'.
- p. 16 line 50 – for Bombac read Bombax
- p. 21 line 19 – for witish read whitish
- p. 24 line 15 – for Megorada read Mejorada
- p. 24 line 44 – for Raugh read Rauh
- p. 25 lines 1 & 16 – for trial read trail
- p. 25 line 51 – should read "when the sun hits the greenhouse
- p. 34a line 32 – should read "I have wondered whether it is correctly named
- p. 39 line 25 – for ther read there
- p. 39 line 28 – for schewbsiana read schwebsiana
- p. 40 line 14 – should read "he paints it all over the patches"
- p. 40 line 43 – for cycological read mycological
- p. 41 line 29 – for free root rim read free root run
- p. 41 line 30 – for petaches read patches
- p. 41 line 42 – for Lavenda read Lavender

## Chileans Annual Gathering 1976

We shall be holding our 1976 Annual Gathering at Brooksby Agricultural College in Leicestershire from the evening of Friday September 3rd to the afternoon of Sunday September 5th. It is anticipated that talks and discussions will cover: Matucana / Submatucana, Neochilenia, Weingartia, Sulcorebutia, Columnar Copiapoa, and a selected group of Gymnocalycium. It is anticipated that the all-in cost for accomodation, meals, morning coffee and afternoon tea, commencing with an evening meal on the Friday and terminating with a buffet tea on Sunday, will not exceed £17.50. To book a place, please send £5 deposit to: Mrs. J. Hobart, 39 Woodside, Darras Hall, Ponteland, Newcastle on Tyne NE20 9JA. As always, plants, slides and contributions to the discussions will all be welcome. The Exchange & Mart table will be open for plants, books or what-have-you.

## Chileans Local Discussion Groups.

In order to facilitate local discussion and exchange of information between members, arrangements have been made by a few members for informal discussions in one or two localities. We are fortunate in having local members who have volunteered to advise enquiring members of any such pending discussions - for N.E. London / S.E. Essex: P.H. Sherville, 51 Park Road, Enfield, Middlesex EN3 6SR; for Nottingham: H. Mays, 42 Padley Lane, Burton Joyce, Nottingham NG14 5BW. All arrangements for any discussions and any financial involvement are wholly the responsibility of participating members.

## Chileans Annual Gathering 1975 – Accounts

Cash & Cheques received	£316.50	To Leicestershire County Council	£275.31
Brought forward	18.10	Printing, Postage, etc.	14.12
	<hr/>		<hr/>
Total Income	334.60		
Less Expenditure	289.43	Total Expenditure	289.43
	<hr/>		
Balance carried forward	45.17		

It has been anticipated that between £50 & £60 would have been required to meet the cost of Mr. Buining coming to speak to this meeting. An invitation has been extended to a European guest speaker for our 1976 Annual Gathering. A report of the 1975 Gathering will appear in a forthcoming issue.

## STUDY GROUPS / ROUND ROBINS

Cleistocacti	T. Lavender, 62 Finchale Avenue, Billingham, Cleveland TS23 2EB
Copiapoa	D. J. Lewis, 80 Pencisley Road, Llandaff, Cardiff CF5 1DQ
Frailea	J. Forrest, Beechfield House, Meikle Earnock Road, Hamilton, Scotland
Gymnocalycium	G. J. Swales, 5 Hillcrest, Middle Herrington, Sunderland, Co. Durham.
Lobivia	J. Hopkins, Primrose Cottage, Monks Lane, Audlem, Cheshire CW3 0HP
Matucana/Borzicactinae	P. H. Sherville, 51 Park Road, Enfield, Middlesex, EN3 6SR
Melocactus/Discocactus	Mrs. L. Teare, 27a Maher St., Kensington Gardens, Adelaide, South Australia, 5068 Australia.
Neoporteriae	D. Rushforth, 8 Broadfield Road, Knowle, Bristol 4.
Notocactinae	K. H. Halstead, Little Firtrees, Wellington Close, Dibden Purlieu, Southampton.
Parodia	A. Johnston, 11 Malvern Road, Scunthorpe, Lincs.
Photographing Cacti	A. W. Craig, Davela, Forest Lane, Kirklevington, Nr. Yarm, Yorks.
Sulcorebutia	W. G. Sykes, 10 Ashley Close, Thornton Cleveleys, Lancs FY5 5EG.
Trichocereus	N. T. Hann, 5 Lake Road, Shirley, Croydon, Surrey CR0 8DS

## THE CHILEANS

Organiser	H. Middleditch, 5 Lyons Avenue, Hetton le Hole, Co. Durham, England DH5 0HS.
Treasurer	R. L. Purves, 19 Brocks Drive, Fairlands, Guilford, Surrey GU3 3ND.
Membership Secretary and Back Numbers	Mrs. A. Lavender, 62 Finchale Avenue, Billingham, Cleveland, TS23 2EB
Seed Exchange	J. Hopkins, Primrose Cottage, Monks Lane, Audlem, Cheshire CW3 0HP.
Slide Librarian	A. W. Craig, Davela, Forest Lane, Kirklevington, Nr. Yarm, Yorks.

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