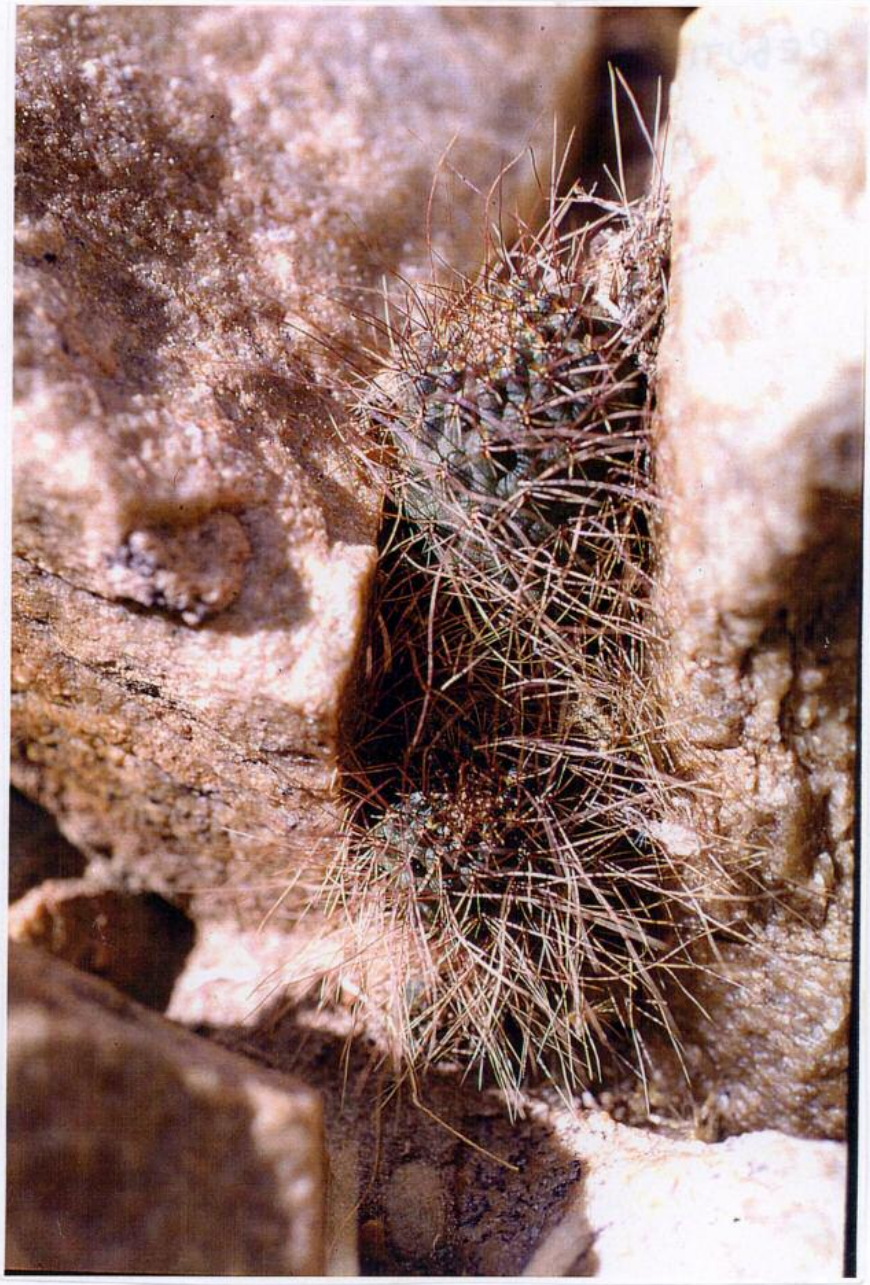
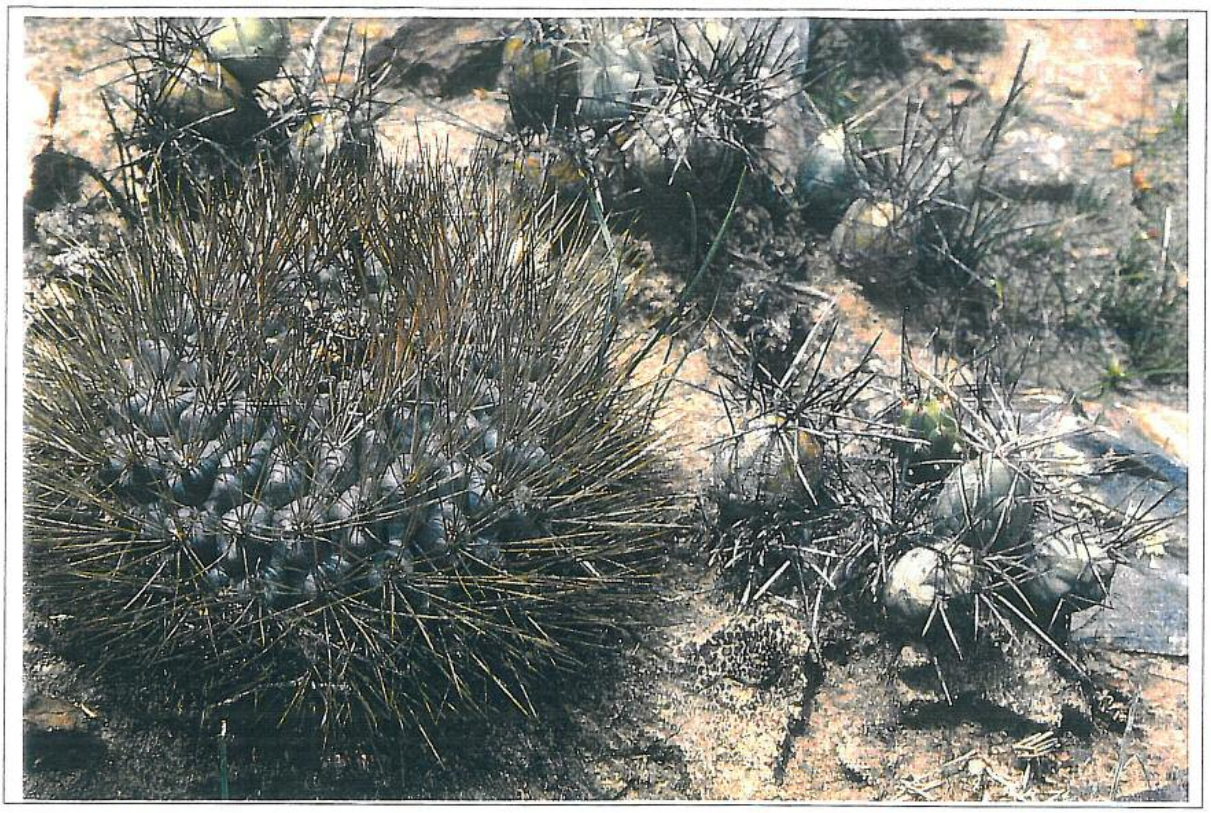
THE CHILEANS '98

VOLUME 17 NUMBER 56



Rebutia einsteinii
El Moreno
Photo. - L.v.d.Hoeven



Weingartia westii Tephrocactus bolivianus

Cucho Ingenio

Photo: F. Vandenbroeck

Parodia maassii Weingartia westii

Parodia occulta

West of Culpina

Photo: M. Lowry

WEINGARTIA IN SOUTHERN BOLIVIA From F.Vandenbroeck.

When we were travelling through Bolivia in 1988 we took the road out of Camargo to the north, in the direction of Potosi. This involved a long and gradual climb out of the river valley as well as a drive for an hour or two through an undulating, hilly, area. Around Padcoyo the ground took on a more gently sloping character, with moderate hills, becoming steadily more like the real altiplano. Just before we reached Lecori, a big blackish spined three-headed cluster of a cactus growing close to the road caught my eye. So we stopped the car and got out to investigate. There were Weingartia here, which we took to be W.westii.

At this particular point on the high plateau the ground was sloping downwards very gently and steadily away from us for several hundred metres, followed by an equally gentle rise, the road disappearing from view over a hump of ground about a km away. The surface of the ground was covered with gravel and stones, here and there with a stone of more than head size. On this slope no grasses or bushes were immediately obvious - you had to search to find any other vegetation. The Weingartia were growing in fair numbers, sometimes as close as a couple of paces apart. and they were quite widespread - as far as one could see to distinguish them from the stones. These plants were growing up to about 100 to 150 mm tall and wide. There was good regeneration with ample numbers of young plants, which typically were very much withdrawn into the ground; these plant bodies were hardly to be seen, only the long blackish spines seemed to project out of the ground, so that you could easily tread on them. These plants continued to appear as we travelled further along the road, over a distance of several kilometres. When we stopped again, even closer to Lecori, the Weingartia were even more numerous and displayed even finer developed specimens. Once we had gone past Lecori we saw no more of these plants, until we were near to Cucho Ingenio, when they reappeared.

We met with similar looking Weingartia again when travelling from San Pedro to Culpina, shortly after the highest point on the road, on the gentle descent towards Culpina. Both here and at Cucho Ingenio we found isolated flowering specimens. At all three locations the young plants develop almost subterraneously, with only the spines projecting out of the soil. The older plants growing at Lecori seemed to be somewhat shorter spined than at the other two places, but otherwise the plants were similar at all three locations. The landscape at Cuchu Ingenio was was very much like that at Lecori, more or less level terrain with undulations, but between San Pedro and Culpina the ground is far more broken and mountainous. The Weingartia usually grew either on ground sloping gently to the N, NW, or NE, or on level terrain, at an altitude which I would estimate to be between 3000 and 3500 m.

When we were travelling from Camargo to Cotagaita the road follows the valley of the Rio Tumusla for a considerable distance. At one of the highest points on this road we found some marvellous stands of W.fidaiana. This species was extremely numerous here, the surrounding slopes were covered with thousands of these golden spined slightly columnar plants. They reach a height of up to some 20 cm in length. It was my impression that these W.fidaiana had a different mode of growth to the Weingartia which we saw at Lecori, for they tend to grow somewhat more elongated and I do not remember seeing any young plants withdrawn into the ground. There was more variety of vegetation here than at Lecori, consisting of dwarf shrubs together with some herbs and the occasional specimen of Parodia obtusa. The country here is much more rough and broken than it is near Lecori. From where we stopped to examine these Weingartia we could look westwards and see sharp ridges and mountain tops, but surprisingly all the peaks and ridges were at almost exactly the same height for many kms in all directions. At this location we would be near the pass perhaps at about 2750 m altitude. Going further on from there in the direction of Cotagaita, one descends very gradually, passing over an absolutely flat plateau through remarkable savannah vegetation like that in Africa, with many acacia-like trees sparsely interspersed with Oreocereus celsianus. Coming close to Cotagaita this savannah disappears and lower down in a small bowl-like valley you can see the town of Cotagaita.

It was on our third visit to Bolivia early in 1988 that we at last found W,pygmaea on the Pampa Mochara. It is a curious tiny plant with an enormous tap root.

.....from H.Middleditch

When travelling north from Camargo, F.Vandenbroeck would be gradually climbing up and out of a north-south running valley which extends for a very considerable distance to the south of Camargo, where it is occupied firstly by the R.Tumusla and then by the Rio San Juan del Oro. It is sometimes referred to as the Cinti valley as it lies within the provinces of north and south Cinti. To the west of, and parallel to, this valley there lies a long, high mountain ridge. Even further to the west of that mountain chain again there lies a very broad basin, stretching from Vitichi in the north to Tupiza in the south. Roughly in the middle of this broad basin there lies the town of Cotagaita. From the high mountains to the west of the Cotagaita basin the waters drain either to the Rio Tumusla or to the Rio Cotagaita. Both rivers then flow eastwards, across the broad basin in which Cotagaita lies, their valleys cut down below the level of the floor of the basin as a whole. Flowing further eastwards, both rivers face the mountains ridge which separates the Cotagaita basin and the Camargo (Cinti) valley. They are deflected neither right nor left but pursue their steady descent as the mountains rise ever further at either side, entrenching their valleys ever deeper as they flow to the east. Roughly half way through this mountain ridge, the Rio Cotagaita discharges its waters into the Rio Tumusla. The Rio Tumusla then follows an ever more deeply entrenched valley until it has cut completely through the mountain range blocking its path and flows out into the Cinti valley.

The road taken by F.Vandenbroeck from Camargo to Cotagaita follows the general line of this Rio Tumusla valley for a considerable distance. At a point roughly half way from Camargo to Cotagaita, this road has climbed out of the valley to the pass, from where it swings away from the river valley and then descends a steady gradient to Cotagaita. The location given by F.Vandenbroeck for W.fidaiana appears to lie not far to the

west of the highest parts of the mountain chain, where the road is starting to descend on the western side. At this location, the ground appears to be pretty broken terrain with at least some dwarf vegetation in view.
.....from P.Down.

When we were travelling from Cotagaita to Camargo, we travelled about 8 km north out of Cotagaita before we turned off to the right, taking the road which leads towards the Cinti valley. This road climbs slowly and steadily upwards, much of it running quite straight so that you can be deceived into thinking that you are not really climbing at all. Round about the highest point on this road it bends and turns around rugged, steep sided terrain. Here we stopped the vehicle very briefly to take a photograph of the cacti growing on a steep, rocky slope. There were some dwarf bushes around and even one or two low, scraggy looking trees, together with scattered tufts of grass, herbs, and abundant cacti. The taller and thinner plants might have been Cleistocacti. The short columnar golden spined cacti of orange to grapefruit size were there in their hundreds. They grew on all the slopes, steep and gradual, for a mile or two along the road. We thought that we might possibly be looking at the short columnar stems of Parodia obtusa which we had seen nearer Cotagaita, But there was not a single flower to be seen and we had to press on in order to reach Culpina by nightfall.

At The Chileans 1998 Weekend we were able to see the photographs taken by F.Vandenbroeck at what must surely be either at, or very close to, the self-same spot near the highest point on this road, where we made a very brief stop. In this picture there could be seen in the far distance the peculiar shaped twin mountain peaks which are found where this road joins the Cinti valley. In the foreground were the magnificent specimens of what we could now clearly see were Weingartia.
.....from J.Fahr

When we visited Bolivia in 1966 we travelled south from La Paz and made one or two stops between Otavi and Camargo. From Camargo, we continued a short distance further to the south to where we were able to turn west up the valley of the Rio Tumusla. We travelled for 20 km along this road making three stops on the way and found some very interesting forms of Parodia. On our return visit to Bolivia in 1998 we again drove up the valley of the Rio Tumusla, but this time we were heading for Cotagaita. Once again we made a stop to look at the Parodia obtusa about 5 km before we reached Pampa Grande. Then some km beyond Pampa Grande we stopped again to look at more Parodia obtusa, which grew up to 80 cm high and up to 18 cm in diameter, both solitary and in groups. There were thornbushes growing here and also Oreocereus, Trichocereus, and Lobivia, as well as very large plants of Weingartia, which were up to 20-25 cm in diameter. As far as I can recollect, they were globular, but I would not be absolutely certain, as we were exclusively concerned with observing the Parodia.
.....from H.Middleditch

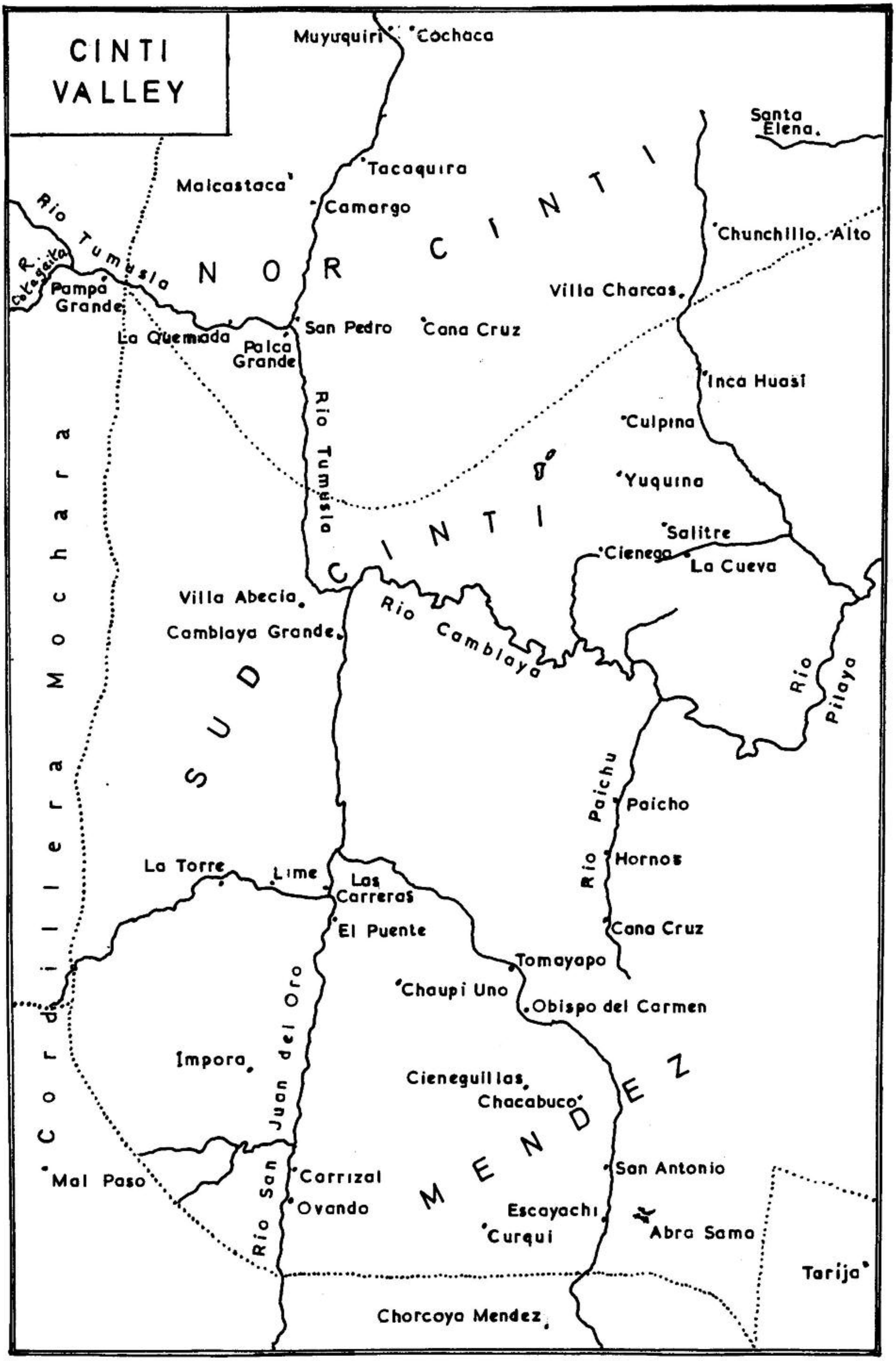
On none of the Instituto Geografico Militar La Paz maps have I found a mention of Pampa Grande on this section of the Rio Tumusla, but it is printed on the ancient ex-Brandt map.
.....from J.Fahr

Naturally we made use of the Geografico Militar maps but plainly not all place names are plotted and many are designated with other names. Nor have I seen the name Pampa Grande on any map, but only on a notice board at this very spot. It had been a very hot day and at the time we had to start looking for a suitable camping place. We found one a few km further on, where we came across P.obtusa again, together with Lobivia lateritia, Cleistocactus, Trichocereus, and Opuntia, but no Weingartia. We might even have thought about going further along to follow the course of the R.Cotagaita, but there was no road going any further than Chiu-Chiu.
.....from M.Lowry

In the course of our visit to Bolivia in late 1996 our route took us from San Pedro to Culpina. On the long climb out of the valley we passed significant numbers of the Weingartia cintiensis which have been recorded alongside that particular stretch of road by a number of travellers. There is not a distinct point on this road which can be described as a pass, because the highest stretch of the road follows a rather undulating course for several kms. The descent into the Culpina basin is then quite gradual. Somewhere about the start of the descent, there was a new stretch of road, leaving the old road on our left. We stopped roughly about where the old road rejoined the new (BLMT 71), where there was a fairly large area of ground covered with small stones. We could see some spots of red, which turned out to be Parodia occulta in flower and in fact there were two sorts of Parodia to be seen growing there. In addition there was a Weingartia with fairly long dark spines standing more or less straight upwards, the plant bodies being largely below ground level. They displayed a very similar appearance to the photograph which was subsequently shown to us by F.Vandenbroeck at The Chileans 1998 Weekend, which he had taken near this same road but possibly a few km nearer to Culpina.

On our return visit to Bolivia in 1997/98 we again visited the Culpina basin, where this time we took the road which runs in a westerly direction out of Salitre. This took us round the back of the mountains bordering the south of the Culpina basin and then back into the south-west corner of that basin, near Cienega. It was here that we once again found Weingartia similar to those we had already seen at two locations near the pass between Culpina and San Pedro. These plants were also very similar in overall appearance to the Weingartia we saw near Cuchu Ingenio at BLMT 96 and BLMT 97, of which we were again shown photographs taken by F.Vandenbroeck at The Chileans 1998 Weekend. The body of these Weingartia was typically broader than tall and of a distinct purplish colour, the spines from each areole not diverging greatly from one another, mostly pointing nearly upright. I would be inclined to class the Weingartia from all these four locations as W.westii.
.....from F.Vandenbroeck

The plants with the solitary and somewhat bluish depressed globular bodies and somewhat porrect spination, which we saw on the Culpina plateau, I also found near Lecori and Cuchu Ingenio. I consider them to be W.westii.


CINTI VALLEY
NOR CINTI
SUD CINTI
MENDEZ
Cordillera Mochara
Muyuquiri
Cochaca
Santa Elena
Tacaquira
Malcastaca
Camargo
Chunchillo Alto
Rio Tumusla
R. Cotagaita
Pampa Grande
Villa Charcas
San Pedro
Cana Cruz
La Quemada
Palca Grande
Inca Huasi
Culpina
Yuquina
Salitre
Cienega
La Cueva
Villa Abecia
Camblaya Grande
Rio Camblaya
Rio Pilaya
Rio Paichu
Paicho
Hornos
Cana Cruz
La Torre
Lime
Las Carreras
El Puente
Tomayapo
Chaupi Uno
Obispo del Carmen
Impora
Rio San Juan del Oro
Cieneguillas
Chacabuco
San Antonio
Mal Paso
Carrizal
Ovando
Escayachi
Curqui
Abra Sama
Tarija
Chorcoya Mendez

.....from H.Middleditch

But the photograph of the Weingartia taken by M.Lowry on the descent to Culpina from the west (at BLMT 71) clearly has a green body.

.....from M.Lowry

Both at Cuchu Ingenio and at BLMT 71 we could see that the small seedling plants had somewhat purplish coloured bodies and were virtually flush with the surface of the ground. It was the larger plants which displayed the green coloured bodies, as you may see on the photograph taken at BLMT 71.

.....from H.Middleditch

But on the photographs shown to us by F.Vandenbroeck the Weingartia at Cuchu Ingenio and to the west of Culpina displayed purplish brown coloured bodies - and those plants were distinctly larger than the green bodied plant which may be seen alongside Parodia occulta on the picture taken at BLMT 71.

.....from M.Lowry

But the pictures shown to us by F.Vandenbroeck were taken in the dry season, in late winter, when it was cool and without any cloud cover so that the body would be exposed to the sun every single day. and this could account for the very dark body colour.

.....from P.Down

We made a stop a few km to the south of Cuchu Ingenio, where the roads from Padcoyo and Vitichi come together (BDH7). We found some Weingartias there but I do not recall seeing any with very dark bodies like the one photographed by F.Vandenbroeck near Cuchu Ingenio. My recollection is of seeing plants roughly 3 to 4 inches across, with bodies of a more or less greenish colour. We made a stop a few km NW of Padcoyo (BDH 26) where again we found Weingartia; these did display darker coloured bodies, but certainly not the very dark colour that we saw on the pictures from F.Vandenbroeck.

.....from M.Lowry

On our 1996 trip we stopped a few km to the west of Padcoyo (BLMT 59), prior to reaching Lecori, and again in the same vicinity in 1997/98 (BLMT 169), at 3400m altitude. Both these spots are close to the BDH 26 location. Here we found Weingartia which grew somewhat taller than broad with yellowish spines which tended to look as though they were sweeping round the body. These plants gave me the impression that they started life in a low-growing form, hugging the ground and only when they were well established did they appear to adopt the short elongated body form. Rather similar were the Weingartia at BLMT 168 near Muyuquiri, where we could see that the young plants displayed a body of green colour. We regarded both these populations as W.lecoriensis, which may well encompass W.vilcayensis. The pictures taken by F.,Vandenbroeck of the Weingartia seen at about pass height between the Cinti valley and Cotagaita, were clearly of short-elongated body form, with yellowish spines swept round the body. They appeared to me to be fairly similar to the W.lecoriensis which we had seen at Muyuquiri and near Lecori.

In addition to the W.cintiensis which we saw on the long climb from San Pedro out of the valley, similar plants were also seen above Impora at 3251m at BLMT 128, as well as near La Torre at BLMT 159, 160 and 161, between 2400 and 2800m, and also at BLMT 158 at 2876m when climbing out from El Puente on the road to Chaupi Uno. But in addition we kept seeing these self-same plants at numerous places whilst we were travelling along the roads within the Cinti valley. There must be hundreds of thousands of these plants spread along the valley all the way along the Cinti valley from San Pedro to Carrizal. They were all rather similar, but certainly not identical; the spination was usually a yellowish colour, but perhaps rather more brownish to the west, in the area of Impora. A number of plants at BLMT 158 were taller than broad, but that was the exception rather than the rule. However, we did find one plant above Impora, growing at the bottom of a bush, which had attained a height of two feet and a diameter of eight inches.

.....from H.Middleditch

It may possibly be relevant that the reported locations for W.cintiensis mostly appear to fall below 3000m, as well as lying within the confines of the Cinti valley. This valley enjoys a climate quite distinct from that of the higher parts of the mountain slopes and the altiplano, which surround this valley [Chileans No. 54 p.121, K.Fiebrig; and O.Schmeider]. In this connection it is necessary to consider the Weingartia seen independently by P.Down and by F.Vandenbroeck roughly at pass height between Cotagaita and the Cinti valley; these were identified as W.fidaiana by F.Vandenbroeck. These are quite possibly the same population seen by J.Fahr in this area at some 2900m altitude. If that identification is accepted, would this name also be appropriate for the Weingartia photographed by J.R.Kirtley at B/K 26 above Impora at 2790m and seen by M.Lowry above Impora at 3251m at BLMT 128?

.....from K.Augustin

I can only again emphasise that our main problem lies above all in the precise definition of the Type species of W.fidaiana. In my opinion fidaiana and cintiensis are very closely related, if not perhaps one and the self-same species. Naturally there are variations in appearances, but in certain instances the root system can be regarded as a good characteristic for distinguishing the separate groups of forms. On one hand in fidaiana and cintiensis there is to be found a relatively long root of fairly uniform stoutness; then in westii there is to be found a large, cuneiform root; and with the neumanniana forms there is developed a very strong rootstock with a neck. The names W.lecoriensis and W.vilcayensis are only local forms of W.westii. .

.....from M.Lowry

During our visit to Bolivia in 1997/98 we were fortunate enough to find Weingartia at another location, this time very close to the border with Argentina, before we reached Villazon.

.....from K.Augustin

In his field number list, W.Rausch had listed WR 749 as Weingartia sp. Villazon. In his most recently available list this find was described as W.neumanniana. In addition, this latest list also quoted a more specific

habitat location - Berque. On none of my maps am I able to find either a place name or a physical feature with this particular name. But W.Rausch did bring a few of these plants back with him some years ago, which he passed over to myself and to Prof. Diers. As to the classification of these plants, they have the same semi-taproot, the same habit, and even the same flowers as W.neumanniana.
.....from H.Middleditch

On receipt of this letter from K.Augustin I proceeded to open out my 1:250,000 Institut Geografico Militar map of the area of Bolivia adjacent to the Argentine border in order to try and locate any place by the name of Berque. After spending some time over this, no success ensued. Nevertheless, a second attempt was made later and this place name suddenly materialised on the map. It lies very close to the headwaters of the Rio San Juan del Oro, at no great distance from the border with Argentina.
.....from M.Lowry

Before we left for Bolivia we were aware that Rausch had found W.neumanniana somewhere in this area not far from Villazon, but were without any precise habitat location. We left Tupiza and travelled due south, following the upper valley of the Rio San Juan del Oro, through Talina and as far as Rancho Retan. From here we turned south-east on the road leading to Villazon. Very shortly after we had climbed out of the valley we found the plants of Weingartia. At this spot we were no great distance from the border with Argentina.
.....from H.Middleditch

For practical purposes this site appears to be the same as the Berque of WR 479. It is apparently the only known location for Weingartia neumanniana in the South of Bolivia.
.....from M.Lowry

My return flight from Bolivia in January 1998 was broken for a connection at Buenos Aires which enabled me to pay a call on O.Ferrari, where we were joined by R.Kiesling and L.v.d.Hoeven. There was an interesting Weingartia in the O.Ferrari collection which I was told had been found jointly by Kiesling and Ferrari near to Cieneguillas, which lies along the road between Escayache and El Puente. The Escayache basin and its surrounding mountains is an area from which (as far as I was aware) there had been no previously reported findings of Weingartia. This seemed to me to be such an unusual report that I had doubts regarding the accuracy of the statement as to its original finding place.
.....from K.Augustin

When this particular Weingartia was found, W.Rausch was a member of the party and he was good enough to bring me some plants from this location. It is included in the Rausch field list as Weingartia neumanniana from Cieneguillas, WR 914. Fortunately this plant has now flowered for the first time and in regard to this feature it does not really differ from W.neumanniana or W.kargliana. I am inclined to agree with its attribution to W.neumanniana. From another friend I have received a Weingartia from the surroundings of San Antonio, as well as another from quite close to Iscayache. These plants are similar to WR 914. In addition there occurs a form of W.neumanniana to the east of El Puente, which furthermore flowers with orange to brick-red flowers. In my view, this is the most northerly occurring form of W.neumanniana known up to the present time.
.....from H.Middleditch

There is an R.942 W.cintiensis from El Puente, but it may be imagined that this particular location is on the lower valley sides, at an altitude comparable to the W.cintiensis seen by many travellers on the climb out of San Pedro, and possibly similar to those seen by J.R.Kirtley on the descent to Impora. Presumably the W.neumanniana referred to by K.Augustin from east of El Puente, will be at a distinctly higher altitude, perhaps at 3000m or more?
.....from M.Lowry

We did find some Weingartia about 7 km out of El Puente on the road to Cieneguillas. We recorded them as W.cintiensis. They are certainly not what I would regard as W.neumanniana. .
.....from H.Middleditch

The information from K.Augustin regarding the discoveries of W.neumanniana in the area between Iscayache, Paicho, and Cieneguillas, represents an extension to the previously known distribution of this species which does not appear to have been recorded elsewhere.

OREOCEREUS FRUIT - A JUICY STORY From M.Muse

My Oreocereus urmirensis KK 888 was acquired in 1986 from a member of Leicester Branch, at which time it was 40 cm high. In 1997 four buds appeared near the crown of the plant, each two areoles out from the crown; this was in April and the plant was by then 94 cm high. The buds were large, conical, rough to the touch and a very dark green, one on the shoulder about 1 cm from the crown; these buds appeared on areoles facing NNE and NNW respectively. Over the course of three to four weeks the buds developed rapidly and the first flower opened during the second week of May and remained turgid for about a week. On about day five a plant of Matucana weberbauerii opened its first flower and I used a sable hair artists brush to transfer pollen from each plant to the other. After about two weeks I was fairly sure that a fruit had set on the Oreocereus, but not on the Matucana.

During the remaining weeks in May, one bud aborted on the Oreocereus, but the remaining two opened and I was able to remove one in entirety and section the flower. The flowers measured 9.5 cm long by 1.1. cm thick at midway. One of the most striking aspects was the excerted style which protruded by 2 cm beyond the stamens. The tips of the scales on the outer tube were of a near-metallic gold in colour as though gilded; I have never seen such metallic colouration on a flower before.

The fruit was a glossy dark green at first and somewhat fluted and tuberculate, initially 1.8 cm in diameter. Over a period of a couple of months the fruit gradually increased in size so that towards the end of July the fruit had turned a pale whitish yellow colour and had become 3.4 cm in diameter and was then noticeably top-shaped. About the end of August this fruit virtually fell into my hand when touched, so I cut it in half. The interior of the fruit was entirely filled with a dense, white sweetish fibrous pulp in which was a sparse embedding of black seeds. The fruit wall was a uniform thickness of about 2 mm and there was no aperture in the base of the fruit. All these features correspond with Roy Mottram's observations in Chileans No.42, i.e quite different from the photo of the Morawetzia fruit pictured alongside that of FR 100a. This seems to me to provide further support for the contention that this range of forms, essentially O.fossulatus, stand closer to Cleistocactus than to Oreocereus. However, the much-excerted style and the more or less top shaped fruit are not characters I have seen in the 15 or so Cleistocacti that I have grown in recent years.

.....from G.Charles

It was a considerable number of years ago that I sowed some seed of Oreocereus, which might have been from the NCSS list, or from a commercial source, but it was certainly not offered as habitat collected seed. From that sowing I now have a plant which has reached flowering size and it also sets fruit. The fruit is quite solid internally with the seeds embedded in a stiff pulp.

.....from A.W.Craig

About twenty years ago I sowed some seed of KK1336 Oreocereus luribayensis. This plant is now, in 1997, about four feet tall with a relatively slender stem, which carries long white hairs and golden yellow central spines. It has just put out its very first branch about 8 inches above soil level. It also flowered for the very first time this year, with two or three flowers from the top of the stem. I went round anything that was near to hand that was out in flower to find pollen to dab on to the Oreocereus stigma and the result was that one fruit was set. This would be about the end of May and the fruit had ripened by the beginning of August. It fell off the plant without being disturbed and when the fruit was cut in half it was found to be solid, full of stiff pulp inside. The seed was not kept as it would have been of no value.

When travelling in southern Peru with K.Preston-Mafham a stop was made along the road from Nazca to Puquio, some 68 km out of Nazca, at 3350m altitude. Here we found fruit on Oreocereus hendricksenianus and when the fruit was cut in half it was also found to be solid, not hollow. The seed was brought back home with us and the resultant seedlings are now growing quite well.

.....from J.R.Kirtley

During our expedition to Bolivia with B.Bates in 1989 a fruit was collected from an Oreocereus in the La Paz valley, which had evidently been pecked by a bird or gnawed by an animal. It was photographed and through the pecked or gnawed openings can be seen the solid pulp enclosing the black seeds, which fills the interior. However, another fruit, apparently likewise filled with solid pulp, was brought back home with us; when it was unpacked the seeds could be heard rattling round inside the hollow interior. .

.....from R.Mottram.

All the fruit on these plants in the La Paz valley will have a solid interior as they belong to Cleistocactus and not to Oreocereus.

.....from M.Lowry

But when we were in the La Paz valley we collected a fruit off an Oreocereus and then poured the dry seeds out of the hollow interior, there on the spot. .

.....from H.Middleditch

It is difficult to formulate an explanation for the apparent occurrence both of fruits with a hollow and with a solid filled interior which have been found on Oreocereus from the La Paz and Luribay area, an anomaly already touched upon in Chileans No.42 and 43.

.....from C.Pugh

I can distinctly remember sitting in the back of our hired car not far from Yavi, being busily engaged with removing the seeds from the Oreocereus fruits which we had collected. This was a very messy business as the inside of the fruit was full of a somewhat slimy pulp - the O.celsianus and O.trollii being similar in that respect. Presumably the seed would have been ripe because it germinated quite well after we returned home.

.....from R.Ferryman

For my own part I have removed fruit in habitat from Oreocereus celsianus, O trollii and O.leucotrichus (hendricksenianus) and in each case the fruit was hollow. On my first visit to Chile a fruit was removed from an Oreocereus when we were not far to the north of San Pedro de Atacama, and I found some grubs inside the fruit. As a result of this discovery, I wanted to section as many Oreocereus fruit as possible and consequently I got into the habit of taking several fruits off the Oreocereus whenever there was an opportunity to do so. Travelling northwards from San Pedro de Atacama we did come across Oreocereus at various locations, as far north as Parinacota, by which time we were no great distance from the border with Peru. These locations would be RMF35a to RMF 35h. There was quite a range of appearance in all these plants, some quite woolly, some more spiny; the spine colour was fairly constant on any one plant but varied from one plant to another. From memory I must have opened at least 20 fruits of O.leucotrichus, all of them hollow. All the seed was kept and sown on our return home and germinated well, so that as a result at one time I must have had over a thousand seedlings of Oreocereus.

With this recollection in mind I also opened quite a number of Oreocereus fruit when we were in northern Argentina, near the border with Bolivia. It was east of Yavi that we found both O.celsianus and O.trollii in fruit. Somewhat further to the east, closer to the Abra Lizoite, there is a most spectacular habitat of O.celsianus, with hundreds of these plants spread over the hillsides. On the occasion of a visit to Vienna I

mentioned this particular location to Rausch, asking him if he had visited that site. He had indeed done so, and seen the fruit on the Oreocereus there; in answer to my further question he observed that the “fruit was hollow - all Oreocereus have hollow fruit”. The fruit that we found on the Oreocereus near the border with Bolivia, east of Yavi, could be pulled off with a healthy tug, and by holding them in the hand and pressing with the thumb, the fruit would break open, revealing them to be hollow internally. I can recollect discussing this with K.Preston-Mafham who had found O.trollii north of Tres Cruces, also with hollow fruit.

When I look at the slides which I have taken of Oreocereus in flower in habitat I am reminded that they rarely have more than two or three flowers out at one time. Not infrequently there is only one open flower. In consequence I am convinced that they have a long flowering season in habitat. The Oreocereus which I have in cultivation produce a very good flush of flowers very early in the season, around May, and afterwards they will often have one or two flowers right up until September. There may even be as many as thirty flowers appear on one plant in the first Spring flush of flowers.

Two cultivated plants of O.celsianus flower for me, one being 1.3 metres tall, a single stem, which has been flowering for some twelve years now, although not entirely dependable as it is prone to miss the odd season. This was grown by Roanoke from FR 22 seed. The second plant was also ex Roanoke grown from FR 78 seed, with a reference of var. rubrispina. It is a twin headed plant no more than 0.8 m tall but has flowered only twice in ten years. Oreocereus hendriksenianus from FR 123 seed flowered consistently over a ten year period, reaching perhaps 1.2 metres in height before it succumbed to the rigours of the cross-country move. I also lost a collected O.trollii that was extremely dependable in flowering with usually ten to twelve flowers opening together, which had reached one metre tall.

Oreocereus fossulatus is of course as tough as old boots and four clones flower continually throughout the summer months and have done so for many years. The largest clump now exceeds 2.2. metres tall and has been cut back before now. The smallest flowering plant is slightly less than one metre high but probably started flowering much smaller. A number of origins here, Roanoke and FR 100a seed among them.

None of my Oreocereus will set fruit in cultivation if left to their own devices. I have tried setting fruit on Oreocereus by using pollen from Cleistocactus or from Matucana and whilst first impressions might be that a fruit had set, this never reaches a mature state. To start with, the first flush of flowers will usually appear on just one Oreocereus and cross pollination between flowers on any one plant does not result in fruit being set. But cross pollination from one Oreocereus to another will very frequently yield a fruit which does attain maturity. The plants of O.celsianus and O.leucotrichus which I have in cultivation both set fruit in this way. It will take about six to eight weeks for the fruit to change colour and become quite ripe, at which stage a fruit will part from the plant if given a very gentle tug. If the fruit is left on the plant it will fall off at some time in the subsequent weeks. Every fruit which I have set in this manner has been hollow, as on the enclosed slide. Oreocereus fossulatus consistently flowers for me and I feel quite sure that this has also set fruit, but just at the moment I am not able to confirm this.

The photographs from M.Muse of the flowers and fruit on his Oreocereus are as one would expect from this plant, with the exception of the solid fruit.

.....from H.Middleditch

Could it be possible that Oreocereus fruit is pulp filled for a significant period whilst they are unripe, with the pulp drying out as the seed become ripe and so yielding a hollow ripe fruit? However this would hardly explain how fruits taken off Oreocereus at one and the same site near the Bolivian border could be described as “full of slime” by C.Pugh and “hollow” by R.Ferryman.

.....from F.Vandenbroeck

[Chileans No.53 p.73] Near Chunchara we were able to collect some withered blackish Oreocereus fruits which contained ripe seeds. I suppose the fruits must dry up on the plant and wither and finally fall off on to the ground where the seeds must be spread by rain and animals.

.....from U.Eggli

I can inform you that the few Oreocereus fruits I have been able to observe do closely correspond with the picture taken by R.Ferryman in habitat. We have had fruits on Morawetzia sericata (Ritter 1309) and these abcissed from the plant with a basal pore and they were also hollow. I have also observed some ripe fruits on Oreocereus some 36 km east of Chiu Chiu, northern Chile (Eggli & Leuenberger 2704) and these were hollow in absolutely the same manner. I cannot say if unripe fruits are pulp-filled as you suggest could be possible, or whether indeed some taxa produce different fruits. Additional observations are necessary and it is important to examine fully ripe fruits only. The pulp characteristics of many cactus fruits changes only in the last few days before being fully ripe. .

.....from R.Kraus

In our travels we have found fruit on Oreocereus celsianus and certainly some unripe fruits are not hollow.

.....from R.Gooch

Our package tour from Rio de Janeiro to Lima included a stopover in La Paz, from where a trip was made down the La Paz valley to the locality looking like a lunar landscape. There were Oreocereus to be seen growing here, which were bearing fruit. These were very firm and a dark green colour when I collected them, so I scraped the outer layer off the top of one of these fruits in order to discover the state of the seed. The seeds looked brown and I judged that it was sufficiently advanced to have a good chance of ripening away from the plant. The seed appeared to be embedded in a white pulp which evidently filled the interior of the fruit. These fruits were packed in our luggage and remained there in complete darkness for at least four weeks before our return home. The collected fruits were removed from our luggage and now the seed could be heard rattling around inside. The pods broke open quite easily to spill out the seed and there was not a trace of any

remaining pulp.
.....from A.W.Craig

It appears that my Oreocereus is not going to produce a flower this year, but if it is possible to set a fruit on it again next year, then I would be quite prepared to lay the fruit to one side for a period of time before opening it.
.....from G.Charles

Perhaps on Oreocereus in cultivation it may take a much longer time for the fruit to change from its pulp-filled state to a hollow interior. The fruit may become detached well before this change has begun to take place. .
.....from H.Middleditch

We have several reports above of seed being removed from pulp-filled Oreocereus fruit and the seed has subsequently germinated well. This would suggest that the seed is ripe before the fruit turns hollow. If a hollow fruit is regarded as the characteristic of a ripe fruit, then it would appear that the seed ripens before the fruit ripens.
.....from E.Zecher, G.O.K. Newsletter May 1974

We visited the collection of Vasquez in Cochabamba which contained some very interesting plants, including a natural hybrid between Oreocereus celsianus and Cleistocactus tupizensis.
.....from J.R.Kirtley

In the course of the expedition to Bolivia which was undertaken in company with B.Bates, we set off from Potosi to the south and shortly after passing through Cuchu Ingenio we took the branch road which passes through Vitichi and Cotagaita on the way to Tupiza. We made a stop roughly 15 km to the south of Vitichi to have a look at the Oreocereus celsianus and the Cleistocactus that were growing there. Among these plants was at least one which gave the appearance of being a natural hybrid between the Oreocereus and the Cleistocactus.
.....from H.Middleditch

It would be expected that a hybrid of this nature would produce a pulp-filled fruit, but it seems to be most unlikely that all the reports of pulp filled fruit on Oreocereus could possibly be attributed to this origin.
.....from R.Ferryman

When travelling near Parinacota in company with A.Hoffmann, we saw a population of Oreocereus which displayed the range of variation in appearance which is usual with these plants, but there was one particular specimen which was quite distinctly different. I said at the time that it gave me the impression of being a hybrid between Oreocereus and Corryocactus, as the stems resembled Corryocactus but it bore an Oreocereus flower.
.....from R.Senior

It does seem ages ago now that I raised Oreocereus trollii from Ritter's seed - it must be fifteen years or more. My plant is now about 12 inches high and growing in a 7 inch pot; it is put outdoors for the summer and brought under glass over winter. It put out a flower for the very first time in 1997.
.....from H.Middleditch

My ancient scruffy Oreocereus fossulatus v.rubrispinus, of unknown age and origin, died back at the top of the two foot high main stem at least a year a two ago, but it has two or three decent side branches. The tallest of these side branches has amazed me by putting out two flowers in the middle of June, both at the south side of the stem, from almost the two topmost areoles. One of these two flowers has been open now for three days and the second is clearly about to open. None of my Matucana are even in bud, never mind in flower. Seticereus icosagonus is in bud but it will hardly be open in time to catch the Oreocereus still with an open flower; it will be longer still before the bud on the Denmoza opens - and even longer before the Morawetzia bud opens. There are several Cleistocactus either in full bud or with withering flowers, but only Cleistocactus ?brookei has a couple of flowers with fairly fresh pollen. This has been applied to the stigma on the Oreocereus flower and results (if any) are awaited. .....(later) Unfortunately to no effect.
.....from M.Muse

Now that my last Oreocereus flower of the season is opening, I find that there are no Matucana presently in flower from which I could obtain pollen to apply to the Oreocereus stigma. But if circumstances allow of setting a fruit on my Oreocereus next year, then I will certainly keep the fruit for several weeks in order to see if converts itself from a pulp filled fruit to a hollow fruit.
.....from T.Lavender

It was in 1956 that we purchased an Oreocereus trollii from a shop in Billingham which obtained their plants from Greens of Sheffield. At that time this plants was just a single stem about four inches tall. In the intervening years it has grown slowly but steadily, the original stem having now attained a height of some 18 inches whilst three further stems, newer and shorter than the original, now arise from the base. In 1997 it flowered for the very first time, towards the end of the month of May. One of these flowers was cross pollinated with Cleistocactus straussii which resulted in a fruit being set on the Oreocereus. The resultant seed was sown to see if would germinate and indeed it did. In 1998 it flowered once again, this time with twelve flowers, which did not all open at once, there being perhaps three flowers open at any one time. Once again a fruit was set by crossing a flower with Cleistocactus straussii. Cross pollination from Winterocereus aureispinus resulted in seed being set on both of these plants. At the time I had no Matucana out in flower so it was not possible to try setting fruit on the Oreocereus with pollen from a Matucana.
.....from N.Tate

Over the years I have acquired a number of interesting plants from one of our Branch members who is now a ripe old age. One of these is an Oreocereus trollii, which was raised from Ritter's seed sown in 1961.

This year (1998) it is producing buds for the very first time. .
.....from H.Middleditch

The two foregoing observations resulted from chance enquiries and it proved to be just too late to suggest the possibility of sending pollen in the mail between these two collections, so that a cross pollination of O.trollii x O.trollii could be tried.
.....from T.Lavender

If circumstances permit then I would certainly be happy to try this next year. Probably I would remove a complete flower off the plants and send the pollen in that manner.
.....from R.Ferryman

The difficulty of transferring pollen in the mail is the rather limited active life of the pollen grains. Somewhere or other I have read that pollen can be kept in an viable condition by putting it in a normal domestic refridgerator, but I am far from sure how long it will remain viable if it is kept under those conditions.
.....from M.Muse

At the present moment I still have one single bud remaining on my flowering Oreocereus, which looks as though it will probably open in two or three days.
.....from R.Ferryman

Yes indeed I do have more than one of my Oreocereus out in flower at the moment, both fossulatus and another of that group, so I will send some pollen off to M.Muse straight away. Probably the best way of doing this would be to remove a complete flower and put it into one of those small plastic tubes, together with a spot of silica gel. If the tube is reasonably well sealed then the silica gel should absorb whatever moisture is in the air in the tube and at least it might prevent any fungus growing on the pollen and rendering it ineffective, during the relatively short period of time it is in transit. .
.....from H.Middleditch

Results (if any) will be awaited.

A FIELD OF THELOCEPHALA FLOWERS From A.W.Craig

Our expedition to Chile in the October-November of 1997 was fortunately not adversely affected to any real degree by all the temporary road diversions and occasional wash-outs that we encountered, resulting from the combination of earthquake shocks that occurred just before our arrival, and the extremely heavy rainfall which had been caused by the El Nino effect. This unusual rainfall had certainly brought out a great deal more greenery and flowers than we had seen on our previous visits to Chile. There were great numbers of butterflies of varying sorts to be seen wherever we stopped to admire the flowers or look for the cacti. Once again we were able to find a very interesting number of Thelocephala in habitat, growing in various places. They appeared to have benefited from the extra rainfall brought by El Nino. These plants seemed to have taken up moisture into their rootstock and probably into the aerial heads as well, for we saw very little sign of shrunken and dessicated plants.

However the most impressive sight of Thelocephala that we saw was undoubtedly near Obispito, some kilometres north of the port of Caldera. We had stopped overnight at this little spot and on the following morning we drove out into the desert nearby. There is a record in Englera 16 of Thelocephala FR 502 being found to the north of Caldera, and also of RMF 131 from Agua Leones, again north of Caldera, whilst FK 519 is given as Punta de Lobos, which is fairly near to Agua Leones. On our previous visit to Chile we had been fortunate enough to find some Thelocephala kraussii near Agua Leones. If one is at a site not previously visited and also lacks the benefit of a travelling companion who knows precisely where to find Thelocephala in that area, it is usually necessary to proceed very slowly across the ground with eyes cast down to try and catch sight of some sign of an almost buried head which is flush with the surface of the ground. Or, better still, proceed on hands and knees with nose close to the ground.

But we had no need to do any searching at all on the occasion of our visit to Obispito. There, laid out before us, were hundreds of acres over which were spread flowers of Thelocephala. Even the plants which were not in flower seemed to be actually projecting above the surface of the ground for a distance of two, or perhaps even three, millimetres. Standing still at one spot I started to count the number of plants which I could see within about a yard of my feet but when I got up to fifty I gave up - there were still a great many more. This field of Thelocephala would be about three kilometres one way and two kilometres across. If it was occupied by a tenth as many Thelocephala per square metre as I had round my feet at this spot, then there were more than a million of these plants in this area.

The flowers we could see were open, but only just open, so we left this particular site with the intention of returning in the afternoon in anticipation of finding the flowers fully open. And we were not disappointed for when we went back again in the mid-afternoon the flowers were all wide open, measuring almost three inches across, with petals of a crocus yellow colour. Because the flowers were all now wide open it was possible to see even more easily just how far these plants stretched in all directions. On the very occasional plant there were some withered flowers to be seen, but these seemed to have been open literally in the previous day or two. Similarly, we did see some unopened buds which again were few and far between; they were big buds, not small ones and they did look as though they would probably open in the relatively near future, possibly on the following day. We certainly did not see any young, small buds. Nor did we see any fruit. The overall impression was of a synchronised flowering of the whole population which took place over one or two days, with the odd straggler.

On the occasion of our previous visit to Chile we had come across one, and only one, population of

Thelocephala where many of the plants bore fruit. That was on T.napina to the south of Freirina in the Huasco valley, where there were hundreds of fruit to be seen - naturally it was the fruit that was to be seen above the ground because the plants were almost out of sight just below the surface. These fruit gave the impression of all being at the same stage of development. Now that we have seen this enormous field of flowering Thelocephala kraussii we suppose that the Thelocephala we saw in fruit near Freirina were also the result of synchronous flowering.

On our previous trip we had seen one flower which was nearly open and that was on T.kraussii near Agua Leones. We also saw a single flower on the T.napina near Freirina another single one on the T.malleolata v. solitaria, and again just one on the T.esmeraldana above Mina Esmeralda in Quebrada Grande, as well as a single flower of a peach colour at Canto del Agua. At each of the spots where we had seen any one of these flowers in the morning, the flower was only just open so we had come to the conclusion that they would probably open later in the day, which proved decisively to be the case with the T.kraussii near Obispito.

At the site near Obispito there was some other vegetation in the form of dwarf herbs - so dwarf that they barely exceeded ankle height. They were scattered here and there and many of them were out in flower. There were also quite few insects about, of various sorts, although certainly not in great numbers - but possibly sufficient to pollinate an appreciable number of the flowers to be seen.

.....from R.Ferryman

My recollection of flowers on Thelocephala is that I have only seen three or four plants out in flower during the course of all my previous visits to Chile. But on the occasion of our visit to Chile at the end of 1997 we were much more fortunate. We found both flower and fruit on malleolata, on esmeraldana, and on odierii. We found fruit on kraussii as well as fruit and withered flowers on fankhauseri. It is my belief that at each of these places the flowering had been brought about by rainfall. But at Cifuncho there was nothing to be seen at all, as it had not rained there. My acquaintance in Bahia Iglesia commented that the Th.odierii had not flowered for the previous five years - when I called on him three years ago he then observed that the Thelocephala there had not flowered for two years, so I feel his recollections are very probably correct.

Perhaps the most significant observation was the flowers which we saw on Th.esmeraldana, as these were not growing from close to the crown, but well away from the crown, almost at the sides.

.....from F.Kattermann

The only Thelocephala which I have seen out in flower in Chile were T.napina in the Huasco valley and even then there were only a few plants out in flower.

.....from C.Pugh

During our 1994 visit to Chile we saw only one, or at the most, two open flowers on Thelocephala.

.....from W.Maechler

When do Thelocephala flower in Chile? Whenever good rains have fallen, Thelocephala tend to bloom. Over the last few years only a few Thelocephala have managed to bloom, as so little rain has fallen. The normal flowering season is likely to be between the middle of August to the beginning of December, dependent upon rainfall.

In the middle of August 1997 I was in the vicinity of Totoral and Totoral Bajo. It had already rained in this area in June and everything was green. There were scattered specimens of Thelocephala fulva in bloom here, as well as some glabrescens. All along the coast the sky was overcast during the morning with mist or cloud so that there was no full sunshine. Consequently the flowers on the Thelocephala had not opened completely. Because it is fairly cool along the coast when it is overcast, I would suppose that the flowers had been at a standstill for perhaps a week or longer. Some plants already had withered flowers. As far as the plants that I saw there, the flowers would be situated at about the middle of the plant.

Early in September we came down from the north for an overnight stay in Pan de Azucar and on the next morning we took a brief look round in the vicinity, where a similar situation prevailed. There was T.malleolata with some smaller and some larger flower buds of which some were half-open. But here, too, the sky was overcast and it was relatively cool. This was also the situation to the south of Chanaral where I searched over the habitat location in the morning, with the T.malleolata v.solitaria there and further south again with T.longirapa, where the flowers buds were also close to the centre. Unfortunately it transpired that I was always at the habitat locations in the morning under an overcast sky, but one really needs a programme where one can sometimes stay in one place for a while.

At all these foregoing habitat locations I have of course only seen plants with flower buds. At many of their described habitat locations, I have not seen any Thelocephala; I am not aware if they are perhaps known to be difficult to be find. Probably there were many plants still covered over by the sand and possibly some days or weeks later they came into flower.

.....from Mrs.G.Craig

We were not far from Freirina when we decided to make a stop for some refreshments out of the hamper. We were on a fairly level patch of ground and Alan took a walk over to see what might be growing at a likely looking spot about two or three hundred yards away. There was something of interest there, so he came back for the camera and I walked back with him to see what was being photographed. Then we set off back to the vehicle for something to eat. As we were walking back, Alan suddenly stopped and pointed in front of us. At first I could not see what he was pointing at, but then realised that he had seen a Thelocephala fruit standing above the surface of the ground, perhaps five or ten yards from us. When we walked over to take a close look at this fruit, it took a moment or two to see precisely where it was even though we were almost standing on top of it. Where there was one of these plants, there might well be others, so we looked around, trying to look five or ten yards away in order to see if there was any more fruit standing above the surface of the ground. We were

surprised to find more fruits, provided we looked a suitable distance away from where we were standing. Once we had found out how to pick out the fruit, then we discovered that they were all round us, all over the level piece of ground, hundreds of them. If it had not been for the chance sighting of the one fruit, we would have left this spot believing that there were no Thelocephala growing there, despite having walked four times over the same piece of ground.
.....from A.W.Craig

In Chileans No.55 there was some discussion over the position of the flowers on Thelocephala and it was suggested that the flowers usually appeared from near the growing point, or at least at the top of the plant. But where is the top of a Thelocephala? In habitat these plants are usually growing with their bodies more or less flush with the surface of the ground so that this flat area forms the top of the plant. But if any of these plants are brought into cultivation and given a reasonably frequent watering, the body will fill out so that what had previously been a flat top becomes a typical crown. Those Thelocephala illustrated in Kattermann's Eriosyce book which are flowering in cultivation and have a flower appearing more or less at the shoulder, would no doubt have the flower standing up from the flat top of the plant in habitat.

PARODIA OCCULTA From K.Preston-Mafham
At the 1989 Chileans' Weekend

On the way from Camargo to Culpina we cross the pass above San Pedro and then follow the descent to Culpina. Now we come across a unique habitat for cacti in Bolivia - no other cacti grow in a habitat like this. Usually I would not even bother to look for cacti at such a spot. You get so used to the kind of habitat that cacti grow in, that when you see bare, flat, rocky areas like this, you just switch off. In fact, the only plant you find on this area is the only one adapted to living under these conditions and getting its seedlings established. It is Parodia occulta. If I had had to search for it on my own, very probably I would never have found it. Fortunately my driver, Ed Aguilar, knew where this plant was to be found. It is the smallest Parodia known. It is mostly only one inch across when it is fully grown. They were growing entirely flush with the surface of the ground. We did in fact stop at two places before reaching Culpina, where this plant grew.

It is rather variable. The original plants which Ritter described and photographed in his book are not identical to those found here. There is more than one spot where these rock beds occur - two or three actually - but they are extremely localised and P.occulta grows on these and nowhere else. It is a species which has evolved to suit these special local requirements: it has no competition from anything else on this rock, as nothing else can grow there. There are literally thousands of P.occulta here, but you could walk over them without seeing them, really amazing. They look just like Thelocephala and do have a quite robust root. We were very, very, lucky as we caught them in flower and I was very busy looking at the variation in flower colours. If they had not been in flower when a collector passed by they would not have been discovered to this day. There are not many people who have seen them besides ourselves - Rausch and one or two others, probably. There was no seed - February would probably be the time for seed.

On the other side of Culpina, we stopped near Incahuasi, which is near the Rausch Type habitat location for Rebutia albopectinata. We were unable to get across the river here because it was in spate. This is where we found Parodia subterranea; these plants here were probably not much more than 30 mm across, whilst they projected only a little further above the ground level than P.occulta. Bear in mind that the rainy season had started in earnest and everything was very wet, so they are likely to be even more inconspicuous in the dry season. The plants which we grow in cultivation are quite different to what can be seen in habitat; in cultivation they grow in the same way the most other cacti, with the body above ground level.

There were plants of a form of P.maassii here too, but despite the two sorts growing occasionally only a few metres away from each other, the micro-ecology was quite different between the places where the P.occulta grew and where the form of P.maassii grew.

.....from H.Middleditch

Looking at the photograph on p.58 of K.Preston-Mafham's "Cacti & Succulents in habitat", the yellow-brown rock in the foreground are where Parodia occulta grows. This surface looks as though the bedding planes are almost vertical with laminated rock forming most of the surface. Are the mountains in the background of this picture the southern rim of the Culpina basin, or the northern rim?
.....from K.Preston-Mafham

The photograph in question was taken with my back to Culpina, with the road heading towards San Pedro down on the right. The hills in the background are similar to those found throughout the area e.g. at Inca Huasi. The flat lands near Culpina are heavily farmed, although Lobivia ferox still occurs in stony places between the fields where ploughing is impossible. I think that you are right that where we found Parodia obtusa on a flat but rough area of rock, the bedding planes come near to the surface, with the bedding planes splitting off to form the characteristic flat-sided gravel.

PARODIA OCCULTA By F.Ritter, Kakteen in Sud-Amerika

Solitary, rather grey-green, flush with the surface of the ground in habitat, 25-50 mm in diameter, with robust conical rootstock.....Type location Cana Cruz, prov. Mendez. Grows here together with Parodia suprema, both sorts flowering at the same time, but I was not able to find any hybrids between the two of

them.
.....from H.Middleditch

The site described by K.Preston-Mafham lies in the province of S.Cinti which is on the north side of the very deep gorge of the R.Pilaya-Camblaya. The site recorded by Ritter lies in province Mendez which is on the south side of the gorge of the R.Pilaya-Camblaya.

.....from M.Lowry

On our 1997/98 trip to Bolivia we were north of Iscayache, at San Antonio, from where we headed out in the direction of the Paicho valley. At roughly half way along this stretch we made a stop at BLMT 137 at an altitude of 3390m where Oreocereus, Cleistocactus, Trichocereus, Austrocylindropuntia and Lobivia were to be found, as well as Parodia which we took to be representatives of both P.maxima and P.suprema. Further along this road we turned to descend into the Paicho valley and we went as far as Cana Cruz. Quite close to Cana Cruz we searched a small hill in the valley bottom and found Parodia maxima again, but saw no sign of another sort of Parodia there.

.....from F.Ritter, 40 Years' Adventuring

On 2 December 1962 I set out from San Antonio for the Paicho valley. After the road had gone a long way over the high plateau, came the descent into the valley. The road here is very narrow so one must proceed with the utmost caution to avoid going over the edge and into the abyss. Down in the valley I came to a place Cana Cruz, with a few houses. Here I found a fine new Cleistocactus in flower, which I published later as C.hildegardiae. Notes were made, a specimen selected, photographs taken, and some seed collected. From here onwards the road was little better than a track in the riverbed. but in frightful condition on account of the rain coming off the mountains. But I thought to myself that there would hardly be another opportunity to go further down the valley to search for cacti and resolved to try the enterprise. The track was dreadful, most of the way in first gear, averaging only six km per hour. Finally I came to a spot where a strong side stream came into the valley and the track was completely washed away. Here I had to leave the wagon behind and go forward on foot for a further 4 km down the valley, where another strong side stream joined the valley. This brought to an end any further progress downstream, since the stream would continually have to be crossed and recrossed and there was no path through the dense vegetation. On trekking back upstream I saw at one spot a trail going off up the mountainside, which I followed. By good luck I came across a fine new Gymnocalycium, which I later publishes as G.armatum. [On the drive back upstream, the wagon became stuck and the water rose from a thunderstorm up in the mountains. Finally he got back to Cana Cruz on foot].

The next morning I set off early to roam round the vicinity of this place, where I found a new Parodia yet again, later published as P.occulta. Upstream from where the road came down to the bottom of the valley was a second house which was the real Cana Cruz. Here I also collected fruit from the new Cleistocactus. [Eventually assistance was obtained to recover the wagon and get it back to Cana Cruz]. Then I drove up the steep narrow track up the precipitous mountainside, for about 700m., where I made a further search of the surroundings and collected samples of new species of cacti.

.....from H.Middleditch

In this account we appear to have the first reported finding of Parodia occulta, from Cana Cruz which lies roughly half way between Escayache and the Rio Pilaya/Camblaya, in province Mendez. As far as it is possible to judge from the contour lines on the 1:250,000 scale Instituto Geografico Militar map of this area, this Cana Cruz seems to lie at about 3000m altitude. On the ex-Brandt map, there appears to be a location of another Cana Cruz roughly on the Culpina side of the pass from San Pedro. Quite a coincidence that two locations for P.occulta should have the same name.

.....from M.Lowry

Our route from San Antonio to Cana Cruz took us over the altiplano so it was very probably the same road taken by Ritter which he describes as going "over the high plateau". At BLMT 137 the road was following the lip of a very steep drop down into the Paicho valley, which again seems to match Ritter's account. Here there was P.suprema on the exposed ground to our left. Going over the lip to our right and descending some 10 metres or so we found plants of P.maxima on the steep slope where they were in a rather less exposed situation. We had also seen P.suprema when travelling east along the road from Cieneguillas, more or less when rounding the spur before the road turns south towards San Antonio, at a height of roughly 3600m. Between that spot and our BLMT 137 it seemed to be quite probable that Parodia suprema would grow, within a fairly specific altitude band. We had gained the distinct impression that P.maxima grew at an altitude level below that at which P.suprema was to be found, as typified by the P.maxima seen at our stopping point at Cana Cruz at 2840m altitude.

.....from J.Fahr

Our visit to Bolivia in 1996 took us along the Cinti valley and along the road leading from El Puente to Iscayache. In the course of the climb up from El Puente we would be some 10 km past Chaupi Uno when we found P.maxima at two places not far from each other, at 2955m and 3095 m altitude respectively. We also found this same species on the descent to Cana Cruz, in the Paicho valley, at 3055m, and then again on the road from Cieneguillas to Obispo del Carmen at 2855m.

Between Cieneguillas and San Antonio we stopped near Estancia Chacabuco and there we found P.suprema at what we consider to be the Type locality, at 3490m altitude, as Ritter gives 3500m altitude for the Type location. We then turned off on to the road leading to Cana Cruz, across fairly level terrain, until the road came close to the edge of the Paicho valley where we stopped at 3400m altitude and found P.suprema again. So I would agree from our observations that P.suprema grows at a higher altitude than P.maxima. We were able to collect seed of both sorts and seed samples were sent to W.Weskamp on our return home; he confirmed our identification of these two species.

.....from H.Middleditch

In his description of Parodia occulta (above) Ritter states that it is found in company with P.suprema. If Ritter's idea of what constitutes P.suprema matches that of the BLMT party, than it would suggest that Ritter's P.occulta was found well above Cana Cruz, and not at the lower altitude as stated by Ritter - the usual system of misinformation to confuse others. Or might there be some possibility that the P.suprema and P.maxima as understood by Ritter is respectively the P.maxima and P.suprema as understood by the BLMT party?

.....from M.Lowry

Our understanding of P.suprema and P.maxima does indeed follow that of Ritter, as expressed in his Kakteen in Sud-Amerika. His photographs of these two species are good representations of the plants which we saw and to which we applied his names. As the name implies, P.maxima are large plants - up to football size, sometimes a little taller than broad, with yellow flowers - and we did see them in flower. On the other hand, P.suprema is much smaller, about baseball-sized plants but hugging the ground, with a bluish green body, dark spines, and a red flower - and again we saw them in flower.

.....from H.Middleditch

Apart from Cana Cruz itself there appears to be few place names above, or on the descent to, Cana Cruz. When Ritter in his first description of P.occulta says that it comes from Cana Cruz, that could be the nearest place name to the Type location - possibly several km apart from each other; even at several hundred metres altitude above Cana Cruz, where P.suprema grow. But in his "40 years adventuring" Ritter states that he found P.occulta when wandering around near Cana Cruz and only later did he climb up to the road on the altiplano to seek help in recovering his vehicle. Which leaves us with the confliction between Ritter finding Parodia occulta near Cana Cruz and Ritter locating it in company with Parodia suprema at what is presumably a distinctly higher altitude than Cana Cruz,

.....from J.Fahr

My interest is mostly in Parodia so that when I was in the Culpina basin, I only took note of Lobivia and Opuntia in addition to Parodia. Ritter tells us that Parodia occulta is to be found in prov. Mendez so perhaps K.Preston-Mafham was mistaken when he says that he found this species on the road from San Pedro to Culpina. We did not stop along that road at the time of my own visit there.

.....from H.Middleditch

If you wish to consult the book entitled "Cacti & Succulents in Habitat" by K.Preston-Mafham you will find a photograph taken near to the road from the pass down to Culpina at the location where P.occulta was found. This is the same picture as that shown to us on slide at our 1989 Chileans' Weekend, by K.Preston-Mafham.

.....from J.Fahr

Now I have seen that picture I have a good idea where to look for this species. ....(Later) In the course of their most recent trip in November, E.Heger and K.Beckert searched for P.occulta at the place which you indicated to us. Unfortunately without success.

.....from K.Preston-Mafham

But my driver had stopped at the spot previously to let his passenger look at these plants; if I had been on my own I would probably not have found them either.

.....from M.Lowry

On our visit to Bolivia in late 1996 we were able to take the road from San Pedro to Culpina. Shortly after the crossing the pass we came to a few km of new road, whilst the old road lay over to our left. We stopped where the two roads rejoined, where the ground was rather similar to that shown in the K.Preston-Mafham picture. For practical purposes there did not appear to be any vegetation at all growing there. The surface of the ground was almost flat and apart from the occasional outcrop of solid rock the surface of the ground was covered with broken stone from about hand size down to pebble size. But we caught site of a tiny patch of red and upon investigation this proved to be a small Parodia out in flower. The body projected only 2 or 3 cm above the surrounding stones. As there were four of us in the party we were able to search over a fairly wide area and in a short time found many more of these plants, but well scattered, rarely two plants growing within a pace of each other.

At this location there was also a Weingartia with quite long, robust spination, but not out in flower,

.....from J.Fahr

We made another visit to Bolivia early in 1998 and we visited the location pictured by K.Preston-Mafham in his book, at which he had found Parodia occulta. All my fellow travellers were of the opinion that here it could only be regarded as a form of P.subterranea. They are plants which are very difficult to find and only by the flowers catching the eye does one become aware of a stopping place. Why? The plants grow in an area in which very many goats browse. These animals consume the new heads of the plants and the plants then put out new offsets from the top. If such a plant is dug up, there is a fine sight to be seen; under the loose gravel there appears the remains of the plants, which are about 5 cm in diameter. Their habit is like P.subterranea.

Since returning from Bolivia I have once again compared the description of occulta and subterranea and have come to the view that a separation should only apply as a form. Even the picture in Ritter's Kakteen in Sud-amerika Vol.2 leads to no other conclusion.

.....from H.Middleditch

The longitude and latitude quoted by J.Fahr for this site place it at about 9 or 10 km out of Culpina on the road heading in the direction of San Pedro in the Cinti valley. Here the road rises gradually over the gently undulating terrain and continues in the same manner for a further 10 to 12 km before reaching the highest part, which is where Parodia occulta and a Weingartia were found by M.Lowry, as indicated above.

.....from M.Lowry

A few days after we had visited the Paicho valley we made a return trip to the Culpina basin. We set off from Culpina in the direction of Salitre, passing Yuquina at the end of the range of hills which forms the southern margin of that part of the Culpina basin. On reaching Salitre, which effectively lies on the edge of the basin, we turned off to the west along a track which was little more than a river bed. This took us behind the line of hills on which Yuquina stands and after a while we began to follow a track which took us to Cienegas. From there a road took us north to bring us back into the southwest corner of the Culpina basin. Along this stretch we made a stop to look around and again found P.occulta on ground very similar to that in K.Preston-Mafham's picture. The nature of the ground and the absence of other vegetation was again similar at the other two places in the Culpina basin where we found P.occulta.

At Cienegas we not only found P.occulta but also many Parodia in a great variety of forms. There were plants which one could call P.maassii, others which were evidently P.subterranea, and yet others which we would describe as P.occulta. But in addition there were many plants which displayed all forms of transition between these three sorts. Which makes it very difficult to decide precisely how these three sorts are to be separated.

ANOTHER FORM FOR OPUNTIA HETEROMORPHA? From R.K.Hughes

I have read and re-read the article on Opuntia heteromorpha Philippi 1891, as presented in Chileans No.53, and come to a quite different view from the evidence presented, together with some additional data.

I shall start with Chucuito and where it is situated. There is a map in the geography department of Liverpool University with the title: "Lago Titicaca, Plano formado sobre los trabajos de Pentland, Raimondi, Agassiz, etc. Para la Conferencio que en le noche del 21 Diciembre del ano 1891 dio en el local de la Sociedad Geografica el Dr. Don Ignacio Le Puente, sobre el estudio monografica del lago bajo su aspecto fisica e historico. pro Rafael E Baluarte, cartigrafico de la Sociedad Geografica de Lima, colabarador y dibujante del mapa oficial del Peru del profesor sor a Raimondi." This map shows the great northern section of the lake above the straits of Tiquina as Lago Chucuito. The small bay area around Puno town is called Bahia de Puno. From Puno the road goes south curving round the southwestern shore of this bay to Acora, with the village of Chucuito halfway between Puno and Acora. A narrow strip of land north of Acora running to the northwest is called the peninsular de Chucuito.

It will be seen from this that the great basin of Chucuito is in fact the area around the northwestern, Peruvian end of the Lake, and remote from the Bolivian altiplano. As Weddell says, this is the most populated area, which is no doubt due to the good farming soil of the flood plain that extends towards Juliaca. In 1986 due to an extended rainy season, half the 30 km distance to Juliaca was flooded due to a rise in the lake level, causing devastation to the farming in this area.

As has been indicated in The Chileans on more than one occasion, the main route to La Paz in past times was from the coast to Arequipa, then to Puno, along the lake to the Bolivian border at the R.Desaguadero, then on to La Paz. This is the reverse of Weddell's route quoted in Chileans No.53.

The hairy Austrocylindropuntia from Chucuito (Puno) therefore will most probably be one of the A.floccosa forms. When I first became aware of A.floccosa, I heard all the stories of how they change in cultivation, from short-stemmed hairy clumping plants to plants that resemble A.exaltata. Despite all my best efforts this is still a difficulty that I still face in growing these plants. Some do become quite hairy though never as dense or as long as in habitat. Clumps seen in habitat have stems which approach two inches in diameter and usually never exceed 10 inches tall. In cultivation, stems usually never exceed one inch in diameter but readily elongate over a foot in length when they become decumbent. The plants that Philippi grew in his Botanic Garden in Santiago certainly sound as if they gave him similar difficulties in growing them

Many of the A.floccosa forms initially put out straight hair before it crinkles up later, whereas on A.vestita it is usually wispy crinkled hair from the beginning. Stems some 4 cm thick from the previous year indicate that it must be A,floccosa and not A. vestita. Of all the A.vestita that I collected (they are all as hairy as each other now) the stems of last year are barely half an inch in diameter, only in great age do I expect them to fatten up. The largest clumps of A.vestita we saw at BDH 16 were about 10 inches tall by a foot across and I doubt if they had any stems as large as an inch in diameter. My old cultivated clone of A.vestita does have hair which is much longer and denser on its mature stems than on my collected A.vestita. Also it has much longer leaves, 35 mm compared to 7 to 10 mm on my collected plants. Deep yellow spines are very much a feature of A.floccosa, particularly on the new growth. The tiny needle-like spines of A.vestita appear to range from translucent, through white to red and brown, with yellow not featuring. I have only seen yellow-flowering floccosas but a check of Backeberg's Lexikon gives a number of red-flowering forms. In habitat A.vestita is not an outstanding plant that would be noticed by people not searching for it. A.floccosa however cannot help but amaze and be admired by anybody who comes across it in habitat.

I trust the above information will now allow of the conclusion that Opuntia heteromorpha is equal to Austrocylindropuntia floccosa

.....from H.Middleditch

It may possibly help if we knew precisely what was intended by Philippi when he says "Tarapaca l.d. Chucuito" in his description. It is a translation from the latin for l.d. which is really required.

.....from N.Martland, Research Librarian, Royal Botanic Gardens, Kew

Having checked a number of dictionaries and enquired from other members of the staff here, it has not

been possible to suggest any suitable translation for the abbreviation “l.d.” in the quoted context.
.....from Ibero-Amerikanisches Institut P.K., Berlin

I would suggest that in the context quoted, “l.d.” means “loco dicto”, that is “a place named” as this would be in harmony with the rest of the text.
.....from J.Iliff

It is with regret that I am not able to understand the identification of Philippi’s Opuntia heteromorpha as O.floccosa by R.Hughes and I cannot agree with it. It seems to me to be unwise to treat the peripheral unstable details like nature of hair or spine colour as characters of the same weight as the clearly described habit and the “crown” of red flowers. If the stem was decumbent for a foot and then ascended a metre it must have been all of four feet long, unjointed. I think that this would have been a quite extraordinary habit for a floccosa sort. I do not really think that it is plausible to suppose this length resulted from cultivation. Even here such an outcome would be very odd; Santiago would presumably give the specimen a better chance.

I am reminded of the photograph taken by J.R.Kirtley near Muyuquiri, of which I received a much appreciated copy, showing a plant growing up out of a shrub, apparently with three or four independant heads. But the accompanying sketch told me that it was a single plant with a long decumbent stem, all of a metre long, with branches from part way along the stem which stood out above the shrub. This photograph shows us that such elongated growth is found in habitat. And that plant was certainly not O.floccosa.
.....from H.Middleditch

Philippi came to Chile from Germany at a time when Victorian conservatories were all the rage for growing exotic plants. Heating would commonly be by hot water pipes supplied from a solid fuel boiler, for which no real “thermostat control” existed. Not too surprisingly, such edificies were not infrequently described as hothouses. In Santiago in the 1880’s it is very probable that any heating was of a similar nature, so that excessively elongated growth of a floccosa sort might well result. In addition, we have been told by R.Senior (Chileans 55. p.35) that Opuntia floccosa seen in south-east Peru did display prominent yellow spines.

Thus we come to the red flowers, which means asking whether any O.floccosa sorts have been seen in habitat with red flowers, and whereabouts do they grow?
.....from K.Preston-Mafham

There were both red and yellow flowers to be seen on Opuntia floccosa in Peru, but at quite different locations. There were plants with orange-red flowers to be seen in the Cordillera Blanca where they were growing in the company of Oroya borchersii and Puya raimondii, whilst near the Laguna de Llanganuco, in the Cordillera Blanca, were plants with pure red flowers which might well be regarded as T.yanganucensis.
.....from H.Middleditch

In Rauh’s Peruvian Cactus book there appears the first description of T.yanganucensis from 3000m in the Quebrada Yanganuco, Cordillera Blanca, and T.hirschii from 4000m in the Quebrada Queshque, Cordillera Blanca, both with carmine red flowers. It will be noted that all the foregoing observations of floccosa sorts with red flowers are from the area of the Cordillera Blanca.
.....from R.Senior

There were certainly no red flowering T.floccosus to be seen during my visit to southeast Peru, only yellow flowers. There were not a great number of flowers on any particular plant but there were quite a lot of plants with one or two flowers.
.....from P.Down

Yes we did see scattered plants of floccose sorts near Achicachi, where the field boundaries were formed of long heaps of stones, Some of these plants were growing between the stones in these long heaps. My recollection is that there were a few flowers to be seen, but only a few, all of them being a pale yellow colour.
.....from H.Middleditch

Available data would seem to suggest that red flowering forms of T.floccosus are not to be found in either the south-east part of Peru or the adjacent part of Bolivia. The Philippi O.heteromorpha was evidently found in the north-west of Bolivia but the red flowers would seem to rule out O.heteromorpha Philippi being one of the floccose sorts of Tephrocacti, thus leaving us with Austrocylindropuntia vestita as an indentification.
.....from J.Iliff

So far as I am aware, the “Catalogus praevius plantarum in itinere ad Tarapaca a Frederico Philippi lectarum” of 1891 (in which Opuntia heteromorpha was first published) was a report on Frederico’s expedition written up and published by his father. There is a Prologue to this publication, written in Spanish in the periodical and German in the Separate. It does differ in some respects between the Spanish and the German versions. One has the impression that he wrote it extempore in the two languages on separate occasions, though of course the versions substantially coincide. Near the beginning of the Prologue, Philippi mentions “the conclusion of the recent glorious war” or some such phrase and he clearly saw himself as a missionary of Chilean Empire. He seems to have seen “Tarapaca” through very rose-coloured spectacles and doubtless included Antofagasta de la Sierra in his conception of it. He is emphatic in observing that there is no means of determining a boundary.
.....from H.Middleditch

After the individual nations of South America had gained their freedom from Spanish domination in the early 19th century, no steps were taken to establish any accepted international boundaries between Chile, Argentina, and Bolivia. This was due to no small extent to a complete lack of interest in the inhospitable and unproductive nature of the altiplano where any such boundaries might lie. The question was only addressed after King Edward VII was asked to act as arbitrator in about 1898 and a boundary commission was appointed to undertake the task. Under these circumstances the extent of “Tarapaca” at the time of Philippi’s expedition was presumably what anyone wished to think it was. From the contemporary remarks quoted by J.Iliff it may

be that Philippi regarded much of the altiplano as “Tarapaca”, the same altiplano that Meyen and others circumscribed by the equally indefinite “Chicuito”. Which would equally vaguely include the location of the site where the German railway engineer found the plant which he sent to Philippi, who subsequently described it as Opuntia heteromorpha.

It would appear to be unwise to equate the “Tarapaca” of Philippi with our current understanding of where this name should apply. Similarly those areas around Lake Titicaca which represent various understandings of the plain of Chicuito, would appear to support only yellow-flowering Austrocylindropuntia floccosa. As J.Iliff observes. the red flowers of Philippi’s Opuntia heteromorpha means that it has to be allocated to either Austrocylindropuntia vestita or one of its close allies.

GROWING AUSTROCACTUS HIBERNUS from A.Johnston

The plant of A.hibernus which I have had for many years was an import from Lau and came from T.Jenkins. It was on its own roots but it did not seem to be growing too well, so I decided to put a cutting from it on to a graft. It was just as well, because eventually the original plant on its own roots dried up all together. Quite a few of my other Austrocactus have flowered now for a number of years, but there has never been any sign of a flower on this plant of A.hibernus.

When Alfred Lau came to talk to our local branch he had a look in my greenhouse and saw my A.hibernus. The stems are fairly short and tight spined, but he said that they have shorter and tighter stems in habitat, although he also said that my plant was growing better than he can grow it in Mexico. He sent me a cutting which has not rooted yet. I asked him if he had a slide of this sort in flower but he did not have one.

Early in 1992 I was in touch with Scheck who has a very fine collection of cacti, near Salzburg, in Austria. He had, I gathered, received an excellent selection of Austrocactus and Pterocactus from two collectors who had been out in Patagonia. Apparently he had set to and put about four hundred pieces on to grafts! I gathered that he had already been able to flower A.hibernus. So I was very pleased to be able to pay him a visit later in 1992, when I found that he was growing his plants in a rather unusual fashion. One greenhouse contains Austrocactus, Pterocactus, and Sulcorebutia; the whole of the front of the greenhouse lifts up in order to provide the maximum of ventilation, in conjunction with a door at each end. He also had many of his plants in cold frames, which were of a rather unusual sort. The property lies on a hillside into which a terrace or bench has been cut with a low retaining wall at the back. The bench runs across the hillside on a curve into which plants are bedded out. There is a path immediately below the bench so that these plants are at chest height. In summer these plants are open to the elements but during winter they are covered by glass over the top. Growing on the hillside with no cover at all are various Opuntias and Yuccas. and close relatives. At the time of our visit, in September, the greenhouse was still wide open and there were no covers over the plants bedded out in the terraces.

Whilst I was visiting this collection I acquired a nice selection of bits and pieces. Among these were two pieces of A.hibernus, one of them an ex-Hochstatter plant. Of course this was rather late in the year so they did not start moving until early 1993, but they grew very well and put out several offsets. They were put into the unheated greenhouse for the following winter. During 1994 I took one or two cuttings off these plants and put them on to grafts. The grafting stock should produce good growth but is not really hardy so they will be overwintered in the warm greenhouse. The new growth this year produced some far more robust spines, of a yellow colour, with hooked ends; these spines are some two inches long, which was twice as long as those on the previous growth.

In June 1944 both these ex-Scheck A.hibernus put out buds and flowers. It was the first time that any A.hibernus had flowered for me. One plant had three flowers, the other had two. One flower on each plant came out when there was no flower on the other plant and these did not set fruit when self-pollinated. But the opening of the other flowers coincided on both plants. These were cross-pollinated and all three flowers set fruit. The flowers were an orangey-brown colour with a darker midstripe; stamens yellow. mostly bunched around the style, sparse on the outer ring at the base of the petals. Stigma lobes about eight, creamy white, barely open. All my other Austrocactus produce fruits with a set of spiny bristles pointing upright, which can be grasped to lift the fruit when it is ripe. These bristles are still there when the fruit dries up and splits. On A.hibernus the fruits are quite different. To start with they lack the upwards pointing bunch of bristles at the top. They look rather like gooseberries, about 3/4 inch long and 1/2 inch wide at the widest point. The fruits were still turgid in November, quite unlike the fruit on all my other Austrocactus, which dry off fairly quickly. When the fruit starts to shrink on A.hibernus, the little spine clusters will fall off readily when touched.

....later The fruit was still turgid in November but showing signs of shrinking, so I decided to take them off the plants and collect the seed. When they were opened they were still very wet and fleshy inside so that I had to wash the seed to remove traces of this pulpy material. One of the fruit had twenty seven seeds, the other had thirty two. Looking at them with a hand held magnifying lens they were the same shape as other Austrocactus seed which I have looked at, with the same rough pitted surface. Both lots of seed were black in colour whereas the other Austrocactus seed I have looked at are a lighter sandstone colour.

.....from S.Radcliffe

My A.hibernus is I.S.I.1499 and according to the I.S.I. data it is a propagation from material collected by A.Lau at Monjes Blancos along the Rio Maule, Chile. It is finger-thick, as yet unbranched and about 4 1/2 inches long. It grows horizontally with typically strong, straight, spines on the upper side.

.....from R.Stephenson

My own plant of Austrocactus hibernus Lau 879 also came from I.S.I. as a rooted cutting of about 2” in

length. When it was received its habit of growth was quite upright - the spines were not very pronounced but certainly not as meagre as Chamaecereus. This has not only decided to grow in a horizontal manner, but the longest stem is now growing downwards over the side of the 5" pot. The spines are now longer and stronger but certainly still straight. It arrived about Sept/October time so spent the first winter in the greenhouse - it was in the greenhouse that it first produced the long spines and started to put out other branches. After the first winter it has since been grown for two years out of doors under a small lean-to with glass cover, ends and sides. The doorless aperture does not keep out driving snow or rain. It has even been down to minus 9°C on one occasion in winter without apparently being troubled, but was marked by a frost in early June, presumably because it was growing at the time. I do not think that it really enjoyed the severe sun of a southerly aspect during the summer of 1990. It has now produced flowers from three of the stems, very near the growing tips, from the present year's growth. It took five weeks from the first appearance of the buds to the first flower opening. The tube in particular and also the petals were translucent to quite an extent (as with Lobivia sp.); the flowers were more of an 'onion-skin' brown if viewed against a dark background. Unfortunately it never set fruit.

AUSTROCACTUS HIBERNUS By F.Ritter.
Translated by H.Middleditch from Sukkulentenkunde VII/VIII 1963

The Maule valley in the Chilean Cordillera forms the approximate southern boundary of the distribution of the more advanced cacti; only the primitive Maihuenia extend still further southwards. Here wintry cold and damp forms a barrier to the south for them. In the deepest and warmest part of the ravine the southernmost Chilean Pyrrhocactus is still to be met with as a local rarity. Further up the ravine, around the Dolomita mine, cacti are already completely absent. From there I made a difficult ascent, blazing a trail through thicket and Cypress woods up to the alpine zone. As no possibility for cacti to exist had been evident even in the more temperate climate at lower altitude, so I did not expect to come across any more advanced cactus in the alpine region with its extreme frosts and high precipitation - at best a Maihuenia might possibly appear here.

Hence I was most astonished when on a rocky ridge here I came across a small cactus which from its appearance was perhaps an Echinocereus. At first I believed that I had found a new cactus genus, but later it became evident that it was a Chilean representative of the genus Austrocactus. It was in the summer, at the season of the year of least rainfall; the ground in which my cacti stood was nevertheless damp, but very loose, because it froze up each night, whilst in the warmth of the day it thawed again. I believe there are no frost free nights here; I was at an altitude of about 2000 m. These cacti ascend up to about 2200 m altitude, where shreds of permanent snow already lie on the shaded side of the mountain. In this respect it appears that in consequence of the cold Humboldt current off the sea coast the Pacific side of the Chilean Andes and its foreland displays a much cooler climate than would be expected for the geographical latitude. At one place I found some specimens of this cactus and 20 m below them still lay a bank of old snow from the previous winter. That was on 18 February, which would correspond to 18 August in the northern hemisphere, also the late summer, the time of the greatest melting of the snows. These specimens growing at the highest elevation lie for by far the greater part of the year in snow and frozen ground and have available only one quite short period of midsummer growth, flowers, and fruit, and even during this period they are nightly in frozen ground. For many months they are covered with snow, but there are also plants on rocky ridges where the wind leaves no snow cover; here these plants find no shelter from the extreme alternation of cold nights and warm days, brought about by the intense effect of the high sun. As is well known, plants from a higher latitude which shed their leaves do so less as a protection against the frost than against dessication since the plants are no longer able to draw any water out of the frozen ground.

This cactus has developed a specialised adaption, namely that of a xerophyte in cold ground, from which it can draw no water for several months. The succulence which was already in existence became exploited again in this species enabling it to prosper in the cold ground, in a region of higher precipitation, a situation moreover which I have not encountered with any other cactus species.

In cultivation in Germany Austrocactus hibernus is absolutely winter hardy. Specimens that I sent in 1954 have been kept since then in the open air in Germany without suffering any frost damage. In addition they are resistant to winter dampness or damp cold; I have one specimen which I have kept moist which has never suffered any rot. The pH of the compost in which it grows was determined as about 6.5. Unfortunately in Germany it is not possible to give this species their extreme habitat climate; in summer one should however screen it from warm air as much as possible. On the other hand it requires plenty of light or else it produces thin, rank stems. It is rarely cultivated ungrafted. As this species should be kept in the open air in winter, the grafting stock should also be winter hardy and as far as possible one which has little sensitivity to moisture.
.....from Sukkulentenkunde VII/VIII

(A.hibernus)... Flowers close to the crown, 4-5 cm long, odourless, opening 4-5 cm wide, lasting for about two days, opening only in daytime and closing in the afternoon. Pericarpel 7 to 15 mm long, about 7 mm thick, dark brownish green, glossy, with small, narrow, reddish scales, white felt and flexible almost crinkly bristles. Filaments in two series .... Anthers large, golden yellow, ochre yellow or slightly pink ... 7 to 10 stigma lobes, golden yellow. Petals .... golden yellow to pale brown or slightly reddish-brown, paler towards the base, of the same colour or even golden yellow. Fruit green, barrel shaped, soft; externally furnished like the pericarpel. The scales appear to be deciduous. Fruit interior filled with very viscous, palatable, green pulp, which smells like melon.

.....from H.Middleditch

The original description of this species is accompanied by a photograph of a plant in bud and flower. On this bud and flower there is no obvious sign of the long, upright, bristly spines around the base of the petals which are such a feature of most Austrocactus flowers. Instead, the spines at each areole on the outside of the flower tube appear to carry short bristly spines pointing in various directions, not unlike those displayed by RMF 101 [Chileans No.47 p.53]. Likewise, the external appearance of the fruit is somewhat similar to that on RMF 101.

A.V.FRIC IN THE ARGENTINIAN CORDILLERA
Translated by R.Allcock from Lovec Kaktusu, by K.Crkal

[After being unwell in Puerta Tastil] I took advantage of the opportunity to join a caravan of carts which was going to Salinas in order to fetch salt. And so I came to Tore, which lies at 4000 m altitude. When I attempted to acquire a guide and assistant, the leader of the donkey caravan recommended an elderly native and his two sons; the eldest son would look after the pack animals and the younger of six or seven years of age, would act as cook. He acquitted himself well of his task.

Then I crossed the trail of my celebrated compatriot Roezl and clambered even higher, and thus came upon the most beautiful plant that I ever saw. It was shielded against the icy winds and the solar heat by white wool, and armed with yellow and red spines against the unfriendly surroundings. Such a cross between a lamb and a porcupine out of the plant kingdom! I named it Oreocereus irigoyeni Fric sp.nov. in honour of the present president of the Argentine. And then yet higher into the mountains, to the edge of the permanent snows; even there, where continuous gales permit no plant to raise its head above the boulders, where century-old trees hardly attain a height of a few cms, but yet have thick stems and root, even there I found cacti.

I lingered in the mountains for fourteen days. Of the larger plants, I discovered there Lobivia bruchii v.nivalis. The plant which I found at the highest place of all was the subsequently named Rebulobivia einsteinii, of which I was able to bring back with me only one solitary example.

The acclimatisation in Europe of these inhabitants of the great mountains was very difficult. Those plants which in their homeland were small, little bullets scarcely 1 cm tall, were in the beginning very diminuitive mushrooms. After four years R.einsteinii flowered for the first time, golden yellow from a bronzy-red bud. .

.....from H.Middleditch

Both the caravan of mules going from Toro to Salinas for salt, as well as Fric with his two-man entourage, would in all probability reach the altiplano via the Abra de Palomar. This is the pass used earlier by Fries to access the Altiplano from Toro and is the only available pass over the mountains in this area. It would be on the mountain slopes in this corner of the altiplano where Fric rode on horseback in company with his cook and his guide, and made his first collection of his Rebutia einsteinii. But we have no real guide as to whereabouts on these mountainsides the collection was made. From the mountains in the vicinity of the Abra de Palomar, later collections of Rebutia have been made. There are other passes into this same corner of the altiplano along the roads over the mountains via Purmamarca from the Quebrada Humahuaca. In the vicinity of these passes there are records of finding Soehrensia korethroides (= Lobivia bruchii v.nivalis Fric), as well as Oreocereus trollii and Rebutia (at GC 171).

This appears to be the first and only occasion on which Fric ascended to the heights of the altiplano, this in an area almost totally lacking in habitation and with a dearth of water. Other than the tracks from El Moreno to and from the Quebrada del Toro and the Quebrada Humahuaca, there would be few, if any, other tracks into or across the mountains edging this corner of the altiplano. It might be suggested that Fric threw caution to the winds and trekked round the mountainsides in an area entirely devoid of herders, tracks, or any life support facility. Alternatively, his guide and cook may have been rather more inclined to follow trails that were familiar to them, taking Fric from Abra de Palomar into the altiplano, then across to the passes leading to the Quebrada Humahuaca. If this latter were so, then the origins of Rebutia einsteinii would be from the vicinity of one or other of the passes still well known today.

.....from R.Allcock.

In Kaktusar 1932, Fric writes about the propagation of some of the plants which he brought back from his trip to the Andes. He mentions Rebutia peterseinii and R.nicolaii, then proceeds as follows:

“Where is their finding place? I do not know where I found this or that plant, and neither can I recall how it looked originally. Still less would I be able to say where Rebutia einsteinii was found. Of the original plant I preserved only one rib with some areoles. Several young offcuts were grafted on to assorted stocks and I think that only one took hold. It stood among other unchristened items, which seemed to me to be different. It was regrafted on to a strong peruvianus and after that it coloured up quite differently from everything else which I had; a dark green, almost black body, spines rust coloured when young, later black and adpressed. At the time when I noticed these changes I sought in vain for the parent plant. Maybe it survives among the others, maybe like many others it has perished. I had therefore but one specimen; admittedly things look a bit different today, than how they were at home at that time.

It was one of the first to begin to enliven in the Spring and to develop buds, much earlier than the minuscula itself. And it put out 18 of them. Day by day it grew bigger and blacker. When the flowers opened they were a golden yellow with orange borders. ... Despite diligent fertilisation the plant did not set seed, and moreover became infected from one fruit and started to rot on one side. Immediately upon noticing this I cut off both the head and the one offset which it had, but both graftings perished. The stump produced many offsets; I grafted more than 20 of them, but one after another they perished. All possible stocks were used for

them, but with little success. However, the parent plant gave further young offsets. Today I have it covered with offsets, and four beautiful summer graftings which I believe to be healthy. In the new year I made a dozen grafts under ultra-violet light (under which it is possible to graft even in the winter) and they took nicely.

WE FIND REBUTIA GONJIANII From M.Nilsson

In 1990 I was able to spend ten weeks in the field in Argentina. For much of that time we were travelling on foot, searching for cacti away from the immediate vicinity of a road or vehicle track. My first aim was to occupy two weeks in revisiting the area east of Tilcara and Humahuaca, that is, the Valle Grande. But after arriving in Argentina I was delayed for some days and so had only one week in this area. After travelling up Valle Grande, I walked from the town of Valle Grande up to Santa Ana, then on to Caspala and thence via Abra Colorado to Udquia in the Quebrada Humahuaca.

Going thence to Salta I met my friend who arrived as planned; first we made a short stop in Tilcara. We thought that near Juella would be a good place to look for Rebutia einsteinii v.gonjianii but we did not find them there. Next day we once again climbed the hills to the east of Tilcara, hunting for Rausch's R.euanthema v.tilcarense which should grow in this area. Suddenly I found a big three-headed clump and realised that we had indeed found this sort (MN 163). As far as we could see, MN 163 did not grow in company with R.pygmaea. My collected plants of MN 163 have now flowered back here in Sweden and showed the very rich, red petals.

We then went up to Iturbe from where we planned to go further on to Iruya. But the bus only went twice a week, so therefore we had to spend a few days round this little village. The first day we spent east of Iturbe, and on the road to Iruja, we found MN 171 at about 3750m. We supposed these to be Rebutia pygmaea. But later on, back in Sweden, my friend found that a couple of his plants turned out to be very similar to R.gonjianii. Among those MN 171 which I retained, one shows in the body shape and spination a closer resemblance to euanthema v.tilcarense than to the tiny gonjianii. The flowers of this short-spined form are deep red and more or less identical with MN 163. Also along the road from Iturbe to Iruya, Wahl found a population of Rebutia with red flowers, with broad bodies up to 4 cm in diameter, which he calls R.euanthema v.tilcarense. A small bus took us all the way to Iruya and back. It was a beautiful but rather scaring ride on a narrow trail with a deep drop on one side. The area between Iturbe and Iruya is very interesting and it is a pity we could not stop to look for plants.

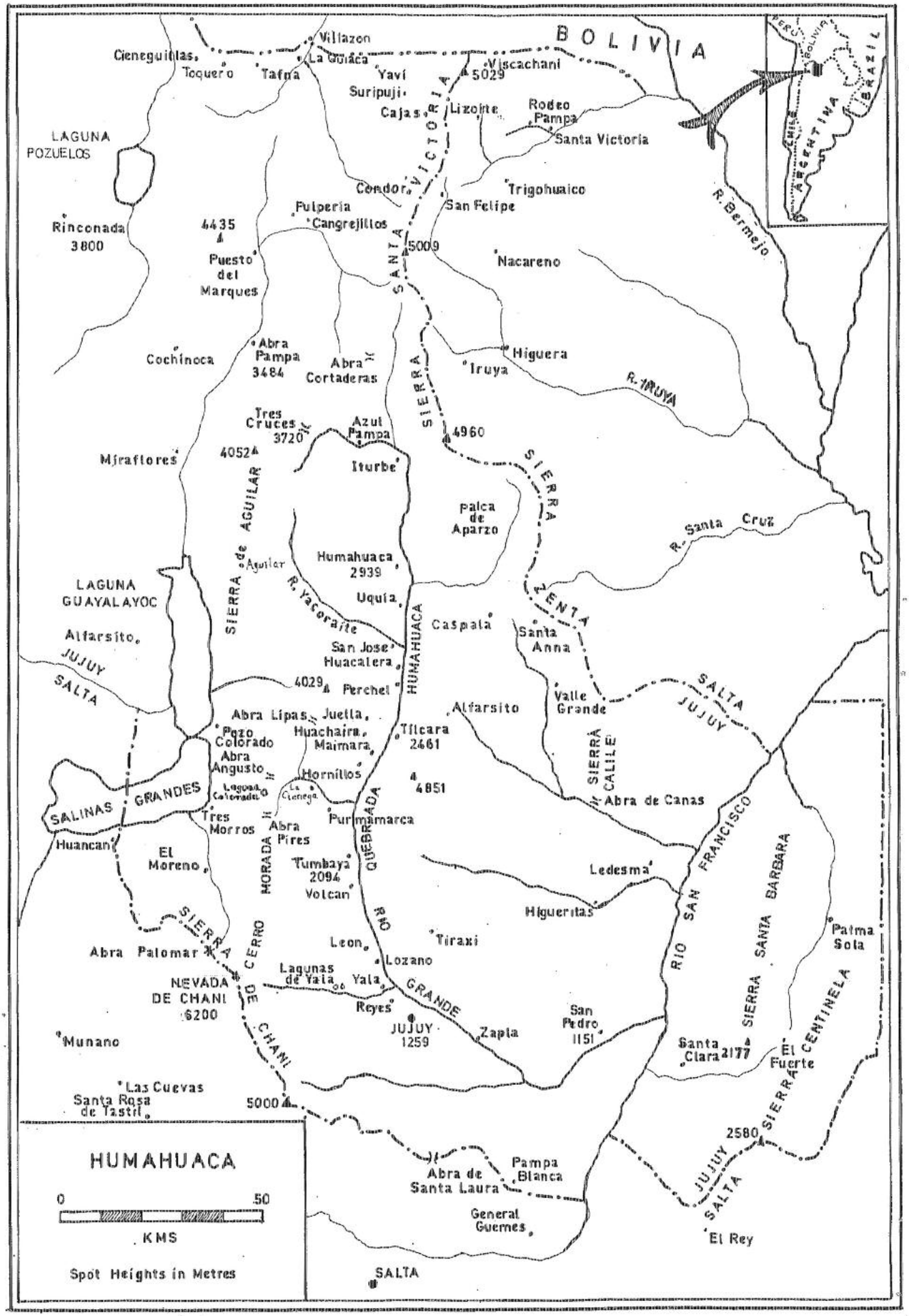
After making a trip to the border with Bolivia, our next stop was Purmamarca, a small village surrounded by magnificent mountains in shades of red. grey, and blue. From an altitude of some 2300m in Purmamarca we started walking uphill to the west, and then hitched a lift until we were at almost 4000m altitude. Here we camped for the night, where it was ice cold, with a strong wind. Next day we retraced our route back towards Purmamarca; at one spot we made a short pause, where I climbed an uninteresting looking hill, only to find there a lot of plants which looked to be typical R.gonjianii; but one specimen was in flower, bearing orange-red petals (MN 188) so it will be a variety of R.einsteinii. This population was growing together with R. pygmaea. Both Lobivia bruchii v. nivalis and L.jajoiana are common in these parts, and easily found.

Further on, part-way on our descent, we pitched camp again for the night and at this spot we found more plants of R.gonjianii (MN 194). The bodies seem to be slightly broader and the spines stronger in comparison with the plants of MN 188 which were seen at a slightly higher altitude. It will be very interesting to see the flowers, and whether they are the same as MN 188. Another population MN 195 was found somewhat further on, and this included a few long-spined forms. The bodies were thin, dark green, with spines ca. 5 mm long. curved, whitish, directed outwards. A few plants were collected but they were suffering from dehydration as it was just before the onset of the rainy season and it was going to be doubtful whether they would get established in cultivation.

After spending a few days on day trips out of Salta with the Neumann family, we returned to the Quebrada Humahuaca. As I stood at the rebuilt indian village of Pucara, near Tilcara, I saw what looked like an interesting spot to investigate, up on the mountainside. We started to climb out of Tilcara to the west, following a dry river bed. Here we came across some nice plants of a form of Lobivia jajoiana, growing deep in the slate. As we climbed, the ground became lighter in colour and more reddish, so I knew that this could mean R.gonjianii. I was right! Soon we found them amongst stones and under bushes (MN 211) with white spines just a few mm long. What a sight! In just fifty square metres there were hundreds of plants. Back here in Sweden the collected plants put out yellow flowers. The ground at the habitat is the same as where we found MN 188 to the west of Purmamarca, a very fine soil almost like powder, mixed with gravel and stones of a pale reddish colour. We never found R.gonjianii growing in the slate. According to R.Wahl, he also found R.gonjianii to the east of Tilcara, at Garganta del Diablo.

Finally a few days were spent in the Quebrada del Toro, where we again climbed up well away from the vehicle road which more or less follows the bottom of the valley, so that we had to camp out overnight on the mountainside for one or two nights. In the pre-Inca ruins of Santa Rosa de Tastil we found R.einsteinii var. MN 214 with short, pale brown spines; very few plants were to be found at this spot. Another day we made a trip above Alfarcito to the nearest high peak, where at 3400m we once again found Lobivia bruchii v.nivalis. At the top of the peak we found a nice form of R.einsteinii MN 220 with short black (occasionally brown) spines. Unlike the plants with the more cylindrical bodies around Las Cuevas, here the body was often flat and somewhat resembling Sulcorebutia rauschii. According to Rausch this find could be Lau's L 476 and L.477.

On my previous visit to Argentina I had spent some days in the Quebrada del Toro. At that time I collected R.einsteinii at Las Cuevas, both north and south of the village, (MN 100, MN103) at 3000-3950m


BOLIVIA
Villazon
Cieneguillas
Toquero
Tafna
La Quiaca
Yavi
Suripuji
Cajas
Lizoite
Rodeo Pampa
Viscachani
5029
Santa Victoria
LAGUNA POZUELOS
Rinconada 3800
4435
Puesto del Marques
Condor
Pulperia
Cangrejillos
San Felipe
5009
Trigohuaico
Nacareno
R. Bermejo
SIERRA SANTA VICTORIA
Cochinoca
Abra Pampa 3484
Abra Cortaderas
Higuera
Iruya
R. Iruya
Tres Cruces 3720
Azul Pampa
4960
Miraflores
4052
Iturbe
SIERRA de AGUILAR
Palca de Aparzo
R. Santa Cruz
Humahuaca 2939
Aguilar
R. Yacoraite
Uquia
HUMAHUACA
Caspala
Santa Anna
SIERRA ZENTA
LAGUNA GUAYALAYOC
Alfarsito
JUJUY
SALTA
San Jose Huacalera
4029
Perchel
Abra Lipas
Juella
Huachaira
Maimara
Pozo Colorado
Abra Angosto
Hornillos
Tilcara 2461
4851
Alfarsito
Valle Grande
SALTA
JUJUY
SIERRA CALILEGUA
Abra de Canas
SALINAS GRANDES
Laguna Colorada
La Ciénega
Tres Morros
Abra Pires
Purmamarca
QUEBRADA de HUMAHUACA
Huancar
El Moreno
Tumbaya 2094
Volcan
Ledesma
RIO SAN FRANCISCO
SIERRA SANTA BARBARA
Higueritas
Palma Sola
SIERRA de CERRO MORADO
Abra Palomar
Leon
Tiraxi
Lozano
RIO GRANDE
Lagunas de Yala
Yala
NEVADA DE CHANI 6200
Reyes
JUJUY 1259
Zapla
San Pedro 1151
Santa Clara 2177
El Fuerte
SIERRA CENTINELA
Munano
CHANI
Las Cuevas
Santa Rosa de Tastil
5000
2580
JUJUY
SALTA
Abra de Santa Laura
Pampa Blanca
General Guemes
El Rey
SALTA
HUMAHUACA
0
50
KMS
Spot Heights in Metres

altitude. The plants are often hidden under low, spiny bushes and the dark spination makes it difficult to pick them out in the somewhat shady spots. These plants have rather long and outwardly directed, blackish-brown spines, some reaching up to 20mm in length. The plants are single to clumping, with clumps up to 10 cm broad. The stems are cylindrical, up to 15-50 mm high and up to 40 mm broad. At almost 4000m there were some smaller plants which had shorter, light brown spines of ca. 5mm length and more appressed. The flowers are yellow. At Cachinal (just north of Las Cuevas) Rausch found the variety atrospinosa, which I suppose will be just a form of those at Las Cuevas. It is said to be 15 mm broad with black spines up to 25mm long. It was found at 4100 m altitude. To the north of Las Cuevas, I found MN 106 at the top of a hill, facing towards Cachinal. The plants have short light brown spines and a light greyish-green body. Body and flower are both smaller than the darker-spined einsteinii MN 100 and MN 103.

More southwards, near Ingr. Maury, I found R.aureiflora MN 110 on the Cerro Golgota where the ground was the same mixture of reddish dust-like material, pebbles, and stones, as at the location of MN 188 near Purmamarca. As I was photographing MN 110 in my greenhouse, I observed the variation between the flowers within this one population. There were some plants with a more or less urn-shaped flower tube but also others with a narrow and more slim tube. The flower colour was a light yellowish-orange similar to those on R.aureiflora MN 112 from near Chorrillos. These MN 110 had mostly short and pectinate spines very similar to the short-spined form of R.aureiflora from Chorrillos. But the body and spine form of MN 110 were very variable, some looking like a short-spined einsteinii, others looking like a tiny gonjianii. It is possibly an intermediate form between R.einsteinii, R. aureiflora, and R.gonjianii.

From Chorrillos we climbed up a very steep hillside, passing Lobivia haematantha v. chorrillosensis MN 114 growing in the midst of moss, grass, or Bromeliads. Somewhat higher up the mountain we came across Backeberg's R.aureiflora MN 112, which is an extremely variable species. Spines range from short and appressed to long and outwardly directed, white, brown, or black - hence names like v.albolongiseta, etc. Here I only found plants with yellowish-orange flowers, but according to Rausch there are also reddish-pink flowers - hence v. rubriflora.

Northeast of Nevado de Chani, at Volcan, the beginning of the Quebrada de Humahuaca, is the habitat for R.euanthema MN 46. The spines are white, curly to straight and some of the plants are identical with R.aureiflora from Chorrillos. The only difference is the flower, for R.euanthema has tricoloured, shiny petals - reddish throat, yellow, and then carmine. The anthers are reddish. To the east of Volcan, R. Wahl found in 1990 a brown spined euanthema resembling the aureiflora from Chorrillos; the flower is tri-coloured in variable shades. At Tumbaya, Rausch found in 1990 a somewhat smaller and shorter spined R.euanthema WR 823.

The flowers with the orange-red petals on the R.einsteinii v. MN 118 which we found to the west of Purmamarca, were very similar to those on the R.euanthema from Volcan. This would suggest that R. euanthema will have to be merged into the einsteinii complex as R.einsteinii v. euanthema. Or treated as a synonym to R.einsteinii together with R.aureiflora, R.gonjianii, etc.! I am not able to see any clear dividing lines between einsteinii, aureiflora, elegans, gonjianii, tilcarensis, euanthema, and pseudoeinsteinii. It is possible to envisage a geographical distribution for the short-spined varieties of R.einsteinii beginning in the Quebrada del Toro (Golgota, Yacones, Chorrillos, Alfarcito, Tastil, Cachinal, Las Cuevas) and extending over Chani, Volcan, Tumbaya, Purmamarca, and Tilcara to Iturbe.

.....from H.Middleditch

Most of the place names which are referred to by M.Nilsson may be found either on the accompanying map of Humahuaca or on the map of Quebrada del Toro in Chileans No.46. The line of the Sierra Chani appears on both maps. In all probability the original Rebutia einsteinii would be collected by Fric in the triangle between the Cerro Morada, Sierra de Chani, and El Moreno.

Some time ago I was visiting the collection of D.Neville and he showed me a pan of seedlings of R.aureiflora. He was very sceptical of their parentage as there were plants with short appressed spines, plants with spines almost 20 mm long which were curving upwards, and all permutations in between, together with spines of differing colours from white, brown and black, all these from the same packet of seed. However, these variations would appear to fit in with the variations observed by M.Nilsson on the Rebutia aureiflora near Chorrillos and probably reflected the natural variation inherent in the habitat plants.

.....from M.Nilsson

Some Lau 476/477 which I grew from De Herdt's seed flowered orange; the spines looked strange, too, mostly white. So I gave them away as I thought that they were hybrids. Now that I have much better information about these plants, it transpires that any relationship between spine length and geographical location could be open to question.

.....from D.Schweich

My own einsteinii are now well established on their own roots, but I have had to learn patience with the offsets, which have needed almost a year to root down and become properly established. In the einsteinii group, the spination is very variable. There exists a Lau 553 with short, pectinate and adpressed spines about 2-3 mm long; effectively aureiflora and einsteinii seem to be linked at such forms. The true link between the two spp. is to be found near Golgota, where einsteinii-like and aureiflora-like plants are found together. This is the location for WR 794, some of these having typical einsteinii flowers, others typical aureiflora flowers.

.....from W.Rausch, G.O.K. Journal April 1966

[A slide show describing his field trip to Argentina] From the province of Salta, habitat pictures of Pyrrhocactus umadeave, and also of Mediolobivia einsteinii with forms varying from almost spineless to densely armoured, which had been given various names, which are unjustified.

.....from W.Rausch, G.O.K. Journal February 1971

[A slide show describing his trip to Argentina and Bolivia] In regard to Rebutia einsteinii a misunderstanding exists. According to Buxbaum it grows “at one isolated patch”. Rausch was able to find it in an area of 200 km in length. It grows in rocks and over the whole area it occurs in many forms which are mingled together; short or long-spined or more bare of spines; flowers smaller or larger, the flower colour of paler or darker yellow. In our collections they are to be found under the names of Mediolobivia steineckii, conoidea, schmiedcheniana, columnaris, rubroviridis, etc. etc. The oldest name suitable for this type is Rebutia einsteinii, which generally speaking presents a rust-brown impression and occurs up to the border with Chile.

.....from W.Rausch, Lobivia 85

Rebutia einsteinii can be found everywhere around Vulcan Chani, whilst I still found it in Corunzali and further west near the border with Chile at El Toro, a spread of 200 km as the crow flies.

.....from L.v.d.Hoeven

In January-February 1988 I was able to make a trip into north-western Argentina in company with Roberto Kiesling. On the northern slopes of Vulcan Chani, facing El Moreno, we found plants of Rebutia einsteinii growing in vertical clefts in otherwise solid rock. The spines were longer than the thickness of the plant body, pointing in various directions sideways and downwards. (See front cover of this issue)

.....from H.Middleditch

The photograph received from L.v.d.Hoeven is of two plants which display spination of a most remarkable length, with older spines quite possibly one inch long, or longer. By comparison, the spines in the crown are much shorter, and of a reddish brown colour - presumably they are new spines which are still growing. The older spines seem to be of a greyish colour. Up to the present time I have never seen any Rebutia of this group displaying spines of this sort of length in cultivation.

.... from J.D.Donald

There is a complete cline in the Rebutia einsteinii-aureiflora populations, from the short-tubed campanulate flower of the original cylindrorebutias to the broad, longer, open tubes of the R.euanthema group, to the narrow slender tubes of the R.aureiflora. Today there is no doubt that R.einsteinii and R.aureiflora has to be treated as one species. Flower size is immaterial and body shape as well as spination vary enormously even amongst single populations, as Nilsson and Rausch can vouch.

.....from K.u.a.S, September 1937

Lobivia auranitida sp.nov. Wessner. [Full description in Latin and German, including] Flowers ... outer petals externally [bronze] with broad violet midstripe, glossy golden-bronze within and only violet at the tip. Inner petals glossy golden bronze with a darker central stripe more or less extending to the tip. Filaments arranged in two or three insertions, white, anthers yellow. Style green. Stigma lobes yellow, not spreading.

The plants are offered in commerce under the names of Rebutia einsteinii Fric or under the catalogue name Rebutia chrysacantha Winter. The plant belongs in the form-circle of the so-called Rebutia einsteinii Fric nomina nuda. To this belong the following sorts, which up till now were always transitions and awaited descriptions: Rebutia einsteinii, steineckii, nickolaii, karreri, rubriviridis, all nomen nudum 1931/32 Fric.

.....from H.Middleditch

This new description was followed immediately by a second new description by Wessner, for Rebutia brachiantha. In the December 1937 issue of K.u.a.S. it was stated that there had been a printing error, with a transposition of headings; the Latin and German descriptions under the heading of Rebutia brachiantha should have been headed Rebutia auranitida, and visa versa. It is the correct description for R.auranitida which is given above.

.....from Beitrage zur Sukkulentenkunde und Pflege 1939 No.2

Lobivia schmiedcheniana sp.nov. Kohler. [Full description in Latin and German, including] Flowers .... outer petals externally dark- to reddish- yellow with darker broad reddish-brown midstripe; inner petals dark- to reddish-yellow, becoming paler towards the throat. Throat whitish yellow. Filaments whitish yellow, inserted from the base of the tube to part-way up the tube. Anthers whitish yellow. Style whitish yellow, with around eight whitish yellow stigma lobes. Style rises above the anthers.

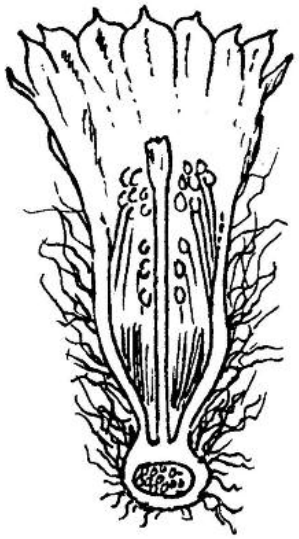
These plants were once named Rebutia einsteinii by Fric. To my knowledge they were first mentioned by Weingart in Kaktusar 1931 p.104, and illustrated by Fric in Kaktusar 1932 p.4.and p.14. All text is in Czech. A valid description is lacking. The name Rebutia einsteinii is consequently a nomen nudum. Consequently I name the plant Lobivia schmiedcheniana to obliterate the name Rebutia einsteinii Fric n.n.

.....from W.Rausch, Lobivia 85

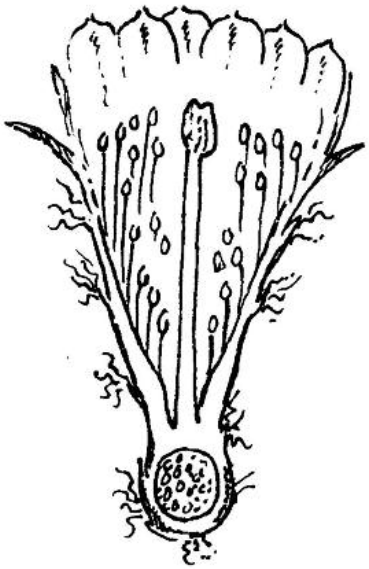
In Kaktusar 16, 1932, Fric writes about his Rebutia einsteinii “In their habitat the plants seldom have a diameter more than one cm ... the epidermis is dark green, reddish-blonde to start with, later black and with appressed spines, the flowers are golden yellow with orange margins”. A scientific diagnosis would probably be much longer but would not really say much more. I consider this description to be adequate.

.....from H.Middleditch

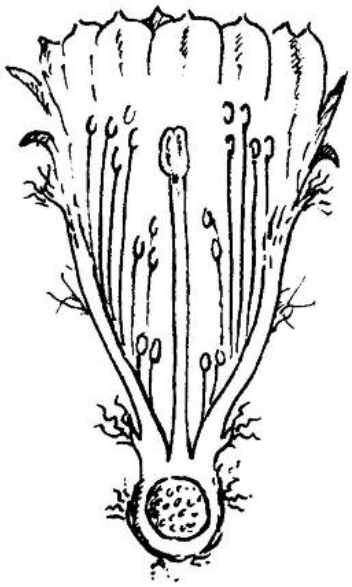
From the various articles written by Fric it would appear that he was not given to producing the sort of comprehensive diagnosis for a new species name that has tended to be the norm in recent years. However, the current ICBN rules of the time did not demand other than a “description” and as Gordon Rowley pointed out in these pages many years ago, a description can be as short as an author wishes it to be - in theory it could be only two words. On this basis it would appear that the name Rebutia einsteinii was validly described by Fric. The german writers of the time generally appear to have provided a more comprehensive description for any new species and one gets the impression from their contemporary writings that they disliked the “gardener’s” approach to new species epitomised by Fric’s articles. However much they belittled Fric and his writings at the time, it does not thereby invalidate the Fric descriptions. Hence the names Lobivia auranitida and Lobivia



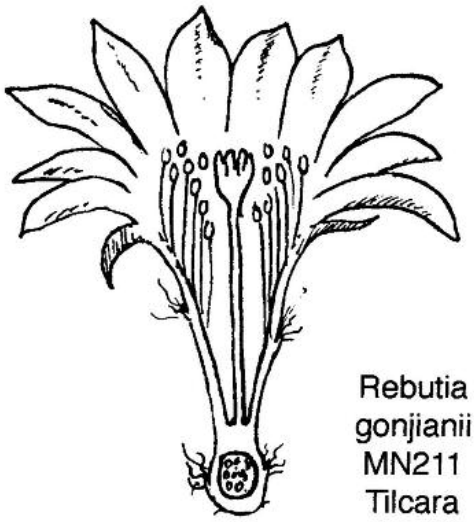
Rebutia euanthema
MN46
Volcan



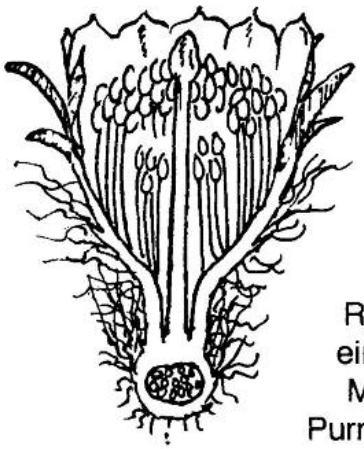
Rebutia euanthema
MN163
Tilcara



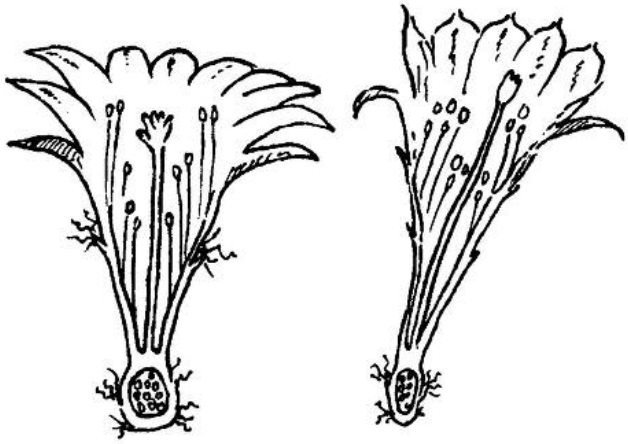
Rebutia einsteinii
MN195
Purmamarca



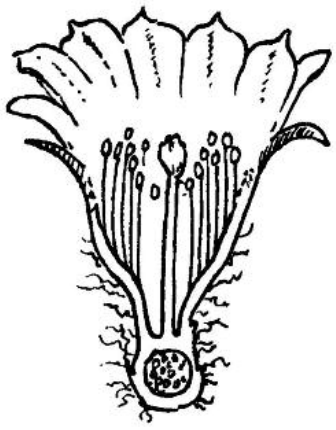
Rebutia
gonjianii
MN211
Tilcara



Rebutia
einsteinii
MN188
Purmamarca



Rebutia einsteinii
MN110
Golgota



Rebutia einsteinii
MN103
Las Cuevas

Sketches - M.Winberg

schmiedcheniana require to be conveyed into oblivion.
.....from P.Allcock

Collecting seed from some of my Rebutia is not difficult because the fruit can be lifted off the plant when the seeds are ripe, without spilling the seeds. So these fruits can be left on the plant, whilst other Rebutia need to have the seed removed immediately it is ripe, or else the fruit quickly becomes brittle. Of the fruit which can be left on the plant, those of R.aureiflora, euanthema, einsteinii, gonjianii, and Lau 477 are all rather similar. I would say that the seeds are very slightly tacky .
.....from M.Wimberg

On this einsteinii group of Rebutia the fruit splits vertically but the seed do not fall out, but stay in place, because they are very slightly sticky. So the fruit can be taken off the plant without spilling the seed - provided it is done very carefully indeed. To collect seed from other Rebutia, I use an aspirator.
.....from D.Schweich

It is very difficult indeed to collect seed off most Rebutia. The dry wall of the fruit is so brittle that the fruit will virtually explode at a touch and scatter the seed all over the plant and the soil beneath. The einsteinii, gonjianii, aureiflora, euanthema are definitely one group; it is much less difficult to collect seeds off these as the fruit does not break open at a touch. But I would not call the seed sticky. It may be very slightly sticky if a newly-ripe fruit is opened, but after a time the seed is absolutely dry. .
.....from M.Wimberg

The flowers on my Rebutia of the einsteinii, gonjianii, aureiflora, euanthema group display a wide range of variation, in the actual shape of the flower, in the number and disposition of the stamens, and in the colours of the anthers. On MN 188 from NW Purmamarca at 3800m the anthers are a purple-red colour, whilst on MN 211 from 3450m, below Purmamarca, the anthers are a yellow to light orange colour. On MN 163 from the east side of the Qu. Humahuaca near Tilcara, the anthers are again a purple-red colour.
.....from H.Middleditch

The sketches from M.Winberg on the previous page which are all approximately to the same scale, illustrate very well the variation in overall flower shape and filament disposition which may be found in this einsteinii group of Rebutia.

WE FIND TEPHROCACTUS SUBTERRANEUS From F.Vandenbroeck

During our trip to Bolivia in December 1992 we were on the Culpina plateau on the way to Salitre when we came across a Cumulopuntia with very small segments, partly hidden in the soil, and having short hair-like spines. At first I took this to be a form of Tephrocactus rossianus. However the plant bodies are very different from T.rossianus and this plant may well be Tephrocactus subterraneus (R.E.Fries) Ritter. Ritter states that he found T.subterraneus as an exceedingly rare plant near Villazon and La Quiaca, whilst the type habitat of this species is even more than 200 km further south from these two locations. But that does not exclude the possibility that this species may occur as far north as Culpina. Unearthing a plant, we found an exceedingly long and narrow taproot.
.....from H.Middleditch

At the 1992 Chileans' Weekend we were shown a slide by B.Bates of an Austrocylindropuntia verschaffeltii seen near Huancaroma, on the edge of the Bolivian altiplano, whose plant bodies were standing barely an inch or so above ground level. Is there any possibility that this mat-like plant seen by F.Vandenbroeck near Culpina may have also been that sort?
.....from F.Vandenbroeck

I believe that this plant of Tephrocactus subterraneus which we found near Culpina cannot possibly be confused with A.verschaffeltii. Crossing the Culpina plateau in the direction of Salitre, our attention was drawn by conspicuously red flowering groups of cacti, which on stopping to look at them, proved to be A.verschaffeltii. A little while later whilst we were travelling further along the selfsame road, we came across large numbers of pinkish red flowers which at first sight appeared to be sticking straight out of the soil. A closer inspection revealed that the heads of the plants were indeed projecting a very short distance above the surface of the ground. As you may see from the slide taken at the spot, the heads were standing more or less side by side so that the plant formed a pad or mat.
.....from H.Middleditch

It would appear from the form of the heads, which are virtually spineless and with but slightly raised tubercles, that this particular plant could be T.subterraneus. On the other hand, at neither of the previously reported locations for T.subterraneus (El Moreno and La Quiaca) has A.verschaffeltii also been found in the near vicinity. It does seem remarkable that no previous travellers in this well-known cactus locality of the Culpina basin, such as Ritter, Rausch, or Lau, appear to have found this particular form of Tephrocactus in this area. Because the mat of heads would appear to project only some 15 to 20 mm above the surface of the ground, it may well be exceedingly difficult to find this plant when it is not out in flower, so that various collectors may have walked over it without realising that it was underfoot.
.....from W.Rausch, G.O.K. Newsletter February 1971

[On his fourth expedition to South America] ... The collecting of Tephrocactus is really no fun; a long time can be taken up with a pick until their large root has been exposed. Tephrocactus subterraneus is difficult to find; its tiny individual globular segments only grow to one cm across, whilst a six-headed clump is indeed a rarity.

.....from R.Hillmann

We were very fortunate to be able to find T.subterraneus near Cangrejillos, even though the plant was not in flower. Here it grows in very sandy soil with very big roots. We also found this plant not far from Culpina, near Inca Huasi, where they grew at the top of a hill along with Rebutia albopectinata. These plants were in full flower.

.....from H.Middleditch

On looking at the picture taken by R.Hillmann of one of these plants at the Culpina site, both the crown of the short stem (all that is visible of the body in the picture) as well as the open flower are virtually identical to my own T.subterraneus. It is most unexpected to have this further report of Tephrocactus subterraneus so far from previously reported locations in northern Argentina.

.....from T.Gilmer

On the picture taken by R.Hillmann only a small part of the body of the plant may be seen projecting beyond the flower, but it is fairly certain that this is indeed T.subterraneus.

.....from J.Lambert

In the course of my visit to Argentina in 1986, we once again went up the Quebrada Humahuaca and turned off for Purmamarca, then continuing to climb. Not far beyond Posta de Hornillos, we reached the highest point of the pass at 4,170 m. The descent of the western slope soon brings us to the high plateau across which we continue as far as El Moreno. Here we search vainly for T.subterraneus and eventually we have to retrace our steps, empty handed, in order to reach Humahuaca for the night.

In 1989 our route took us to the border with Bolivia. To the east of Yavi, at about 3500 m altitude, we were able to find T.subterraneus. Here there were some flowering plants, which rendered our search for them much easier, but apart from this, I got the general impression that the population at Yavi was quite numerous. These plants seem to consist of very few segments, not more than about half a dozen heads. We also found T.pentlandii and Lobivia pugionacantha growing in the same locality.

.....from K.Gilmer

Certainly T.subterraneus (Fries) Backeberg is not very easy to find in habitat. We discovered this species only in two locations of restricted extent in the vicinity of La Quiaca, in Jujuy province. We did know from Backeberg Die Cactaceae Vol.1 p.350 that this species was growing on the stony puna not far from the Bolivian border town of Villazon. As we drove along the road, not far from the border, we stopped frequently to search for this plant. We only knew this plant from cultivated specimens, so we knew nothing about the colour of the plant in habitat, its size, the precise nature of the ground in which it grew, or its exact location. Also there had been little or no rain yet in this region. We must have stopped ten or twelve times, each time searching the ground carefully, but without coming across the plant we were looking for, before we were successful in finding the first specimen. This was not long before we reached Pumahuasi. It is quite possible that we had been walking over the plants at our previous stops. It is probably right to say that that this particular plant can only be found when it is in flower. Most plants consist merely of 1-3 segments, up to a maximum of eight, each about 15 mm in diameter. During the rainy season only the upper 5-10 mm of each segment can be seen, the rest is hidden in the soil. In the dry season I can imagine that the plants will retract completely below the surface of the ground. In an area of approx. 20 m square we found plants with white flowers and plants with flowers of differing colours of rose pink.

.....from M.Nilsson

The northernmost point of our trip to Argentina was at La Quiaca, close to the border with Bolivia, which we reached on 27 January 1987. Whilst we were looking for Lobivia pugionacantha, we were able to find T.subterraneus, even though it was not in flower. Both grow together just some ten minutes from the centre of the town, near the bridge on the border to Bolivia. Here the landscape is completely flat, and the ground is composed mainly of sand and gravel, on which grow small, scattered, tufts of grass and virtually nothing else, all exposed to the full sun. The T.subterraneus were certainly not numerous. Some of the plants had fruit but they were unripe. The plant body is a greyish-green, tinged with red to a brownish-grey-green colour. Only about 10 to 20 mm of the plant body can be seen above the ground, and as they are the same colour as the earth, they are not easy to find. We did find solitary plants, but when looking at my slides I can count up to seven heads on the same plant. Bear in mind that there are many goats in this area and these juicy plants are perfect fodder for goats. There were no plants in flower at the time of our visit and we found only one unripe fruit. But in 1992 came the first flower on these plants in my own greenhouse.

When we returned to this site in late 1990 and then again in the middle of 1993 we found that the town of La Quiaca had expanded considerably since the time of our first visit, to such an extent that the habitat of T.subterraneus, not far from the centre of the town, was almost extinct. When I first visited the area, there were plenty of plants. Now, four years later there were just a few left. Now you have to look on the road to Yavi, just outside La Quiaca, if you want to see this nice Opuntioideae.

.....from G.Charles

During the course of our second trip to northwest Argentina, we drove out of La Quiaca, through Yavi, in the direction of the pass over to Santa Victoria. Beyond the first belt of Oreocereus we crossed a relatively level stretch of terrain and then started to enter a valley leading into the mountains. It was here that we came across Opuntia subterranea, growing not only in the sandy flat area close to the road but also up on the slopes forming the sides of the valley.

.....from K.Gilmer

The slide from F.Vandenbroeck which you showed at the 1993 Chileans' Weekend is of a plant with an extraordinarily large number of heads. Surely this is most unusual for T.subterraneus?

.....from R.Hillmann

The formation of dozens of heads by the form of T.subterraneus seen by F.Vandenbroeck near Culpina, could be attributed to chewing by animals. This sort of damage can often be seen on cacti such as Lobivia, or Rebutia, etc.

.....from H.Middleditch

On the slide taken by F.Vandenbroeck of the supposed T.subterraneus which he found near Culpina, there appears to be between seventy and eighty heads, all packed together side by side. All of the heads project above the surface of the ground to a surprisingly similar extent, perhaps by about 15-20 mm. All the heads are also of a pretty uniform diameter, with the exception of one which is about half as big again as all the others - but it is not in the centre of the mat of heads. Compared with all other reports of finding T.subterraneus in habitat which suggest about six or eight heads maximum per plant, this enormous number of heads appears to be most anomalous.

.....from M.Lowry

During our 1996 trip to Bolivia we were able to visit the Culpina basin. Both near Salitre and near Villa Charcas we were fortunate enough to come across T.subterraneus. We decided to dig up one plant with about six or eight heads in order to examine the root. But when it came out of the ground we discovered that it was not one plant at all, but three plants growing hard up against each other, each with two or three heads.

.....from H.Middleditch

So at last we have an explanation for the great number of heads on the Vandenbroeck "plant". One might suppose that the seed from one fruit could have landed at a favourable spot where a considerable number of the seeds have germinated successfully and thrived, so that this mat is not just one plant but a collection of numerous plants all growing cheek-by-jowl.

In the Vandenbroeck picture there are two buds in clear camera shot; the unopened petals form a cone of roughly 6 mm in diameter and of similar height and are at the stage of growth when the petal colour may be seen. However, these buds lack the wigwam-like cover of bristly spines arising from areoles around the top of the tube, which is a feature of the buds on my own T.subterraneus. Instead, on the Vandenbroeck Culpina plant the areoles on the flower tube bear twisting, semi-projecting spines, possibly about 8-10 mm long. Perhaps plants of T.subterraneus from different locations may display different forms of spination on the flower tubes?

The size of the flower on the Vandenbroeck picture also appears to be much larger than I would have expected. The petals are not open flat, only half way between vertical and flat and yet the flower spans more than three heads. If each of the heads making up this plant is about 12-15 mm in diameter, then a fully open flower would be about 50 mm across (or more). In comparison with the flowers on my own plant, this seems to be far too large for T.subterraneus. In addition, Ritter gives 25-35 mm diameter for these flowers when fully open. Because of the small size of the flower tube on T.subterraneus, the stamens stand nearly upright and also fairly close together, not as close as on a broom made of hazel twigs, perhaps, but more like a bunch of flowers on display at a florist. On the other hand, the stamens on the Vandenbroeck "subterraneus" are standing fairly loosely disposed in a broad tube, in a manner which I would not have associated with T.subterraneus. Finally, the flowers are red, a post office red without any hint of pink or violet. This flower colour does not appear to have been associated with T.subterraneus up to the present.

.....from D.J.Ferguson

Many of the cuttings of the Argentine material are starting to grow well now, and it may not be too long before we are propagating some of them. The Puna subterranea both flowered and set fruit this year; it greatly surprised me in that it had brilliant red-orange flowers rather than the pale pink of the specimens received from Europe.

.....from C.Holland

My T.subterraneus are doing particularly well this year, with over 40 buds altogether on seven plants, three of unknown origin and 4 ex-habitat. Only one plant showed a break from the standard pink petal colour, with a more salmon pink colour. On this plant the stigma lobes are wide open, but on all the others the stigma lobes remain tightly clasped together throughout the time that the flower is open. The colour of the style and filaments are either yellow or pink in varying combinations e.g. one plant has a yellow style and filaments, another has a pink style and yellow filaments and so on. There is considerable variation in the length and number of the bristles on the buds.

The flower colour of the Vandenbroeck plant is very different, indeed. The heads of the Culpina plant appear to be rather short, or at least there is little of them visible above the soil level; the tubercles seem to be very prominent and there are relatively few of them, in comparison with my own plants. This implies that either the tubercles on the Culpina plant are larger, or the heads are smaller! It is a very large clump for a habitat plant if the reports to date on T.subterraneus in habitat are anything to go by.

.....from P.Leigh

My small plant of T.subterraneus puts out quite a few flowers, usually with only one or two flowers open at one time. There are quite a few spiny bristles arising from the areoles at the base of the petals, but I would not describe these as covering the top of the bud. Some of these bristles lie against the outside of the bud, many of them stand upright or nearly so and a few even lean outwards.

.....from N.Wilbraham

My own T.subterraneus is still a fairly reliable flowerer. This year, for example, it had thirteen flowers, but liberal use of the brush was equally fruitless!

.....from W.Geissler

Over the last five years I have experimented with repotting my Tephrocacti and found that plants in normal depth pots do not do so well as those in deep ones. I suspect that it has something to do with the tap-

root system. My largest plant of T.subterraneus is now in a very deep 18" clay pot and has dozens of heads. It gave a wonderful display of twelve flowers this year, but I am sorry to say that there were no fruit.
.....from H.Middleditch

Several years ago I was very fortunate to receive two small pieces of T.subterraneus, one from N.Wilbraham, the other from C.Hall when he was at Guildford. Both plants grew, but very slowly, and very occasionally putting out a fresh head. About three or four years ago they both obliged by starting to bud up early in the season, both plants having more than one bud. In the very early stages the top of the bud was almost covered by a cone of very fine bristles; there must have been a ring of areoles around the tube at the base of the petals, which carried these bristles. There were not a great many areoles to be seen on the rest of the flower tube. The flower petals were a pale coral pink and opened out quite flat, to a diameter of about one inch. The receptacle was very short indeed, barely 8 mm long. All the flowers came out over a period of about ten days, which allowed of cross-pollinating between the flowers on both plants with the aid of a brush. Unfortunately no fruit was set.

Now that I have found a plastic equivalent of the old long tom clay pot, both my T.subterraneus have been repotted into these in order to give the main root ample opportunity for growing downwards. At the same time a more open compost was used. The plants appear to prefer the changes.
.....from A.Johnston

In my own collection I have several plants of T.subterraneus, two specimens from K.Gilmer, one from K.Grantham, and several from Scheck. Two of these plants flowered at the same time this year, so that I was able to cross pollinate them. One plant came from Scheck, the other from K.Grantham. The flowers were pale pink with the petals curved right back to the body. For quite some time I did not think that they had set fruit because the base of the flower remains did not really show much change in appearance. So I did not take much notice of them and it was rather a surprise to found fruits on both plants, a few months later. Both fruits were then ready to lift off. The largest fruit was about 10 mm in diameter and held thirteen seeds. Another fruit held only one seed, and the smallest fruit was empty. I would say that the fruits was almost dry, with no flesh or anything like that inside and the seeds were removed easily and were clean.
.....from C.Holland

Cross pollination of the flowers on several of my plants of T.subterraneus have resulted in fruit being set. The flowering usually takes place in May-June and by September the fruits are obviously ripe. They start off with a fleshy green wall but by the time they are ripe the fruit wall has dried up to almost paper thickness and has become quite brittle. Some of the fruit remains cup shape, about 5-6mm broad and tall, but other fruit is much larger, of a globular shape up to some 10 mm in diameter. The size of the seed is similar in both sorts of fruit, so I suppose the smaller fruit will contain a smaller number of seeds. .
.....from H.Middleditch

There is one common feature displayed not only by the Tephrocactus of the hummock-forming sorts ("Cumulopuntia", "Maihueniopsis"), but also by the sphaericus/dimorphus ("berteri") group from Chile and southern Peru, as well as the articulatus/diadematus group, and that is in respect of the new growth. The new segments bear all the areoles they will carry as mature segments right from their first appearance. These new segments arise from an areole (or node) as this group of Tephrocacti do not possess a growing point to the stem, other than by exception e.g. in the juvenile seedling stage. By comparison, T.subterraneus does possess a growing point, for each head or stem will restart into growth as a new season opens and new areoles are added by the fresh growth. Thus the stems grow longer in the same fashion as Austrocylindropuntia. However, none of my own plants of T.subterraneus have yet produced any short columnar growth comparable to a floccose Tephrocactus. Perhaps the lower part compresses as the upper part grows longer?
.....from G.Charles

My own specimens of T.subterraneus clearly display a short columnar mode of growth. One plant in particular now has a main stem which will be about four inches long, which extends gradually each year as the growing point adds a little more to the length. In habitat the above-ground portion of T.subterraneus does give an impression of a set of short segments, but when I excavated round a plant in habitat it looked to me as if a large part of the elongated stem was buried underground, leaving only a short section projecting above ground level. .
.....from H.Middleditch .

Although Kiesling has correctly pointed out the somewhat unusual nature of the seed of T.subterraneus in comparison with all other Opuntia, this feature alone hardly seems to justify raising a new genus ("Puna"). It might be more appropriate to suggest that it is removed from Tephrocactus and placed into Austrocylindropuntia. In general terms it appears to grow at a higher altitude and under rather more severe climatic conditions than e.g. Opuntia verschaffeltii. The effect of such habitat conditions might be expected to produce the very shortening of stem length that this species does in fact display in habitat.

ECHINOPSIS AUREA v. ECHINOPSIS FALLAX By J.Lambert
Translated by H.Middleditch from Succulenta 67.9.1988

The plants which form the subject of this article belong to those marginal or transition forms, whose frequent occurrence serves to remind us that natural forms do not admit of classification in clearly defined taxa but rather correspond to a gradual and harmonious evolution.

In consequence it is not surprising that these particular sorts are placed by the systematists in the genus Lobivia one day and then again become the genus Echinopsis. It even reached the stage that Backeberg

attempted to get round the problem by the creation of a “bridging - genus” that he named Pseudolobivia. Later on however it became evident that it was not justified and nowadays most authors accept that these two sorts should be considered as Echinopsis. In his recent book W.Rausch departs from this and again considers these to be Lobivia, because they are “Day flowering with short flower tubes”. However I am not able to agree with such a simplistic idea and I also remain in favour of the Echinopsis viewpoint that was accepted at one time by Rausch himself. I quote “If one considers the variability within the aurea-complex, all the features of these plants point towards the Echinopsis group. Indeed the representatives of all the different varieties are found growing between 700m and 1400m altitude, that is to say in the region of Echinopsis. Lobivias are never to be found growing at these heights.”

My own experiences and also those of D.Herzog confirm this in full. On the other hand these views are also supported by the seed form and the fact that the flowers are yellow is by no means a criterion for separation. After this brief explanation concerning the genus we now proceed to take a closer look at the group around Echinopsis aurea. It is a markedly polymorphic group i.e. rich in forms, with an extensive distribution area. The typical form was described from Cassafousth, just to the west of Cordoba, in the Sierra Chica. At the same time they are to be found in the Sierra de San Luis and we found them also near to Tanti, along the eastern slope of the Sierra Grande. In addition a great number of forms are met with to the west and to the north, in the provinces of La Rioja and Catamarca and even in the south of the province Salta.

In his latest view, W.Rausch chose to regard all these forms as varieties of one and the same species, to wit Lobivia (Echinopsis) aurea. This viewpoint stands up well in the case of such a widespread group of forms, but from our observations in the field we acquire the impression that in fact two separate but closely related sorts are present here. In spite of their variability the outward appearance of the plants exhibits a constant difference in the spination. In respect of the population coming from the area to the west of the city of Cordoba and out of the province of San Luis, the difference between the radial and central spines was more striking; also the colour of the central spines was different - yellow with reddish or black base to completely black, compared with yellow or grey with black tip. In our view then the more westerly and northerly forms belong to the species E.fallax.

However the quoted features are difficult to define precisely, again on account of the variability of the different populations. For this reason we look for a clear delimiting feature in order to be able to separate E.aurea clearly from E.fallax. The seeds of both sorts are evidently identical; also all indeed belong to a clearly defined group within the genus Echinopsis viz: those with the dull brown seeds with a large, basal, round and crater-like hilum (Echinopsis tubiflora type). Also the structure of the flower was the same, with the filaments in two separate series and an addition of a hymen ring.

However after a more meticulous examination it became clear that a number of populations (more specifically those from the vicinity of Cordoba and from San Luis) displayed a red throat, and white to pale yellow stigma, whilst in the remaining populations the throat as well as the bases of the primary filaments were green, with a green to whitish-green stigma. These characteristics were apparently either not perceived by Rausch or else he did not find it worth mentioning. Ritter, on the other hand does indeed mention it, but he does not appear to attach any importance to it from a taxonomic point of view. However in my opinion herein lies the separation between E.aurea and E.fallax and in order to test this notion, we bring the finding places of the respective populations on a map. It stands out a mile!

The forms of E.aurea are obviously really restricted to an area of around 250 km from Cordoba city up to the northern part of the province of San Luis, whilst those of E.fallax on the other hand extend over a more widespread distribution area, about 700km from the south of the province of Salta through Catamarca to La Rioja and also in addition the north of the province of Cordoba. The population of JL-110 from Copina forms an exception, which turns out to be like a form of E.fallax. Here however we find ourselves in the boundary zone between the two sorts and this may well be an “outlyer” or even a natural hybrid. In passing it may be observed that the finding place for the Type of E.aurea lies right on the edge of the distribution area, instead of somewhere in the middle. This is naturally pure chance and other examples do occur e.g. Parodia aureicentra.

At this point I think that the following conclusions can be drawn: Echinopsis aurea - to this species belongs the vvs leucomalla, quinensis, and sierragrandensis; Echinopsis fallax - to this species belongs vvs albiflora, callochrysea, catamarcense, depressicostata, shaferi, and tortuosa [all authors and basionyms quoted in full].

Some three varieties are neither mentioned in the text or list above because they belong to the typical species. Rausch has already transferred these into synonomy: the v.elegans Bkbg and v.grandiflora Bkbg belong to E.aurea v.aurea, the v.lariojensis belongs to E.fallax v.fallax. The question as to whether all the named varieties deserve that status, is left open here; this still remains largely a matter of opinion.

In his latest book Rausch considers E.luteiflora as a synonym of E.aurea. This form should then come under E.fallax. However, according to Backeberg it should be distinguished from the aurea-fallax group on account of the existence of spines on the flower tube (a transition towards Acanthocalycium). At the moment I do not wish to speak out over this question, because I am still not able to study plants of a reliable origin with regard to this specific feature. Indeed I have indicated on the map those locations where we came across what we regarded as E.luteiflora; as may be seen, they all lie in the NW of the province Cordoba. It should indeed be possible to fit in here Ritter’s short spined variety cylindrica (FR.445) from Capilla del Monte.

Addendum.

Between the preparation of this manuscript and it going to press the author was able to note a couple of interesting additional observations, as follows:- 1. The flowers of Echinopsis JL-110, from Copina, did indeed display a pale red tint at the base of the filaments. The coloured zone is limited however and not very noticeable. In order to see it well the style must be pushed to one side. Because not the least tinge of pink is to

be perceived with E.fallax, I therefore conclude that JL-110 also belongs to E.aurea, with a somewhat less than typical flower. The hypothesis that we may have to deal here with a natural hybrid, is also not to be rejected. 2. Meanwhile an example of E.?luteiflora JL-173 from La Canada has also flowered. As anticipated, this is none other than a form of E.fallax, possibly identical with Ritter's variety cylindrica. there is no question of any spines on the flower tube.

.....from H.Middleditch

At our 1990 Chileans' Weekend we were shown a set of slides on loan from J.Piltz, which concentrated upon the form and nature of the scales on the flower tube, to which J.Lambert briefly refers. These covered almost all the spp./vv which form the aurea group, showing scales ranging from thin and spiniferously tipped to substantial and turtle backed.

.....from J.Piltz

There is a great deal of variation in the nature of the scales on the flower tube of the Lobivia aurea from various locations. But it is not only in this particular feature that variation exits. Near Alpa Corral, some plants of P.193 had pointed petals, others had blunt, denticulate petals. All these had reddish throats. To the east of Copina, P.175 had a greenish tube with a red throat, but the extent to which the flower opened varied widely, from narrow funneliform to widely funneliform. On the Sierra Estanzuela, San Luis province, the flower tube on P.105 is brownish and only about 4.5 cm long, looking very short compared with the diameter of the flower. On the flower tube the scales were quite small but with a very prominent spiniferous tip, so that there appeared to be more spiniferous tip than scale. On the Sierra Chepes, P.207 displayed white anther sacs, whereas elsewhere these are usually cream in colour. To the south of Alemania, at Tres Cruces, is found the v.calochrysea, whose flower scales are always non-spiniferous. Of two plants collected here by D.Hertzog, one has long, thin petals, the other has broad petals and a green style. Of another pair of plants from here, one has a green tube, the other has a flower tube infused with a brown colour. Of five plants collected at this locality, one of them produced a white flower.

.....from D.W.Schweich

When I was looking for plants at Abra del Infernillo, province Tucuman, I confused Acanthocalycium variiflorum with a curious Lobivia. This is perhaps not too surprising since these Acanthocalycium grow in the same area as plants of the aurea group. Every grower of aurea knows the curious scales on the ovary and flower tube - something in between the spiny scales of Acanthocalycium and the typical fleshy scales of other Lobivia.

.....from H.Middleditch

Taking into account the nature and extent of the foregoing variations, it would appear that the presence or absence of a red throat may be the only consistent distinguishing feature left to divide up the L.aurea group. However, this view may have to be modified if the nature of the scales, or any other feature, proves to have a geographic consistency.

.....from M.Muse

In October 1988, J.Lambert kindly sent me a copy of his article on his findings concerning Lobivia aurea and L.fallax; this was accompanied by a good translation covering the main arguments on which his views were based. At that time I had accumulated a good selection of seed slides representing material from all the principal localities within the distribution area of this group and had also started to take flower section slides as the plants in my collection reached flowering size, so that I was not entirely uninformed on this subject. My plants are all raised from seed bearing the field numbers of Muhr, Ritter, Rausch and Piltz, with the latter predominating. Whilst this is less than ideal, the plants do have some sort of provenance as opposed to none at all. My studies are far from complete since many of my plants have yet to flower.

When it was suggested to me by H.Middleditch that the findings of J.Lambert were worthy of further investigation, even the limited data then to hand pointed to somewhat different conclusions. At this point I started to examine in some detail the statements made by Ritter and Rausch and as has been the case so often in the past, they were not in full agreement. Indeed, some of Rausch's statements in Lobivia 85 seemed self contradictory. In the absence of field collected study material one is hesitant in challenging the views of people who have spent so much time in the field, but when (as is the case here) one finds so much carelessness in the presentation of differentiatimg criteria, matters take on a different aspect. Until recently only Lambert has carried out more detailed work, so that his observations are worthy of consideration.

Lambert's views may be summarised as follows: this group of plants properly belongs to Echinopsis since they are low altitude forms and their seed types are those of Echinopsis, to which I would add the construction of the flowers also. Lambert than divides the group into two species: Echinopsis aurea and E.fallax and his reasoning is as follows. One group of forms has a south-easterly distribution covering about 250 km (E.aurea), whilst the larger north westerly group extends over a distance of c.700 km (E.fallax). The latter group can, in the main, be distinguished by their more pronounced central spines, but as noted by J.Lambert this is difficult to define precisely due to the great variation of different populations. The real difference though is to be discerned from the internal details of the flowers: the southern group exhibit a red throat with red/carmine stamens and have a style and stigma varying from white to pale yellow. The other populations possess a green throat and stamen bases with green to greenish white style and stigmas and it is at this level (according to Lambert) that the difference between E.aurea and E.fallax can be defined. Lambert also notes that Ritter had noticed these floral characteristics but failed to draw any taxonomic conclusions from them. In fact Ritter only mentions them in connection with Rausch's L.aurea v.quinensis and describes the throat colour as purple, whereas there is no mention of this feature in the accounts of the other five varieties that Ritter recognises. These are calochrysea, depressicostata, catamarcensis, cylindrica and lariojensis. As I hope to show, there is scant evidence to support these names.

The quality of Rausch's work can only be assessed from his published work on the genus Lobivia. In the three volume work published in 1977 and again in Lobivia 85 we are offered a series of assertions with virtually no supporting evidence. In the interests of fairness I shall quote only from Lobivia 85 i.e. his most recent work. Here we find the variety of cylindrica listed under the synonomy of the type i.e. L.aurea, yet under the rubric of L.aurea v.catamarcensis we find: "the plants from around Catamarca to the Sierra Velasco have shorter flowers than the other varieties. Possibly it is here that we should look for Backeberg's Lobivia cylindrica". Concerning the variety calochrysea he says: "Without the flower it is easy to confuse it with Echinopsis tubiflora which often grows together with it". The confusion is not entirely due to this factor, as a careful examination of the cactus literature allows one to state with a reasonable degree of certainty that no plants resembling the E.tubiflora from Uruguay and Rio Grande do Sul are to be found in the northwestern provinces of Argentina. This has, I hope, served to illustrate yet again that we cannot rely upon the unsupported testimony of any author, however well travelled or how famous.

The final contribution from Rausch which does not support close enquiry concerns Ritter's v.catamarcensis. In the Rausch field number list issued some years ago by G.O.K., R.136 is listed as aurea v.fallax and this attribution is sustained in Vol.3 of Rausch's "Lobivia". One now finds in Lobivia 85 that R.136 has become L.aurea v.catamarcensis. Not only is there no account of how this differs from previously published names, at least in Vol.2 of Ritter's Kakteen in Südamerika, but it is very difficult to see how it differs from several other "varieties" created by Ritter. Whilst Rausch comments on this, he gives no reason for the transfer of R.136 to this epithet and since the habitat and details of morphology are not sufficiently different from that of the variety fallax, it is difficult to take the name catamarcense seriously.

Now to move on to consider the evidence given by Lambert in support of his views and compare them with my own findings. After I have examined the seed slides from this complex that are in my possession it appears that three types may be distinguished. It should be noted that there is no real difference in the form of the seeds except for a single field number, viz: Lobivia aurea v.cylindrica P.207. The principal difference between the other varietal names and field numbers is to be seen in the size of the hilum; to my knowledge no-one has so far drawn attention to the seed characteristics, at least in this respect.

The table below shows the floral characteristics of the plants so far examined in my own collection; from this data it would appear that so far as it goes the data tends to support Lambert's thesis. However closer examination shows that several plants which ought to have white or whitish yellow stigmas do not and the style of the ex SPI shaferi should be green. The length of the style is quite variable between the different "varieties" but I do not think that one can infer anything useful from this since the extent to which the style is exserted or recessed is quite variable in Echinopsis, even between different flowers on the same plant.

Species	Throat red	Throat white to yellowish	Style white to yellowish	Style green
L.aurea B.1		Y		G
L.aurea R.101	R			G
v.calochrysea FR985(1)		Y		G
v.calochrysea FR985(2)		Y		G
v.depressicostata P.25		Y		G
v.fallax P.32		Y		G
v.fallax P.137		Y		G
v.luteiflora P.14	R			G
v.leucomalla R.116	R		Y	
v.robustior P.105	R		Y	
v.shaferi ex SPI		Y	Y	

The data in the literature concerning the altitude at which the plants occur is very scanty and the assertion by Lambert that these are low altitude group of plants may be largely correct, but when one finds that the v.sierragrandensis grows around 1600 to 1800 m then the whole issue becomes open to question.

To sum up: Ritter and Rausch cannot even agree on such fundamentals as the length of the flower on this or that "variety" and depending on whether one accepts their divergent views or those of Piltz, the v.cylindrica grows in Catamarca, La Rioja, or Cordoba. Judging by the localities given by these and other collectors the different forms seem to occur mainly in the lower regions around but below the higher regions of the Sierras. In this and in his identification of the reddish colour of the lower portion of the throat filaments in the southernmost populations, Lambert seems to be correct and his conclusions seem to me to be well founded. The unusual and divergent form of the v.cylindrica P.207 may indicate that this plant too may be a good variety. Finally, the large and small hilum seed types may, according to Francis Fuschillo, be no more than an indication of either a drier or wetter locality.

.....from H.Middleditch

Earlier in the year I was paying a flying visit to see G.Charles' new greenhouse and I was surprised to find a plant from the L.aurea group already in flower. This appeared to have the red throat described to us by J.Lambert at the previous Chileans' Weekend. More out of curiosity than anything else I borrowed a suitable implement and cut the flower vertically into two sections. On glancing at the stamens it appeared that these did not spring from the inside face of the flower tube but were adnate to the wall of the tube. On closer examination it looked as if almost all the stamens were lying against and adnate to the tube wall, becoming free of the tube wall at various distances up from the base. The point of detachment of the stamens appeared to lie on the usual spiral, but as far as it was possible to see, all the stamens originated from the base of the tube.

This was unexpected, but reflected an observation made in correspondence by D.Ferguson, who had suggested that this was a fairly common feature in the cacti.

In order to try and find out whether there was any real substance in this idea, the whole series of stamens were then grasped in one hand and the body of the flower held by the other hand, in order to peel the stamens away from the wall of the tube. One or two broke off in the process, but the whole mass certainly peeled off the wall of the tube almost right down to the base of the tube. When this had been done, there was a bunch of crimson red filaments lying loosely and only attached to the base of the flower tube, exposing a greenish-white throat which was virtually entirely lacking any red or crimson colouration.

.....from J.Lambert

Since I received your note about the "throat colour" in Echinopsis aurea, I have taken the opportunity to check a number of other species in regard to this particular feature and came to the conclusion that what you observed is a much more frequently occurring situation amongst Echinopsis than one would suspect. i.e. that in the seemingly coloured throats, the actual inside wall of the tube is not involved in the process, and remains more or less whitish. The impression of a coloured throat is produced mostly by the basal part of the filaments, or in some cases even by the basal part of the inner tepals.

In those flowers which display a hymen (Hymenorebutia sensu Buining) the colour of the hymen is a good indication of the actual colour of the inner wall of the tube, for example when it is pinkish white or yellowish white. When the hymen displays a distinctive colouration, as for example in Lobivia jajoiana, then the inner wall of the tube is also effectively coloured. I found whitish inner walls in L.densispina and its varieties pectinifera and amblayensis, as well as in L. saltensis v.pseudocachensis. The same observation was made on a long-flowered Echinopsis, E.leucantha. Here the white flower seems to have a green throat, but in this instance, apart from the greenish base of the filaments, another factor interferes, i.e. the transparency of the tube, letting the green colour from the outside filter through to some extent.

Of course the whole matter depends upon what we understand by "throat". If we consider this "sensu stricto", to be the inner wall of the tube, then it seems to remain whitish in quite a number of species. However, if we accept that the throat is what we see when looking into the flower from above (without dissecting it) i.e. including the filaments or any other elements lining the lower part of the tube, then we may describe it as coloured as a whole. Both conceptions appear to be equally appropriate, but of course it should be made clear in any preliminary comments which one is being chosen by the author.

.....from R.Allcock

My two globular plants of Echinopsis aurea have produced flowers with a purple-red throat and purple-red colouration of the lower part of the filaments. There is a hymen ring clearly visible to the casual observer. Upon making a longitudinal section of the flowers, it may be seen that the total thickness of the petals at their base is less than the thickness of the top of the tube, so that this leaves a step at the top of the tube on the inside of the flower. It is also found that the throat ring of filaments are indeed fused to the inner wall of the tube; at the top of the tube, these filaments bend over sharply and remain fused to the step at the top of the tube; where these filaments meet the petals, they become free and at that point they bend sharply upwards. There are also other filaments fused to the wall of the tube which become free at a lower level further down the tube. In aurea v.leucomalla there is a similar rosy-purple coloured throat and also a distinct hymen.

On Echinopsis calochrysea FR 985 the hymen is very strongly developed, there being a very considerable thickening of the tube wall immediately below the ring of stamens at the throat. All the filaments are yellow above, green below. Here again, the throat ring of filaments make a sharp kink between the inner wall of the tube and the underside of the hymen, together with another sharp kink where they meet the base of the petals and become free.

In Lobivia fallax, the filaments are yellow above, green below; as the tube wall is about the same thickness as that of the base of the petals, the hymen is almost imperceptible.

.....from M.Muse

In midsummer this year I made a section of the flower on my P.14 Lobivia luteiflora and for the first time I was able to see an example of the hymen as described by R.Allcock. Up to this point I was beginning to wonder if my observations were too cursory to notice this feature. I have to say that once it is seen there is no ambiguity and this feature draws attention to itself as soon as the flower is sectioned. Two months later I made another flower section of P.14 and was surprised to find that the so-called hymen was scarcely discernible. In future I feel I would prefer to describe this feature as a raised annulus.

.....from H.Middleditch

In the course of his various journeyings through Argentina, J.Lambert must surely have come across a fairly representative number of specimens from the aurea group.

.....from J.Lambert (Reviewed at the 1991 Chileans' Weekend)

First of all there is the typical form of E.aurea, which was met with at Cerros Largos, for example, in the north of San Luis. Many other populations of this form were also met with in the Sierra Chica, at La Falda, Calamuchita, etc., and even on the eastern slopes of the Sierra Grande, near Tanti. As soon as one climbs higher up in the Sierra Grande, the typical form is replaced by the variety sierragrandensis, which is characterised by its much longer central spines.

In the region around Quines, to the north-east of San Luis, another form was seen which received the name of v.quinensis. Ritter writes that this form should be separated from E.aurea as the structure of the flower is quite different, but I see no reason to do so. A last variety, also met with in San Luis, is the v.leucomalla. From its appearance this seems to be very closely related to v.quinensis, so closely indeed that both varieties should perhaps be merged into a single one.

Now we come to E.fallax. of which a typical form was found at the Cuesta de Huaco, province of La

Rioja. Several strains of this species have been raised in my greenhouse from seed collected during my travels in Argentina, from Carrizal, from Pinchas, and from near Olpas. In the latter plants the tepals are more lanceolate.

It will not have escaped attention that all the immediately afore-mentioned places are situated in the province of La Rioja; which is why Ritter's "Hymenorebutia aurea v.lariojensis" is nothing more than the typical fallax. Another interesting form is E.fallax v.cylindrica. which was found occupying a well-defined niche in the NW of Cordoba province, where I observed it at several locations, for example at Agua Colorado. The plants which I established in my greenhouse came from La Canada, which lies between Agua Colorado and La Falda; I also noted this same form at Sauce Punco and up at San Miguel, near the border with Santiago del Estero. Plants in cultivation seem to match the collected strain quite well, so that this seems to be a good and distinct variety. The assertion by Backeberg that this form bears more spines on the floral tube, and hence is a transition towards Acanthocalycium, is not borne out by those plants which I have observed.

Much more to the northwest, and at a higher altitude in the mountains, I was able to collect E.fallax v.shaferi along the Cuesta de la Chilca, (to the east of Andalgala) at an altitude of 1700 m. This form is clearly characterised by its long central spines, especially on the crown, and by the more cylindrical shape of the individual heads, often forming dense clusters, as I have observed in habitat. Lastly, I also encountered what I suppose to be E.fallax v.catamarcensis at the foot of the Cuesta del Portezuelo (which is east of Catamarca). I have two nice little plants of this form in my greenhouse, but as they have not flowered yet, I cannot give you an opinion about the value of this variety.

I must tell you that my friend Walter Rausch still considers the whole complex to be a single species, which he calls Lobivia aurea, and he thinks that my separation based upon the colour of the throat is just rubbish! Of course he is quite entitled to his opinion on this matter, but I would like to draw attention to two extrinsic elements that support my proposition. Firstly, there is the geographical distribution, showing a clear separation of the aurea and fallax forms. Secondly there is a piece of physiological evidence which I observed in my greenhouse. Here the plants of the aurea varieties and of the fallax group are kept side by side on the same bench, but I have noticed that, year after year, the aurea plants started flowering earlier than those of the fallax group. The interval of time may vary owing to the weather, but it is never less than a fortnight.

.....from Lovec Kaktusu, by Karel Crkel - Biography of Fric

[Fric writes] At Sanagasta I found in large numbers a plant which matches the description of L.shaferi Br. & Rose. However, neither the plant nor the description in any way conform to the genuine Lobivia, if we take as the type of the genus Echinopsis pentlandii with curved spines, glossy epidermis and red flowers. The yellow-flowering Lobivia shaferi, with a long hairy flower tube and a soft and laterally dehiscent fruit, is really, as Echinopsis aureiflora n.n., a genuine and definite Echinopsis, and both belong in a very near relationship with Echinopsis albispinosa. The spines of these plants are ostensively white due to limy encrustations. On young examples and after rain, however, the spines are black and because of this I name the plant as Echinopsis nigrispina aureiflora Fric n.n.

Above Carrera, near Catamarca city, Echinopsis aureiflora assumed here a columnar appearance, and grew among groups of its own offsets, whereas the globular form down below developed groups of independent seedlings.

.....from J.Lambert

It was to the east of Andalgala, on the Cuesta de la Chilca, where I came across L.fallax v.shaferi. These plants are indeed short columnar, and offsetting from the base, as on Fig.34 in my book. Older stems may reach a length of 25 cm, with a diameter of no more than 4-5 cm.

.....from K.Preston-Mafham

Near Andalgala there were two sorts of Lobivia aurea v.shaferi to be seen. One sort was multi-headed, with more or less round bodies, areoles fairly close together with shortish, dark spines. It looked to me rather like Lobivia amblayensis. It formed large mats composed of many heads. The other sort was the form commonly cultivated under this name, with much taller stems, with longer spines of a pale colour, each clump being made up of far fewer heads than with the short plants.

.....from M.Muse

It would be about 1990 when I germinated some seed of Piltz P.142 Lobivia shaferi. However, as the seedlings grew on I became quite disappointed as they bore little or no resemblance to the plants with the short-columnar form of growth that I associated with this species name. Instead they were globular in shape, or perhaps slightly depressed globular, with an almost grass-green body and a relatively weak spination. In due course I came to the conclusion that there had been some mix-up with the seed that had been supplied to me and disposed of these seedlings. Four or five years later I decided to try another packet of Piltz P.142 seed and unfortunately this has once again yielded the short, green, globular plants. I find this most peculiar.

.....from H.Middleditch

But perhaps the Piltz P.142 plants are the lower-growing, almost mat-forming, globular plants with short spination that K.Preston-Mafham reports having seen at the site of the traditional form of L.shaferi?

.....from J.Piltz

The original P.142 as we saw them in habitat were the short elongated, somewhat finger-like plants which are to be found in cultivation in many collections. It is difficult to understand how the seed-grown P.142 have come to display a quite different appearance.

.....from H.Middleditch

In my own collection there are several plants of the aurea group which flower readily and at quite a small size. My general impression of the flowers is that they are a funneliform shape with stamens distributed over the height of the flower tube. In some flowers the anthers seem to be fairly close to one another and in other

flowers they are more openly spaced, which could be a reflection of stamen count, or of the length and width of the tube, or of a combination of both factors. But the uppermost anthers usually lie further away from the style whilst the lower most anthers are fairly close to the style, so that collectively the anthers tend to form a funnel reflecting the form of the flower tube itself. However, on one single occasion when glancing at a flower it was quite a surprise to see that the anthers all lay at precisely the same distance from the style so that they formed a distinct cylinder or tube; the upper filaments which rose from a steadily widening tube leant progressively more and more towards the style, rather than lying substantially upright in the normal fashion. My immediate impression was that I was looking at an Acanthocalycium flower. This is something that might be worth looking out for during the next flowering season - although it may simply be the stamen disposition at first opening of the flower.

.....from R.Purslow

I have not noticed any pronounced “tube” formation of the stamens round the style, although as the width of the flower tube itself is very variable within this group, could this bunching of stamens just be the result of the usual number of anthers being in a narrow tubed flower? Certainly I can recollect having problems setting seed on L.aurea v.albiflora, having trouble even in finding the stigma on account of the number of anthers.

.....from M.Muse

The wealth of possible relevant floral characteristics has induced me to create a separate database file and in order to load in actual obervations and measurements, I took the opportunity to section flowers on 12 different plants. The first ten of these showed no unambiguous funnelling of the stamens and none have so far displayed any obvious hymen - this with the aid of a x4 lens. However, shortly afterwards I sectioned two further flowers and, lo and behold, two excellent examples of “cylinder anthers” were revealed. I must confess that I was somewhat dubious about the existence of this feature and the likelihood of finding it.

.....from R.Purslow

Of my own plants of this group, I have noted an appreciable variability in both flower form and body morphology between plants of one and the same collection number. The only plants of this group in which I have seen a consistently red throat are L.leucomalla R 116 and the quinensis form R 112, as well as Kiesling plants of this same sort. This seems to be in line with the original description.

A CACTUS COLLECTING TRIP IN SOUTH AMERICA. By H.Blossfeld.
Translated by H.Middleditch from Kakteenkunde 1936 No.4

After much delay in getting custom clearance for my equipment, we drove into Cordoba province. Here we found the the handsome Acanthocalycium violacea, as well as Lobivia aurea, ... From here we had planned to make a diversion of a few days to the south in the mountains of San Luis province. There we came across such very poor roads that we made very slow progress. At one point it was so steep that we had to unload the Ford pick-up in order to drive it up empty, then follow up on foot with all our baggage, including about a hundred kilos of cactus plants. We had already forwarded to Jujuy the plants collected in Cordoba and our spare baggage. We had certainly not calculated that we would be delayed for a full three weeks in San Luis because of the state of the roads. In spite of that, the harvest was rewarding. We found there what I supposed was a white haired Lobivia, which I provisionally identified with my number 19. It is probably a new discovery, certainly overall one of the finest Lobivias.

.....from W.Wessner, Beitrage zur Sukkulentenkunde 1938.1

Lobivia leucomalla sp.nov.

....Flower funneliform, 50 mm diameter, 40 mm long, when open. Pericarpel 6 mm diameter, pale green, densely covered with brown and white wool, scales pale greenish, narrow lanceolate, 8 mm long. Tube of similar pale green colour, glossy, wool more sparse, scales becoming longer up the tube, up to 24 mm long, from 5 to 10 mm wide. Calyx petals lanceolate, externally pale yellow with olive brown stripe. Outer petals externally with pale brownish middle stripe, inwardly pale yellow; squat spathulate with small tip, margin somewhat denticulate. Inner petals in two lines, inside and outside clear citron yellow, with lighter midstripe which runs into the small pointed tip, greatest breadth 11 mm. Throat white.

Stamens arranged in three insertions; the lowermost set arise from the base of the wall of the tube; the filaments here are deep carmine. The central set arise from the wall of the tube, the filaments being white like those of the uppermost set, which arise from the bulge at the calyx thickening and lean somewhat towards the stigma. All anthers are cream coloured.

Style freestanding from the base of the tube, cream coloured. Stigma with twelve lobes, cream coloured, projecting up to the uppermost anthers.

Fruit pale green, somewhat elongated, dehiscing by a longitudinal slit, hairy.

Habitat: Argentina, province San Luis, collected by H.Blossfeldt as Lobivia no. 19.

In the variety the coat of white bristles is lighter and the red-brown spines are more numerous and up to 1 cm long, which we can distinguish as the variety rubrispina. There are however all gradations of spination from the dense woolly sort to the open spined varieties to be found and which were observed. The flower is the same. .

.....from H.Middleditch

Presumably this last brief remark means that the flower is the same irrespective of the variation in the spination. The observation about the variation in spination is echoed by the comment from J.Lambert in regard to other members of the aurea group. If the detailed description by Wessner (above) of the filaments is

interpreted correctly, the main body of the filaments are white, only the lowermost ring being carmine. When looking into the flower, or when glancing at a flower section, this will tend to give the impression of a red colouration at the base of the throat only, just as J.Lambert observes on JL 110. Perhaps it is only the lowermost ring of filaments which are carmine on JL 110, too?

My own plant of L.aurea v.leucomalla R.116 grown from seed by C.Deane was but slightly elongated globular when it produced flowers from about the equator. The very base of the flower grew out horizontally, the tube following a steady curve so that the corolla was held almost upright. The flower tube was a pale green, not obscured by scales and hair. The scales were slightly turtle backed, about 1 mm long at the pericarpel and about 10 mm long at the top of the tube, the lower half of the scales being green and the upper half brown; on the upper part of the tube the scales terminated in a slim pointed apex about 1 mm long, but at the base of the tube any such tip was too small to see with the naked eye. The size of scales observed was far smaller than the dimensions quoted (above) by Wessner, which may be accounted for to some extent by this being the first flowering of a young plant of small size.

Cutting the flower vertically in half exposed the filaments clearly. There were no filaments inserted in the lowermost 4 to 5 mm of tube wall, above which the filaments were inserted over approximately two-thirds of the height of the tube; above this was a gap free of filaments and then finally the throat ring. Thus only two series of stamen insertions were to be seen, not three as stated by Wessner (above). If an imaginary line were to be drawn horizontally across the flower section at about half way up the tube, then any filaments crossing this line were coloured wine red below the line and bright yellow above the line. Those lowermost filaments which did not cross this line were red throughout their length and the relatively small number of filaments (excluding the throat circle) inserted above this line were yellow throughout their length. Hence this colour pattern does not conform to that described by Wessner for this species (above).

LOBIVIA FALLAX SP.NOV. From H.Oehme
Translated by H.Middleditch from Kakteenkunde 1939

[from the latin] Globose to cylindrical, green, opaque. Ribs 12, acute, somewhat tuberculate, somewhat notched at areoles. Areoles 12-15 mm apart, lightly felted, later indistinct to absent. Spines 8-10, centrals one, swollen at the base, up to 4.5 cm long, greyish-red when young, very dark, later becoming grey, curved inwards slightly; radials 7-9, upper ones 2-3 cm long, appearance as the foregoing, lower ones 3, paler, directed outwards, up to 2.5 cm long, remainder finer, grey, up to 1.5 cm long. Flower 6-7 cm long, 5-6 cm in diameter, petals lemon yellow (later orange), oblong with a short sharp pointed tip, tall, funnel-shaped tube dingy pink, with scales and dark hairs. Ovary oblongate-globose, green, white-woolly. Stamens numerous, ivory white, in stages overtopping the short style with eight stigma lobes.

I name these plants, which fall into the genus Lobivia and are also to be placed in the complex of the yellow-flowering aurea forms, Lobivia fallax i.e. deceptive or delusive, as the description has caused me some disquiet.

The introduction in 1915 of the Echinopsis aurea found by Rose, which was placed by Backeberg in the Lobivia subgenus Pseudolobivia, was quite an event. It was the first real yellow-flowering Echinopsis to become known and and was imported in 1924 by Haage junior. In his 103rd annual catalogue of 1925, on page 18, Haage listed this species and observed that it possessed three different varieties of flower form.

In addition, various yellow-flowering plants of the same genus have come to us with the consignments from Argentina and thus even in 1931 I received the above named Lobivia fallax together with various other plants. It would be about 1926 that I saw the first plants named Echinopsis aurea with our respected post-master Fobe in Ohorn; it was the short-spined sort which conformed with the illustration in Britton & Rose The Cactaceae III Plate X, as well as in the body- and flower- form. From Fobe I received an offset which is still in my collection today.

I mention this because it does not match the current Lobivia aurea Type pictured in Backeberg's B.f.K. 57/17, so the plant illustrated must be one of the forms. This opinion of mine is not based solely upon a comparison of the illustrations, but I have gathered together in my collection all the forms of the yellow-flowering Lobivia aurea and made observations on them for a fairly long time in order to clarify the situation, bearing in mind that all these plants are imports,

It is perfectly evident that we have here a species with many different habitat forms! As however some named as good species probably belong in this form-complex and already a large section have been separated as varieties, it appears to me essential to study all forms with scrupulous care and distinguish them on a sound basis. To that end the approaching season for cultivation will be helpful. The plant which I have described here appears to me from its features to be well distinguishable from the already described spp. or vvs, but I have chosen the name fallax, deceptive or delusory, as there is always the possibility that "good species" closely associated with the Lobivia aurea Type will not retain their validity and will be attached as varieties. The description and photograph are of an imported plant in my possession.
.....from H.Middleditch

From the information which we have to hand from J.Lambert regarding the extent of the variation in the forms of L.aurea, it now appears that Oehme (above) possessed a very good grasp of the nature of the variation to be found within the aurea group - "a species with many different habitat forms". The suggestion is made by Oehme that some good species, having an affinity with the Lobivia aurea Type, could eventually have to recognised as varieties of L.aurea. It is evident that he came to this conclusion on the basis of the range of imported plants which he was growing in his collection. In K.u.a.S of 16.11;1965, W.Rausch relegated the

existing species closely related to aurea to varieties of aurea: leucomalla, quinensis, fallax, and shaferi, and others to synonyms thereof. This group has been divided into two sections (or just two names) by J.Lambert, the division being based on the presence or absence of red-coloured filaments.

From the original description of L.fallax it will be evident that the filaments are described as ivory coloured; whilst in the original description of L.aurea by Britton & Rose there is no reference to filament colour. However, the original description of L.aurea does include a finding location of Cassafouth. This spot lies well within the distribution area of the sorts of L.aurea with the red-coloured filaments and it would be reasonable to assume that the original Britton & Rose L.aurea did have red coloured filaments, despite the original description making no mention of this feature. However, both the original description of L.leucomalla by Wessner in Beitrage zur Sukkulentenkunde for 1938, and for L.fallax by Oehme in Kakteenkunde 1939, make no mention of any herbarium specimen having been deposited. Does this mean that strictly according to the ICBN Rules, these two names are invalid anyway?

.....from R.Mottram

The ICBN requirement for deposition of a Type specimen in a recognised herbarium only came into affect after 1953, so that it does not affect the validity of the names leucomalla and fallax in this respect.

.....from F.Vandenbroeck

When I came along to your Chileans' Weekend to show you some slides of my visits to South America, one of my pictures was of a plant which we had come across not far from San Jose del Morro in the Sierra San Luis, in 1986. The surroundings were an open woodland of low acacia-like trees, with lots of herbs. At that time I believed this plant might have been Echinopsis cordobensis. There were some Gymnocalycium growing in the same area.

.....from H.Middleditch

We were shown slides by F.Vandenbroeck from two locations in San Luis province, both tentatively identified as Echinopsis, but quite different in appearance. The ?Echinopsis sp. seen between Achiras and La Esquina was solitary, globular, a dark bluish green body, apparently with 14 or 15 fairly sharp ribs, whitish radial spines which either do not, or just, overlap those of adjacent areoles, with a wigwam of chestnut brown, dark-tipped new spines over the growing point. The second plant, a presumed Echinopsis cordobensis, has a very yellowish-green body, with 13 or 14 ribs, somewhat blunt, with perhaps half a dozen short, slender, greyish-white spines, spine tips from adjacent areoles being separated by a distance of up to about spine length. The first plant has eye-catching white spines over a dark body; the second has an eye-catching yellow-green body with relatively insignificant spines. In addition there were immediately adjacent to this second plant what may be offsets or equally well could be seedlings.

When Spegazzini gives a location of Villa Mercedes for his E.cordobensis, it may be suspected that this is a very general indication indeed. The actual finding place may be not just one or two km away from Mercedes, but 10 or 20 km or more distant from Mercedes itself. Spegazzini says that it occurs in "Prosopis woodland". Such vegetation may possibly be found some distance to the north of Mercedes - just like the acacia woodland from where these two Echinopsis were reported.?

.....from F.Vandenbroeck

We had a very good trip through Argentine at the end of 1991 when we were able to make a return visit to the Sierra San Luis. Once again we went to San Jose del Morro and relocated these same plants. We also found some more of these same plants at La Esquina and at Achiras. This time they were in flower and so proved to be not an Echinopsis, but forms of Lobivia aurea. This species has a wide habitat area and is extremely variable.

It is difficult to believe that any cacti should occur in the immediate neighbourhood of Villa Mercedes. We approached this town from several directions. The surroundings consist of flat and fairly lush grassy countryside with few or no possible cactus habitats and no "woodland" that I could see.

.....from H.Middleditch

Now that I have seen the slides of Lobivia aurea in flower taken in habitat near San Jose del Morro, it is obvious that the plant of ?Echinopsis sp. on the first of the above two slides (dark body, eye catching white spines) is indeed Lobivia aurea. However I have never seen a plant of L.aurea which bore any reasonable resemblance to the other plant, which has a yellow-green body, even accepting the recognised habitat variability of L.aurea. Hence I remain unconvinced that the presumed Echinopsis cordobensis is necessarily a form of L.aurea.

.....from F.Vandenbroeck

The plants found near La Esquina are larger, somewhat elongated, and less strongly spined than the plants seen to the south of San Jose del Morro. These two plants definitely represent two different species. The plant near La Esquina grows together with Gymnocalycium achirasense. The terrain near La Esquina is a very open hillside, only beset with scattered boulders and tufts of grass.

.....from H.Middleditch

At our 1992 Chileans' Weekend we heard an account from H.Vertongen of his trip through northern Argentina and the plants he saw on that occasion. This included a fine slide taken near Los Colorados of a tall plant with a fairly open but pretty fierce spination. The question was posed - what name should be put on this plant? At a previous Chileans' Weekend we had seen a slide taken by F.Vandenbroeck of Echinopsis leucotricha growing well over half a metre tall. But the relatively slim stem on the Los Colorados plant was the wrong proportions for Echinopsis leucotricha/melanopotamica. The height of the plant and the robust spination did not seem to be suitable for the name Lobivia aurea.

.....from G.Charles

Prior to leaving for our 1992 trip to Argentina we had in mind taking the road past Los Colorados so we

might be able to keep a look out for this plant.
.....from H.Vertongen

Approaching the hamlet of Los Colorados from Patquia, we took the road which leaves the track of the railway off to the left hand side. The red cliffs of the Sierra de los Colorados are over to the right. The road takes a sweep to the left and then crosses a dried up gulley. The plant on my slide is a couple of hundred metres further along the road and can be seen on the slope off to the right. From recollection it was about 40 cm high.

.....(later) from G.Charles

Yes, we did find that plant, or if not that one, its double. We had had the advantage of seeing some long-spined Lobivia aurea near Chepes Viejo, before arriving at Los Colorados, and then subsequently seeing more plants near Catamarca which were similar in appearance to those at Los Colorados. We would have no hesitation, now, in putting the name Lobivia aurea on the plant shown to us by H.Vertongen which he photographed near Los Colorados.

.....from J.Piltz

The Lobivia fallax which we found on the eastern parts of the Sierra Velasco were always growing on granite like rocks and displayed quite fierce looking spines. Near Senor de la Pena in the Sierra Mazan we came across plants with very hairy flowers.

.....from H.Middleditch

The Lobivia aurea v.calochrysea seen near to the south of Alemania and shown to us on slide by K.Gilmer, (Chileans 1993 Weekend) also looks quite similar to the plant from Los Colorados. Both look quite different to the green, low growing, relatively weakly spined plants of L.aurea on the photographs taken by F.Vandenbroeck in the Sierra San Luis. Perhaps the L.aurea growing with herbs, grass, and shrubs in Cordoba and in San Luis all grow quite short and fat, whilst those from drier parts further west, and in the Rio de las Conchas in Salta, growing taller and more strongly spined?

.....from K.Gilmer

The Lobivia aurea v.calochrysea which we saw at TG3 (near Santa Rosa, Rio de las Conchas valley) were globular to elongated globular in shape. Most of them were about 5 or 6 cm tall, but we did find one specimen that was 10-12 cm tall, quite columnar with stout spines projecting well away from the body. .

.....from E.Scholz

In the valley of the Rio de las Conchas we came across Lobivia calochrysea at 1460 m just beyond El Carrizal, and again at 1420m at El Carrizal. The plants were growing on the slopes right next to the road.

.....from J.Piltz, K.u.a.S. 29:4;1978

In the Quebrada Cafayate, near Santa Barbara, we saw Opuntia sulphurea and a specimen of Denmoza erythrocephala. Shortly afterwards we found in a small side valley a population of Gymnocalycium delaetii, together with specimens of Lobivia calochrysea. .

.....from G.Charles

We would be four or five km north of El Carrizal at GC 45 when we found both Lobivia calochrysea and Gymnocalycium delaetii .

.....from H.Middleditch

Plotting on a map all the foregoing reports of Echinopsis silvestrii and Lobivia calochrysea being sighted in the valley of the Rio de las Conchas, the Lobivia calochrysea extend north down the valley as far as GC 45 (a few km north of El Carrizal). There is then a gap of a good 25km before Echinopsis silvestrii MN 113a which was found a km or so to the south of Alemania; from there, this Echinopsis than extends further to the north. Are there any other reports of either Lobivia calochrysea or Echinopsis silvestrii being found in this "gap" between GC 45 and MN 113a?

There is a surprising similarity in the appearance of Lobivia calochrysea and Echinopsis silvestrii. In particular, we saw at our Chileans' Weekend a photograph taken by H.Vertongen of a plant roughly twice its diameter in height, neither in bud or flower, which could hardly be allocated to one or other of these sorts with any reasonable certainty. This photograph was taken at Las Curtiembres. The Vertongen site of Las Curtiembres lies roughly right in the middle of this gap between GC45 and MN113a. It would be interesting to hear if the plants at this Vertongen site were identified.

.....from H.Vertongen

When I was at Las Curtiembres in 1992, a rocky platform was seen in bushy surroundings close to the road. Three plants were collected there, from an area of hardly more than a square metre. These were not in flower and it was thought at the time that they all belonged to the same species. However, when the plants flowered later, in the greenhouse, it transpired that two of them produced white flowers, so were Echinopsis silvestrii, but the third one displayed a magnificent yellow flower and so was Lobivia calochrysea.

.....from J.Lambert

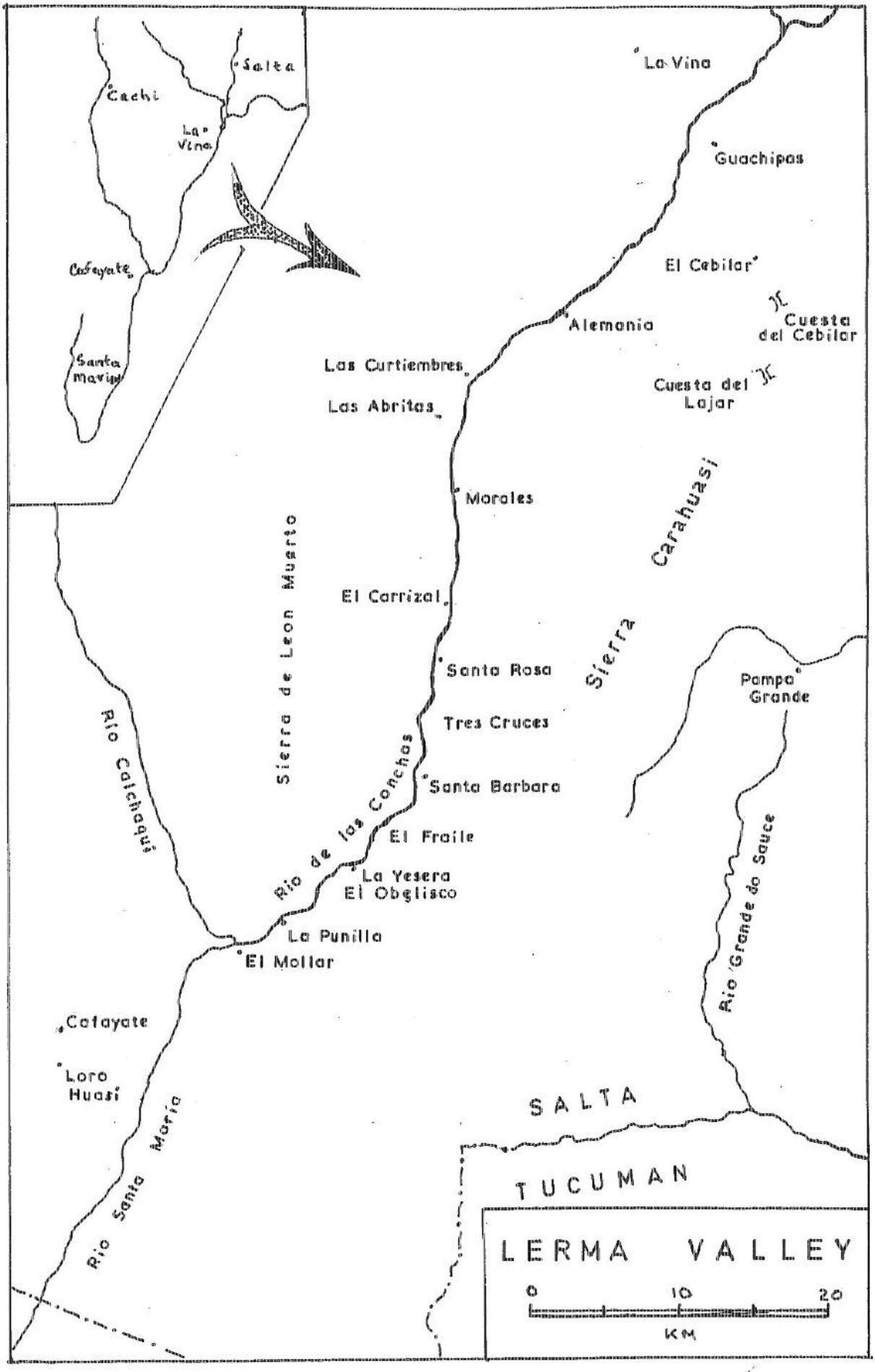
Apart from the quite different flowers, the Lobivia fallax v.callochrysea has stronger central spines and becomes more elongated with age; whilst E.silvestrii bears shorter central spines and remains more subspherical. Hence I would say that the plant on the photograph which was sent to you by H.Vertongen belongs to Lobivia fallax v.callochrysea.

.....from G.Charles

When we were in the valley of the Rio de las Conchas I do not recollect seeing any Lobivia aurea v. calochrysea with any offsets - they were all solitary. Consequently I am inclined to suggest that the offsetting plant photographed near Las Curtiembres by H.Vertongen is Echinopsis silvestrii.

.....from H.Middleditch

Las Curtiembres lies roughly half-way between Alemania and GC45 and thus extends the distribution of


Salta
Cachi
La Vina
Cafayate
Santa Maria
La Vina
Guachipas
El Cebilar
Alemania
Cuesta del Cebilar
Las Curtiembres
Las Abritas
Cuesta del Lajar
Morales
Sierra de Leon Muerto
Carahuasi
El Carrizal
Sierra
Santa Rosa
Pampa Grande
Tres Cruces
Rio Calchaqui
Rio de los Conchas
Santa Barbara
El Fraile
La Yesera
El Obelisco
La Punilla
El Mollar
Rio Grande de Sauce
Cafayate
Loro Huasi
Rio Santa Maria
SALTA
TUCUMAN
LERMA VALLEY
0
10
20
KM

E.silvestrii further up the valley of the Rio de las Conchas. However, the location of ES 14c Echinopsis silvestrii is not really clear from the available data. .

.....from E.Scholz

But this was found at the same place near El Carrizal as the Lobivia aurea was growing. In fact these two sorts can be found growing together for some distance north from El Carrizal, down the Quebrada Cafayate. Strictly speaking, it was not quite the same place, as the Lobivia aurea were found down in the bottom of the valley and the Echinopsis were found after we had climbed up the hillside. Trichocereus angelesii also grew along this stretch of the valley.

.....from H.Middleditch

This brings the distribution for E.silvestrii even further still upstream.

.....from J.Piltz

We understood from D.Herzog that he collected five plants near Tres Cruces (in the valley of the Rio de las Conchas) supposing them to be all the same, but subsequently one of them produced a white flower in cultivation with him. Some time after we had made our first visit to the valley of the Rio de las Conchas, I received from D.Herzog a photograph taken near Tres Cruces of an Echinopsis with the usual long, white flower which has far fewer petals than on L.callochrysea.

.....from H.Middleditch

Which brings the distribution of E.silvestrii further upstream still. The statement in Rausch Lobivia '85 that Lobivia callochrysea "often grows together with Echinopsis "tubiflora" and is difficult to distinguish from it when not in flower" would thus appear to be substantiated by the foregoing data.

.....from E.Markus

You have spelt Lobivia calochrysea with only one "l" but I think that this is a mistake, as it should be L. callochrysea.

.....from H.Middleditch

On referring to Ritter's Kakteen in Sudamerika it may be seen that he does indeed spell the name as callochrysea, giving as a synonym the name he first used in the Winter 1960 seed catalogue. On referring to that catalogue, it may be seen that the name appears there as "Lobivia calochrysea" i.e., with one "l". So which spelling should we be using? The callochrysea presumably comes from the Greek chryso meaning gold (Stearn, Botanical Latin 1973) and "calli- (in compounds) = beautiful". So do we adhere to etymological exactitude or to the first published spelling?

.....from R.Mottram

The name callochryseus is from the greek "kallos" meaning beauty and "chryseus" meaning golden - hence 'golden beauty'. The spelling of the greek word kallos is sometimes written as kalos, though then it is more likely to mean 'beautiful' i.e. the adjective. However, it seems to me that 'callochryseus' meaning golden beauty is a noun, and should be placed in apposition to Lobivia, with the termination retained as masculine. Thus we would have Lobivia callochryseus. As the spelling of kalos or kallos is a bit mixed, and the nomenclatural rules overide any other choice, the spelling used by the author at the place of publication ought to be retained i.e. as callochrysea.

A RETIRING MICRANTHOCEREUS? From S.Ratcliffe

Some years ago - possibly a good twenty years ago - I acquired a nice plant of Micranthocereus polyanthus which has always been kept in the warm section of my greenhouse. When I obtained this plant it was a fairly small seedling. Not only has it grown quite well, but every few years it starts to grow a new stem from the base of the plant. At one stage, two or three years before the plant had flowered, the oldest stem looked as though it had stopped growing, then started to show signs of being unhappy followed by shrinking, drooping and losing its normal colouring. Eventually this stem had to be removed. As far as I am aware, it had not been subjected to an odd night of low temperature, or suffered from scorch. So I am at rather a loss to account for the loss of the one stem. Unless it is that these plants do not like to be left bone dry and at a complete standstill for a few months over our winter. For some years now I have made a habit of giving my Micranthocereus, Uebelmannia, and others which seem to prefer not to have a complete winter rest, a little trickle of water now and then over the winter time.

Flowers first appeared on Micranthocereus polyanthus when the tallest stem reached about 10 or 11 inches in height. At the present time the two oldest stems are about 15 inches tall and they have both been producing a show of flowers for several years. There is usually a good show of flowers in autumn but then this will be followed by an odd flower opening at intervals. There is still one flower about to open at the moment, in early February. The new growth is round about one inch each year and the flowers always appear from the topmost part of the stem, so I suppose they appear on the new growth for that year.

My Micranthocereus aureiazureus was grown from seed in the 1970's. The main stem grew quite well and then after some years a new stem appeared from the base; thereafter, at intervals of two or three years a fresh new stem would start to grow from the base. But every so often, the oldest stem would stop growing, then look sick, and finally, after many months, have shrunk so much that it was removed in case it resulted in loss of the complete plant. So despite the emergence of new stems, it has never had more than three or four good stems at any time.

.....from M.Williams

About five or six years ago I purchased a plant of Micranthocereus from Abbey Brook, where it had been standing in the middle of various nondescript plants. One of the stems had clearly shrivelled up, so that it did

not look very pretty. Which probably accounted for the very attractive price. This has grown for me, and although the stems would barely exceed a foot in height, it has also flowered. The tallest flowering stem is now looking very sick and bearing in mind what the plant looked like when I bought it, the loss of the oldest stem may be simply the normal process which the plant adopts. Of course, it may only occur in cultivation rather than be an inherent feature of the plant

.....from A.Hofacker

This problem with Micranthocereus is not new to me. In my own collection I have had just the same experience with M.aureiazureus, and also with some Arthrocereus. But it is indeed no disaster if a stem dies from time to time, because new stems are always appearing. I believe that it is simply a natural process - if the stem is old, it dies off. My usual practice is to cut off a stem that looks as though it is dieing off.

.....from N.Tate

I do happen to have a Micranthocereus densiflorus which was grown from NCSS seed, sown in February 1987 and it exhibits exactly the problem mentioned by Andreas Hofacker. Naturally I assumed that this was the result of my own indifferent management as I am somewhat notorious locally for underwatering my plants. It is not large enough to flower yet.

.....from R.Moreton

Having raised various Micranthocereus from seed, and becoming dubious that much of the seed had been wrongly named, I purchased a plant of Micranthocereus aureiazureus. I would guess that it is about ten years old now. It had two stems when I acquired it, the taller of the two now being about 25 cm high, whilst the three newer stems are approaching that height. One of the older stems looks as though it is getting rather decrepit, just as described by A.Hofacker. Another problem I have had with M.densiflora is that after flowering the stem does not grow away again normally, but developes a distorted area before resuming normal growth.

The Micranthocereus streckeri is now about 7 years old from seed and about 32 cm tall, with one new stem from the base and another just starting. It caught the eye of P.Braun last year who said that it would need to be another 10 cm tall to flower. However, the original stem is beginning to take on the appearance of those Cerei which one commonly used to see in collections, which gave the impression that they have stopped growing and looked sort of “tired”. All these Micranthocereus will be kept at a temperature of about 50°F over the winter

.....D.Angus

Three or four years ago I sowed seed of various sorts of Micranthocereus with fairly good results. The seedlings were planted on into 2 inch square pots in which they are still growing. Micranthocereus polyanthus is putting on champion growth, a two and a half year old seedling now being 4 inches tall. But M.streckeri has not grown anything like as well; one four year old plant is still only 2 inches high with four small offsets from the base. Others a little longer are also offsetting from the base. They also show quite a lot of variation in spine colour. All these small pots are kept in seed trays without drainage holes so that in summer about one inch of water can be poured into the tray and the plants left to soak it up.

.....C.Holland

Luckily I do not seem to have had any problem with this genus, although I did have a struggle with an imported plant of M.aureiazureus, which was very slow to get away. One plant which I have had a for a very long time is M.densiflorus and I cannot even remember where it came from, nor recall its original dimensions, but it was probably a small, single-stemmed plant. It probably started to flower when the two main stems were around 2 to 2½ feet high and they reached something like 3 or 4 feet tall before the plant was accidentally allowed to topple over and the two main stems were broken off. These were put into a half pot and stood on bottom heat to encourage them to reroot - and these two re-rooted stems now flower regularly each year. One of the younger stems on the original plant has now reached the requisite height and is also producing flowers. New stems grew again from the base of the old plant, but no new stems were ever formed from around the top of the broken stumps. Flowering usually takes place in the middle of winter and is quite prolonged, maybe extending up to a month or more, with the lowest flower buds opening first and so on. The flowers appear to be normally borne by last year’s growth, but maybe by this years also but to a lesser extent. Perhaps the December flowers on last year’s growth and the January flowers on this year’s growth?

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

Still packed close together in a tray with other seedlings are several Micranthocereus in a very gritty compost with quite inadequate root room for their present size. There is M.polyanthus HU 123, including two seedlings from 1992 now a staggering 3 inches tall and an older example from around 1990 which is now about one foot high; also a somewhat dehydrated six inch tall double headed M.densiflorus HU 221 also from 1990, which may well have suffered from the under-tray heating elements having overheated the roots locally. Despite growing in this same patch of the tray, but totally unaffected by this problem, is a 17 inch tall M. flaviflorus HU 389 which now has two basal branches of between one and two inches in length. In addition I have several seedlings of M.uillianus HU 439 of unknown age, three of which are growing together in one of the trays and are a mere five inch tall, while seven others are all in one 2.5 inch diameter pot and they range from seven inches to fourteen inches tall! I am quite sure that if they were given more root room they would grow a lot better. There are also one or two Micranthocereus crammed into a little corner of the greenhouse with other Brazilian cereoids which are in 3 inch pots - far too small - as well as being in a very gritty compost

which must surely be very poor now. But no sign of stem die-back on any of them!
.....from G.Charles

In my own collection I do have a number of Micranthocereus but I can not recollect any of them giving me any problems with an older stem ceasing to grow and shrivelling up. Most of these plants were acquired as fairly young seedlings and for several years they almost seemed to stand still, their rate of growth was so slow. Eventually I discovered that I was not really keeping them warm enough or giving them enough water. But once I found out that they enjoyed warmth and plenty of water, they started to romp away. They put on growth towards the end of the year, during September, October, and November. Not only that, several of them will flower at this same time. Many of them flower before they produce any branches, on stems from as short as 8 inches tall from seed. Micranthocereus polyanthus will flower at this height and M. densiflorus also flowers at about that height. But M.streckeri is quite different, it has to be much taller before it will flower. Not only that, it has a cephalium in a groove just like Espostoa, whereas all the other Micranthocereus have a dense growth of bristles at the flowering zone, but not a depressed groove over the width of several ribs.

My plants are kept at 10°C over winter with no water or mist spray at all, but in summer they do seem to like a lot of water, so I wonder what would happen if they were inadvertently allowed to go dry?
.....from C.Wolters, K.u.a.S. 2,42;1991

On an expedition in July 1986 I was able to observe and study Micranthocereus densiflorus in its natural habitat. It grows in a beautiful area, where bizarre rock formations of multi-coloured rock strata rose abruptly out of the extensive arid plain. Close besides massive stands of Discocactus boomianus, it was also accompanied by a dense white woolly Pilosocereus, Melocactus erythracanthus, M.albicephalus, as well as Euphorbia spp. and various bromeliads.

At first sight both Micranthocereus densiflorus and M.polyanthus exhibit a certain similarlity to one another. But this impression is misleading. Whereas M.polyanthus attains some 1.25 m in height, being the tallest Micranthocereus, M.densiflorus appears to be the smallest member of the genus at only 30-50 cm tall. As soon as both spp. flower, they are easy to distinguish. The flowers display their beauty from autumn to winter.
.....from C.Norton

It will be some four years ago that I bought a seedling of Micranthocereus streckeri from D.Bowdrey, when it would be roughly 2 or 3 inches tall. It now has three main stems as well as another three young stems, all branching from the base of the plant. The tallest stem will be about 15 or 16 inches long by now, but it has not flowered yet. If it had been planted out in the bed with a free root run the temperature would probably be too cool in winter nearer the floor, so it is kept higher up on a shelf. The greenhouse is kept at a nominal 50°F over winter. Last winter one of the older stems went square in the middle of its height, as if it was shrinking, but it filled out again by the middle of summer. It is possible that it may prefer to have some moisture in the winter, but it could be a very tricky business watering this plant in winter time. I do wonder if perhaps the roots have access to some moisture in their habitat, even during the dry season?
.....from P.Bint

My one large plant of Micranthocereus which is in a 6 inch half pot, still has the two original stems which were there when I acquired it, but they are now rather dull and dirty. The epidermis is still green, but they do not really look very happy, and they have not put on any growth for two or three years. But they are not showing any sign of shrinking. The newer stems growing up from the base are in good condition and steadily putting on height each year. In addition I have half a dozen seedling Micranthocereus growing together in the one larger pot and they are certainly doing well. Of course they will have more root room than the older plant, the larger pot may not get as hot in warm weather, and the compost will lose water more slowly, all of which the seedling plants probably appreciate.
.....from A.Hofacker

It is Micranthocereus violaciflorus which really gives me most problems with dieing of old stems. Indeed it is one of the most difficult cacti I know to grow in cultivation. We have been on tour in Brazil and the locations of all the Micranthocereus we saw were rather similar, being fairly flat and very stony with much solid rock, a few patches of grass, and no shade from the sun. There was more grass growing at the location of M.streckeri, but no other real difference. But the habitat of M.violaciflorus was indeed a little bit different, as they grew more amongst and under the bushes and shrubs. Most of the plants we saw were solitary and had not produced any offsets.

I do not let my own Micranthocereus dry out in winter for a long time. When we were out in Brazil in their winter, there was a lot of rain for this region, together with a day temperature of 25-30°C, a good temperature for encouraging growth. So I suppose that this means that these plants also grow in winter and therefore need water at that time.

AT THE HABITAT OF MELOCACTUS VIOLACEUS. By F. Carrera

Together with L.Rullf, a search was made of the Restinga (sandhills) in the region of a Praia Seca (dry beach) on the coast north out of Rio de Janeiro. Here, some 300m from the ocean, we found some specimens of Melocactus violaceus. The temperature was very high, between 35 and 40°. The humidity of the air was very high and a constant breeze could be felt. The area has suffered great devastation, because of the indiscriminate growth of housing. Only 20% of the area has been preserved, where typical vegetation can be found: Bromeliads, Cacti and shrubs a a few species of orchids.

Walking round the area we found some cacti like Pilosocereus arribadae, both in flower and bearing

fruits; a species of Selenicereus growing under the shrubs, a species of Vanilla; some orchids; and some bromeliads, all growing in the remnant of the original habitat area. We also found many cherry-like fruit trees and nearer the sea coast some species of Vriesia. So far, no Melocactus.

After searching through the small area of the sandhills we came across a small area of shrubs with dense vegetation. Going into this patch, we came across a spectacular specimen of Melocactus. After taking a close look, we realized that it was an old Melocactus violaceus. The cephalium measured 10 cm and the body was 18 cm in diameter. Close by we found another, younger plant with a 10 cm stem but without a cephalium. The violet colour of the spines probably confirms the species name. Only 15 m from that spot we then found some more Melocacti. Unfortunately many exhibited signs of having been deliberately damaged; we found some plants where the spines and stems had been damaged by fire. These had probably been burnt in the process of fire-clearing the land, human settlement pushing urban development into rural areas.

The local community does not like the Melocacti because they can remain hidden by the sand; children step on them and hurt their feet. Consequently, adults cut and burn all the Melocacti to avoid such accidents. Unfortunately the farmers and the building companies burn off the land to destroy the vegetation. There is a pressing need to make people more conscious of the importance of preserving our natural resources, by an intensive education programme and by enforcement of environment protection.

Under a large flowering Brasiliopuntia brasiliensis we found yet another M.violaceus, this time to our great surprise in flower and fruit. From the look of the cephalium it appeared to be an old specimen. We photographed and then collected the fruits; the flowers were still open at sunset. We measured the temperature of the sand immediately next to the plant and it was 56°C. We also found a rich substrate of peat and humus under the sand, where the roots of the Melocactus were located. They spread over a distance of 5 m.

To germinate the seed it is necessary to reproduce the habitat conditions. The seeds are sown in a mixture 40% peat, 30% sand, 30% humus, which is washed with a solution of 50% N-P-K 10-10-10 and 50% marine salt. then kept in a very hot greenhouse, at some 35-40°C. Now we wait for results.

.....from K.Preston-Mafham, At The Chileans' 1989 Weekend

On the dunes at Marico, en route from Rio de Janeiro to Cabo Frio, we found Melocactus violaceus growing on white sand. They are extremely difficult to grow - I did collect some seed and they germinated but the seedlings have no vigour at all. Has anyone tried growing them from seed on sand?

.....from R.Ferryman

I have some M.violaceus which are now six years old, grown from seed. They were grown on a mixture of sand and grit.

.....from K.Preston-Mafham

So it looks as though grit and sand is the secret for the compost, instead of peat. These particular plants had a pink fruit, but much further north we found a very similar plant with a white fruit.

STICKING TO A GOOD REMEDY From D.Angus

Every so often I seem to suffer from a plague of sciara fly in my greenhouse. One method which I had previously adopted was to use a smoke type of insecticide - close all the vents, light the touchpaper, and retire out of the greenhouse, shutting the door firmly. Left in the enclosed greenhouse, the smoke hopefully penetrated every nook and cranny, disposing of unwanted pests. Afterwards the greenhouse had to be very thoroughly vented until all remaining traces of the insecticidal smoke were removed. If this was not carried out thoroughly you could feel traces of the vapour catching your throat. This method was impracticable for use in my new greenhouse and something else had to be devised, When the dreaded sciara fly re-appeared, none of the supposed remedies seemed to have any real effect. More out of desperation than anything else I decided to hang up two or three sticky flypapers in the greenhouse; these are about the size of a post card and yellow in colour. They were hung in fairly close proximity to the plants, not up in the roof, but placed so that it was difficult to catch them inadvertently when doing any work in the greenhouse, or when lifting plants on or off the bench. It rapidly became obvious that these sticky papers were catching quite number of sciara flies; they continued to do so throughout the season, even though there was no evidence of the pest doing any damage to my plants. So now it looks as if I may have found a satisfactory method of keeping this pest under control. .

.....from F.Wakefield

These sticky yellow flycatcher sheets, which may a be a little larger than the size of a postcard, certainly catch no end of sciara fly. It is important to put them just over the top of the plants in the greenhouse, as the sciara fly do not rise much above the top of the plants. They will be quite an effective method of control, but they cannot be expected to eradicate the problem. If the larvae once get a hold, then a systemic may need to be used; or as an alternative, Fison's soil pest killer can be used, either mixed in with the compost, or sprinkled over the top of the compost and watered in. It really is necessary to get rid of the larvae stage first, and then the sticky flypaper can be used effectively to keep these pests under control. I may add that a few plants of Butterwort and Sundew around the place help enormously.

.....from G.R.Allcock

Having used this sticky flypaper in my own propagator, I am able to confirm its effectiveness in keeping sciara fly under control. In addition, I do have one or two succulent pelargoniums in the greenhouse and having found these covered with white fly on one occasion, I put a sticky flypaper close to these plants and it as most effective in reducing the white fly.

.....from A.Hogg

Our property is at a place which used to be a mushroom farm and in warm weather there are thousands of

sciara fly around here. As far as possible I keep the greenhouse closed but the ventilators have to be opened in very hot weather and that lets in these pests. By simply sitting in the greenhouse and watching the sciara fly it is possible to see that they come back repeatedly to one particular plant; this is their host plant and if when it is examined it is already far gone, the best thing to do is to dispose of it. The flying insects can be tackled by using Fumite G.P. smoke cones, making sure that you are out of the greenhouse when the fumes are still potent. The grubs can be dealt with by Jeyes fluid, used at disinfectant dilution; the compost can be watered with it, or the pots soaked in it, but it should not be sprayed on the plants as they definitely do not like it. The effectiveness of this treatment can easily be demonstrated, simply by dropping a couple of sciara bugs into it - they are dead in a matter of seconds. Try the same thing with any of the organo-phosphate insecticides and the bugs will go on happily crawling around in it for ages. If systemics are supposed to operate by poisoning the insects which suck the juices out of the plant, I never see any point in spraying a systemic insecticide solution on to the plants. Surely most of the water taken into the plant will enter via the roots, so why not just water the compost, or better still soak the pots in a solution of the insecticide?
.....from J.Brickwood

Following my success with growing Parodias from seed, I evidently got too rash and exposed my pots of seedlings to a more open environment too early in the year. The result was that they were attacked by sciara fly.
.....from R.Gooch

The sticky yellow papers which can be used to trap sciara fly have been around for some time now, and I use them fairly extensively in the greenhouse, more as a monitor of what comes into the greenhouse than as a really effective cure all. They do indeed catch a fair number of sciara fly, but knowing the short life cycle of these creatures (I believe that it is about ten days in the fly stage), this is not a cure-all for the problem they create. When I wrote to PBI on this subject some years ago they said that control depended upon how many sources the flies came from! But I did not really understand what they meant by this! Dilute Jeyes fluid applied to the potted plants (unfortunately I do not recall the dilution rate) will kill off the grubs, but it is rather a smelly process. The most effective control that I know of is an ICI product called Dimilin - a wettable powder. This is used for control of sciara or mushroom fly in commercial mushroom farms. As far as I am aware it is not available as a retail item. The last carton I purchased, some years ago, cost over £40 for a kilo or so. It is very economical in use but no-one will confirm its shelf life. It works as a drench to the potted plants, or applied as a powder to the compost mixture before sowing, or potting, etc. The effect is to prevent the grub from completing its metamorphosis and it dies as a consequence. Treatment of the flies alone is a complete waste of time as, if they are seen, it is almost certain that their eggs will have already been deposited. If I remember correctly, the treatment is effective for about 40 days or so. But, with a bit of luck, by that time it will have eliminated the source of the problem, provided that lies within the greenhouse. An obvious way to minimise the problem is to keep the garden compost well away from the greenhouse!
.....from G.Charles

Dimilin is certainly effective against sciara fly but it is very potent and needs to be handled and used with proper caution. The cost will now be nearer some £60 kilo per packet, which will last for many years as only a very small amount is required for each application.

In addition to the sticky yellow pads which are suitable for catching sciara fly, one can also obtain sticky blue pads, which can be used to catch western flower thrips. These are even worse pests than sciara fly - until about three years ago they were a notifiable pest but they have now become so widespread that they have been delisted. They are terrible, eating pollen and flower petals, ruining what would otherwise be good flowers. The real problem with these western flower thrips is that they are virtually indestructable, so that catching them on a suitable sticky pad seems to be the only available method of control.
.....from H.Middleditch

A few comments on the problems with sciara fly appeared in Chileans No.31.

COLD COMFORT OR A CHILLING STORY from J.Brickwood

About five years ago, due to the increasing need to devote more bench space to my ever-growing collection of Parodia, I moved all my Rebutias and Lobivias into an old cold greenhouse. Since I have never over-wintered any of my plants in an unheated greenhouse before, I expected them all to drop dead with shock, especially as we had - at least for this part of the country - quite quite a prolonged cold spell over their first winter under these conditions. Instead they gave the impression that they had never been healthier and flowered magnificently in the following summer. Now all my Sulcorebutias, Echinopsis, and denser spined Matucanas and a good many others are overwintered in the cold greenhouse. Last year my Acanthoalyciums and a few Gymnocalyciums went in with them. Losses of these have been insignificant, in fact no more than in the heated greenhouse. Invariably they were not so much fatalities as plants which were discarded due to marking caused by the odd inevitable water drops.

The plants in the cold greenhouse are all kept bone dry at the roots from about the first week in October, right through until at least April. They get no ventilation whatsoever during this time. The argument for ventilation during dormancy has no logic; it only allows the temperature to lower even more and adds to their sufferings! What about our European counterparts who take their plants indoors or put them in the cellar over winter? Contrary to what might be thought, a lack of ventilation does not in my case lead to condensation problems - I get more of those in the heated greenhouse. In both greenhouses my plants only get ventilation when in growth.

Generally the cold greenhouse plants have a shorter growing season than the heated plants - at least two months shorter. Now, at the end of March, my heated plants have already had two generous waterings, are growing well, and some Sulcorebutias which I keep in that greenhouse are in full bud. It will be at least another 4 to 6 weeks before that happens in the cold greenhouse, yet they are only a couple of feet away from each other. Perhaps the reason for my success with the cold greenhouse is simply its location. Here on the south coast severe frosts are rare. For the last few years the few frosts we have had are usually only down to about minus 1 or 2°C, which means that the cold greenhouse plants probably do not go below freezing point anyway.

.....from D.Rushforth

During the winter of 1995-96 I had put most of my Sulcorebutias in an unheated greenhouse as they were supposed to be hardy, but not one survived!

.....from R.Moreton

Having acquired some information from various sources about the habitat of both Rebutia and Sulcorebutia, I consigned two large trays of seedlings (one of each genus) to my new cold greenhouse. They were both bone dry when they were transferred to their new quarters in the autumn. The lowest outside temperature during the winter was minus 8°C, which wiped out the Sulcorebutia, although the Rebutia seemed to survive.

.....from D.Aubrey-Jones

Over a previous winter I tried some Sulcorebutia seedlings out of doors to see whether they would survive, but they all expired. It seemed to be the combination of both wet compost and low temperature that brought about their demise. So now I have put them under a sheet of glass which is intended to keep them sheltered from all but driving rain, but leaves them still exposed to fresh air and ambient outside temperatures.

.....from M.Lowry

Now that my old small greenhouse has been re-erected I decided to put a lot of my Rebutia, Sulcorebutia, and Weingartia into it and leave them there unheated over the winter. They seemed to be alright until we had a severe cold spell around Christmas to New Year. After a day or two of this, I looked in to see how they were getting along and was rather concerned to see the max-min thermometer on the bench next to the plants registered a low of minus ten. More than that, putting a hand on one or two of the plants gave the clear impression that they were like a block of ice, frozen solid. Barely a couple of months later it became quite clear that the Sulcorebutia had been virtually wiped out, whilst many of the Weingartia were not in a very good condition. But all of the Rebutia seemed to have survived.

Although none of these plants had had any watering or spraying since October, I do believe that there was a vestige of moisture remaining in the compost, which may have contributed to these losses.

.....from R.Allcock

A number of my plants had been put into an unheated greenhouse for the 1995-96 winter and they fared very badly indeed. It was not just a matter of which plants were unable to resist the cold. There was a cutting off a peruvian Trichocereus which grows with a free root run in my large greenhouse - a plant which puts on a fair amount of annual growth, but hardly hardy growth. This rooted cutting was completely destroyed. There were another two rooted cuttings of which the new top growth has been slow and hard owing to the alkaline nature of my compost. The lower portion of both plants which represented the length of the original cutting has been reduced to mush whereas the hard top growth has survived. Even one or two Echinopses have fallen victim to the cold, but not all the plants of a given species; of the one species, those which were lost were in a more open situation on the bench, whilst those which survived were close to each other and were also larger plants.

.....from C.Backeberg, A report of my 1933 journey; Der Kakteenfreunde, Vol3. No.5 1934

Since my visit to Lake Titicaca, the dry season had arrived with a vengeance, even the brief rains and the passing clouds had ceased to appear and an endless blue sky stretched over the highland. One fine day the winter really gripped. The thermometer fell at night to minus ten degrees and the coldest period was yet to come.

Even now it can still become very hot during the day and in the midst of this extraordinary marked difference in temperatures, most Lobivias and Rebutias are now in growth. Heat and cold do not determine their appearance in the least. But it must be said that we have to keep these sorts quite cool in winter, especially if we wish to produce many flowers. although on account of their plump condition in cultivation with us, these plants may not be designated as strictly winter hard.

We can only describe as winter hard those sorts which even at their habitat location are exposed to marked dampness, and those are only very few. The highland is even covered with hoar frost, but otherwise completely dry. On the other hand many choice highland sorts would seem to be suited to open air cultivation in the summer.

.....from R.Hillmann. At The Chileans' 1996 Weekend.

From Iscayache we direct our steps into the hills to the west, towards Curqui. Here in daytime the temperature close to the ground can rise even to 30°C, but every night all the way through summer and winter, the temperature mostly drops below freezing. It had been raining quite heavily so the soil was very wet when we were pitching camp here; but it became frozen during the night. If we are up and about at dawn, the ground is hard. But if I push my finger on to the ground, it goes down into the soil. So it is only the surface that is frozen, but not down into the ground. If our plants in cultivation have a wet compost and we allow the temperature to drop to minus 5 or 10°C it will result in the plants perishing. But the Rebutia growing here are level with the ground and have a big tap root that does not have to endure freezing temperature, so they can survive. .

.....from H.Middleditch

In the issue of K.u.a.S. for August 1994 there is an article by R.Kraus providing habitat records of temperature measurements made over a 24 period for the surface of the ground and also at depths of both 8 cm (3.4 inches) and 15 cm (6 inches) below the surface of the ground. These experiments demonstrated clearly that even when the temperature of the surface of the ground fell below freezing during the course of the night, the ground beneath remained above freezing point. These recordings had been made in northern Chile in areas where Tephrocactus ignescens grew. Temperature measurements had also been made over a 24 hour period at the outer surface of one of these plants, at the centre of the hummock, and within one segment. All these temperatures remained above freezing even though the temperature of the surrounding air and ground surface fell below freezing during the night. The author summarises his findings as :"Opuntia ignescens always has a warm foot even when the outside temperature is near minus 10°C."

A few years ago we endured quite a hard winter here in the north-east with temperatures below freezing point during both day and night for a good week or more, together with an absence of warm days (apart from the odd hour or two) for almost a month. Sometime in early March I had occasion to try and dig a hole in the soil in the garden. It was very puzzling to find the spade refusing to go further down than the top half inch or so of loose surface soil and only after the dint of much effort was it possible to remove a rock hard slab of soil roughly a couple of inches thick. In this way it became apparent that the ground was still frozen absolutely rock solid from the effects of winter, the modest effect of the late winter sun still having failed to thaw out other than the immediate surface. A better example of a close approach to the tundra perma-frost it would be difficult to find.

Consequently it would appear that the outdoor winter temperature regime in many parts of this country does not compare favourably with the effect of night-time freezing in the higher parts of the Andes. .

.....from A.Johnston

A few of my Tephrocacti have been stood on a low wall in a garden shelter to see how they get along in our winter. There are also one or two dwarf Opuntia and an Austrocylindropuntia with them. If the wind is in the wrong direction when it rains, then they get wet. They have been there for three or four years now and all of them have survived. In particular Austrocylindropuntia verschaffeltii has grown well, although of course it is of shorter stature than the plant of the same species which is in the greenhouse.

Apart from those few plants, I keep all my Tephrocactus, Austrocactus, and Pterocactus as well as a few other sorts in a separate greenhouse which does not have any heating. They have now survived six or seven winters there. A wet winter is probably worse than a cold one; some days the plants were wet with condensation and occasionally some of the plants even had ice on them. A few winters ago one of the panes of glass had slipped allowing the rain to soak the single Gymnocalycium (a mihanovichii) in the middle of winter, but it even survived that experience. A Notocactus mammulosus has so far survived one winter in there. The seedlings from another sowing of BDH Oreocereus, now about two inches high, have been in there overwinter and came through unscathed. Only one or two Tephrocactus alboareolatus seem to be unhappy. So far I have not tried any of the T.sphaericus sorts in the cold greenhouse and certainly none of the articulatus sorts. Recently I was doing some maintenance work on the structure of the cold greenhouse and to my surprise I found that I had about a thousand pots in there.

.....from S.Ratcliffe

My unheated greenhouse is an 8ft by 6ft, made of aluminium, standing fairly close to the house. Right from the start I stocked it with plants I believed would survive this treatment on account of their climatological exposure in habitat. It contains a couple of Soehrensia, a couple of Echinopsis, various Trichocereus, the odd Pterocactus and Neoporteria, as well as various species of Sulcorebutia, Tephrocactus, Austrocactus, Oreocereus, Lobivia, Oroya, and Matucana (no Submatucana). All these plants have now survived three complete winters with no adverse effects. No water is given between October to March, but the vents are left open at all times unless the rain or snow is travelling horizontally!.

.....from H.Middleditch

During the early winter, particularly November time, when there are not infrequent mists about, one often wonders whether to leave the ventilators closed and have a greenhouse full of static, cold, damp air; or whether to open the ventilators to let in some even colder and possibly even damper air. This is the time when recent flower remains can start to go mouldy. With a sequence of cool, sunless days, a late bud on a Gymnocalycium will often show a distinct reluctance to come to maturity. If the unopened flower decides to give up the struggle and is not promptly removed from the plant, not only will the deacying flower rapidly become a home for mould, but before you can blink the fungal infection has penetrated the plant. Leaving no choice but to dispose of the plant.

.....from M.Muse

I have transferred some Lobivias and a few joints of Tephrocactus to a tray with about half an inch of a mixture of cior and grit in the bottom, topped up with granite chippings. This has been put outside in the open and left there for the winter. The notion, prevalent for so long, that damp conditions kill cacti at low temperatures is, in my view, untenable. Damp, stale air is really the problem since these are the factors which encourage moulds and other fungi problems.

.....from A.Hill

What I am sure is required to counteract this problem is to keep the air in the greenhouse on the move. I have a couple of small ex-computer fans which are running all the time in the winter for this very purpose. They are only rated at 3 watts but are perfectly adequate for their purpose.

.....from N.Tate

My unheated greenhouse contains Rebutias together with some Tephrocacti and a few miscellaneous

Lobivias. Ice covered glass internally and minus 10°C on the max-min thermometer is pretty standard in the winter. No watering until March unless a heat wave is upon us! There were a few losses over this last winter among the Lobivias, but these were furthest from the door where I suspect they succumbed to a fungal attack. There were no problems among the plants that are fairly close to the door where there will inevitable be some inflow of fresh air, be it only a trickle. Hence I am inclimed to agree with the view that stale air is a prime cause of problems. My heated greenhouse does have an air circulating fan and I have insignificant problems there. So my cold greenhouse is now to be fitted up with a circulating fan as well.
.....from A.Johnston

During a recent severe winter the cold greenhouse went down to 20°F. Some of the plants in there were like lumps of stone, frozen solid. Time will tell as to which have survived. This year I put a small fan in there to keep the air moving. The plants that have suffered most seem to be the floccose Tephrocacti, with the exception of the ex-Macusani plant, which did not even mark.
.....from H.Middleditch

In the outer, unheated, section of my greenhouse there are several Tephrocacti, a Weberbauerocereus, a couple of Denmozas and a few other odds and ends. The articulatus type of Tephrocacti will not survive this regime but the remainder have not suffered to date. They are kept packed closely together so that the body of plants has a better communal thermal inertia.

ISLAYA LAUI? From R.Ferryman

In his travellogue published in the American Cactus Journal, A.Lau made mention of a new cactus species he had found near Tocopilla. He stated that the plant was new to science and needed further investigation. His initial thoughts were that the plant was a Neochilenia, later a juvenile Copiapoa tocopillana, but his investigations led him to believe it to be a new Copiapoa species. During my correspondence with him he indicated that the plant was in all probability a new Copiapoa and would therefore represent the most northerly member of the genus. Lau then made a further specific visit to the site upon his return from the I.o.S. Convention in Argentina. He wrote to me stating that he had found the plant again and from its seed structure it was a Copiapoa.

He urged me to visit the site and make further investigations, such was his enthusiasm for his discovery. This I did in 1987 and was fortunate to find a few plants one of which was in fruit. The fruit was the large hollow balloon type associated with Islaya. The seed therein was large, glossy black and quite unlike any Islaya seed I know. On the basis of the seed alone, Lau's initial reaction that the plant was a Copiapoa is quite understandable.

At The Chileans' Weekend the following year (1988) I showed a number of slides of this plant, taken in habitat, my own slides of the fruit and seeds, supported by Lau's slides of plants which he had flowered subsequent to his discovery. Placement of this plant proved difficult as it contained elements of different genera: Islaya fruit, seed typically Copiapoa, and the flower being small, yellow, and naked again resembles Copiapoa, Islaya, or Mila! For my part, the plant rests best with Islaya, a point the subsequent author of this exciting discovery J.Luthy supports despite placing it in the all-embracing Eriosyce.

The fruit I collected contained 10 seeds which I split with one of my travelling companions. My 5 seeds produced 3 clones, each of which were grafted and flowered within two or three years so that I am pleased to report that seeds and plants have been distributed to a number of interested folk.

The habitat location is not for the faint hearted or indeed the day tripper. The coastal mountains between Antofagasta and Tocopilla rise very steeply from the shoreline. There is sufficient flat ground between the mountain and the sea to support a road and there are also several small bays for the intrepid holidaymaker. Within these mountains exist a few mines and it is often possible to climb to a considerable height utilising their access roads. Moreover it is sometimes possible to utilise the very basic cable lifts that take miners to the higher reaches. However, very few of these save much more than the initial third to half of the climb! Also few of the mines I know can be regarded as long term and they disappear as suddenly as they appear.

The climb for laui was pretty arduous, and on reaching the perceived top one quickly encounters Eulychnia which were for the best part dead. Neochilenia saxifraga and Copiapoa tocopillana were also evident and reasonably represented. The view from the top was spectacular, with the sea visible to the south as well as to the west. My instruction was to continue forward, over the trough that runs north to south in line with the mountain range.

During the several hours of walking I questioned in my mind the veracity of the Lau details and moreover I questioned my sanity! Nothing, but nothing, grew there and it looked like nothing ever had. There were few pointers to confirm that I was following Lau's instructions. The mining territorial markers were there and indeed used by me for the same reason as the miners - a guide. After descending into and crossing the trough, another steep incline was in front of us and after some ascent, Eriosyce laui was re-found. The first specimens took some time to discover, growing multi-headed under rocks but the fruit giving away the natural camouflage. Further specimens were discovered but in reality very few for the time we spent there. All plants were offsetting (as they do indeed readily from seed) but the plants themselves were very frail looking. There was obvious evidence of flower and fruit so even in this remote barren area they were at least producing the potential for reproduction and as the plants in cultivation are not self-fertile, there must exist a pollinator, all be it a very patient one! The peaks of this mountain range were still some way off - indeed they looked as far away as when we started the second stage of the ascent. Climbers will know the feeling. What looked an hour away was still an hour away!

The precise habitat details must remain protected due to the scarcity of the population. But during the

In flower
Photo: J.Gamesby

Unripe fruit
Photo: J.Gamesby

Ripe fruit

Photo: R.Ferryman

Islaya laui

course of 1999 I am committed to a study of this region when I hope to map the potential distribution. Rains occurred in 1998 consequently providing a good opportunity to see if this remarkable species exists elsewhere. It would appear from correspondence and discussions with W.Krahn that he has made concerted efforts to locate this plant in areas surrounding the known site, including Mantas del la Luna and has found Copiapoa tocopillana and Neochilenia saxifraga but not the elusive Eriosyce.

Growing this plant from seed presents an interesting challenge. The resultant seedlings reach a size when they appear to sit still, much like Ariocarpus. What is happening is that the plant is actually forming its rootstock. Although I have never dug up a plant in the wild due to their scarcity, it was evident it had an enlarged root. Nor would it appear to be like Thelocephala, but more like the flaked woody roots seen in many Copiapoa rootstocks. My seedlings were quickly grafted to speed growth and ensure a better chance of survival. The resulting propagations have been spread around and the plant now seems to be in a large number of collections both here and abroad. Many of Lau's propagations by seed have been widely distributed and as a result collectors have had the opportunity to obtain a really unique species. As for the plants in the wild, it remain unclear what their success is. Ever the optimist, I believe that if Lau was able to find them again after a gap of some 15 years, then I have as good a chance after a similar lapse of time.

.....from H.Middleditch

Of the habitat slides taken during the course of this expedition, which were shown by R.Ferryman to the 1988 Chileans' Weekend, the one which tends to stick in the mind is that taken from the top of the first coastal range. This overlooked a quebrada whose steep sides appeared to be formed of great jagged boulders piled one upon the other, with not a sign of a track or a vestige of vegetation. Looking straight across over the considerable drop to the floor of the quebrada, it must have been all of half a mile to the steep rise on the opposite side, where the mountains rose even higher. Bearing this in mind, it seems to be most remarkable that Lau should ever have stumbled across this new discovery in this wide wilderness.

.....from J.Gamesby

My two grafted plants of Eriosyce laui were obtained from Hoogvliet nursery in Holland; I was told that they were grown from seed which originated from R.Ferryman. They do clump very freely but until the new offsets are about 4 to 5 mm in size, they are mostly hidden by the thick wool. The bodies are now about 30mm across. Both plants produced a crop of buds right in the crown, the flowers opening from early June onwards. No fruit was produced until I crossed the two plants which were not co-operating by flowering together so some pollen was stored in the fridge for a few days. The fruit has been on the plant since July; it is somewhat skittle shaped and measures 15mm tall by 8mm in diameter, with a roughish shiny black surface. The withered flower remains continue to stay attached to the fruit. The appearance of the fruit has not changed until now (late October).

I do have a few Islaya that flower and most of them are now covered in fruit. Even when small, these Islaya fruit are a balloon shape and a bright pink colour. I find that Islaya have scented flowers which smell of old hospital disinfectant whereas Islaya laui has no discernible odour. Compared with laui, my other Islaya have a shorter and thicker flower tube, petals broader and more numerous and of a clear pale yellow colour, none with any hint of the reddish brown stipe on the outermost petals as on laui. In fact, the flowers are totally different.

Early next year I intend to remove one of the offsets in order to try and establish it on its own roots, as these plants are said to be very slow from seed if not grafted.

.....from D.Rushforth

In 1997 I obtained several of these plants from M.Bouma in Czechoslovakia but as none of them set seed I presumed that they were of the same clone. When I visited him again in June 1998 I enquired whether he had other clones. He had - but was unaware which was which, so he gave me a plant which already had seed pods. These were short and black just like the seed pods shown to us by J.Gamesby at The Chileans' Weekend. Shortly afterwards, they did elongate and turn pink in the process. I would assume that they were from 1998 flowers - surely they would not take more than 12 months to mature? So assuming that they flowered in May, it would be either 3 to 4 months, or 15 months, before they matured. The mature fruit became 3.25cm long and 1.2 cm wide, looking just like fruit on Islaya. When the fruit showed signs of wrinkling it was slit from top to bottom for the purpose of showing the interior on slide.

CHILEANS 1999 WEEKEND

It is intended to hold this Event over the weekend of September 17-19, at Cavendish Hall, Nottingham University, this being the last weekend prior to the return of the university students to the Hall of Residence. At the time of writing, overtures are being made to a possible visiting speaker. Further details will be sent in due course to those who have participated in previous events and, on request, to any other member.

CHILEANS' FIELD NUMBER COMPENDIUM - SUPPLEMENT

It is anticipated that a 1998 second supplement to the 1995 Field Number List Compendium is likely to be available early in 1999 from the Chileans' membership secretary. This will include 16 field lists consisting of:- new lists; of recent editions to earlier lists; and one list incorporating additional entries. The cost will be £4.90 (UK) or £5 overseas.

CONTENTS

Particular interests

Austrocactus	A.Johnston, 11 Malvern Rd., Scunthorpe DN17 1EL
Cereanae	G.J.Charles, Briars Bank, Fosters Bridge, Ketton, Stamford PE9 3UU
Cleistocactus	T.Lavender, Kalanchoe, Market Place, Tetney DN36 5NN
Copiapoa	A.W.Craig, 32 Forest Lane, Kirklevington, Yarm TS15 9LY
Discocactus	R.Moreton, 91 Umberslade Rd., Selly Oak, Birmingham, B29 7SB
Echinopsis	M.Muse, 32 Fielding Rd., Birstall, Leicester, LE4 3AJ
Frailea	C.Holland, Newling Farm, Litcham, Kings Lynn PE32 2PB
Lobivia	M.Lowry, 7 Bygot Close, Leconfield, Beverley HU17 7NN
Matucana	D.Aubrey-Jones, 62 Rosehill Park, Caversham, Reading RG4 8XF
Melocactus	J.Arnold, Suffolk House, 2 Oak Hill, Washingborough, LN4 1BA
Neoporterianae	R.M.Ferryman, Nichelia, Leckhampton Hill, Cheltenham GL53 9QJ
Opuntia	R.Crook, 35 Cardinal Close, Worcester Park, Surrey KT4 7EH
Parodia	J. Brickwood,48 Haselworth Dr.,Gosport, PO12 2UH
Rebutia	M.O'Hara, 242 New Road, Booker, High Wycombe, HP12 4RG
Rhipsalis	A.Hill, 8 Vicarage Rd., Grenoside, Sheffield S30 3RG
Tephrocactus	R.K.Hughes, 16 Ashbourne Ave., Bootle L30 3SF

When contacting any of these members please enclose an s.a.e. in the first instance.

THE CHILEANS

Organiser	H.Middleditch, 5 Lyons Ave., Hetton-le-Hole DH5 OHS
Treasurer	R.L.Purves, 19 Brocks Drive, Guildford GU3 3ND
Membership Secretary and Back Numbers	Mrs.G.Craig, 32 Forest Lane, Kirklevington, Yarm TS15 9LY