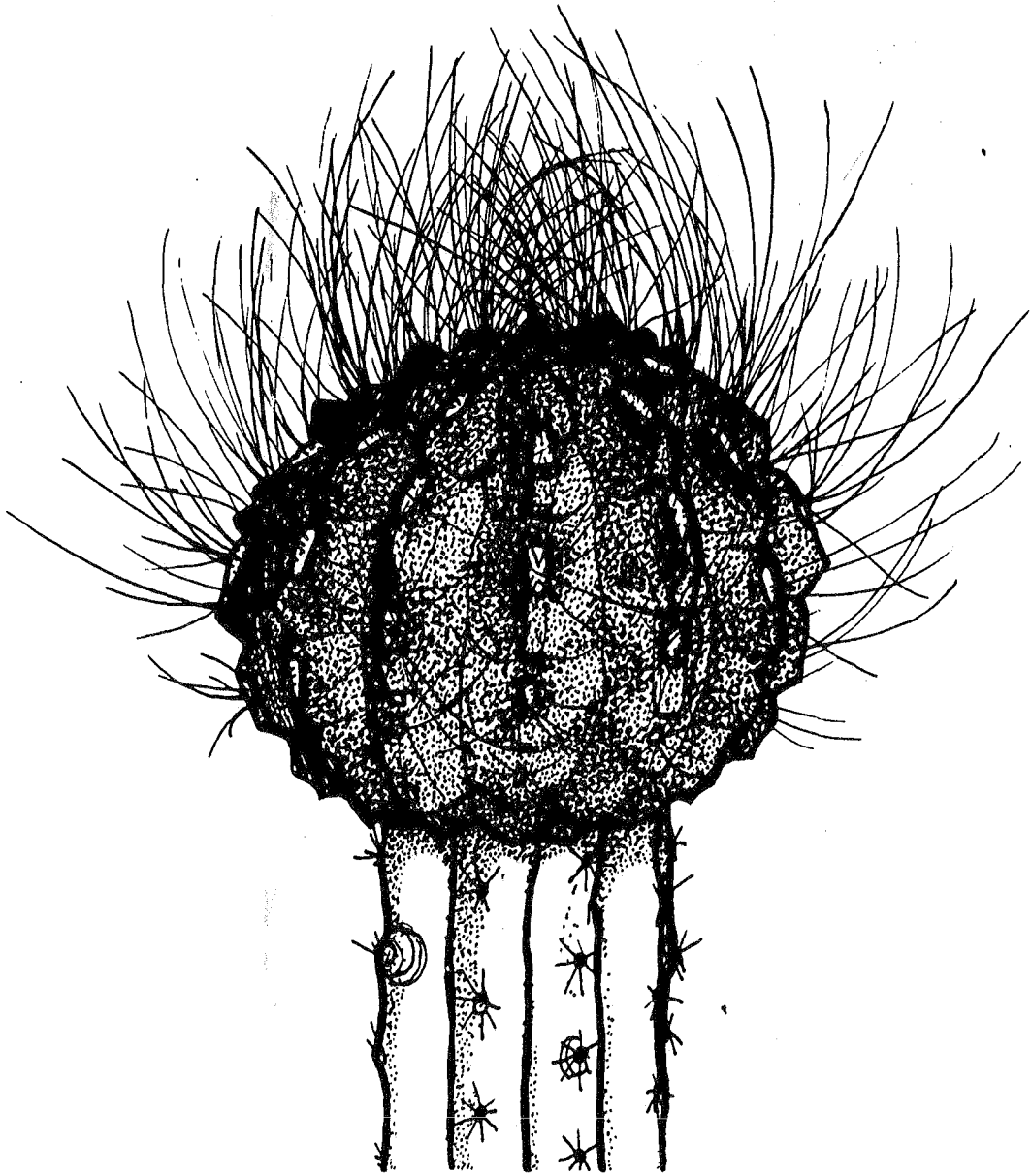


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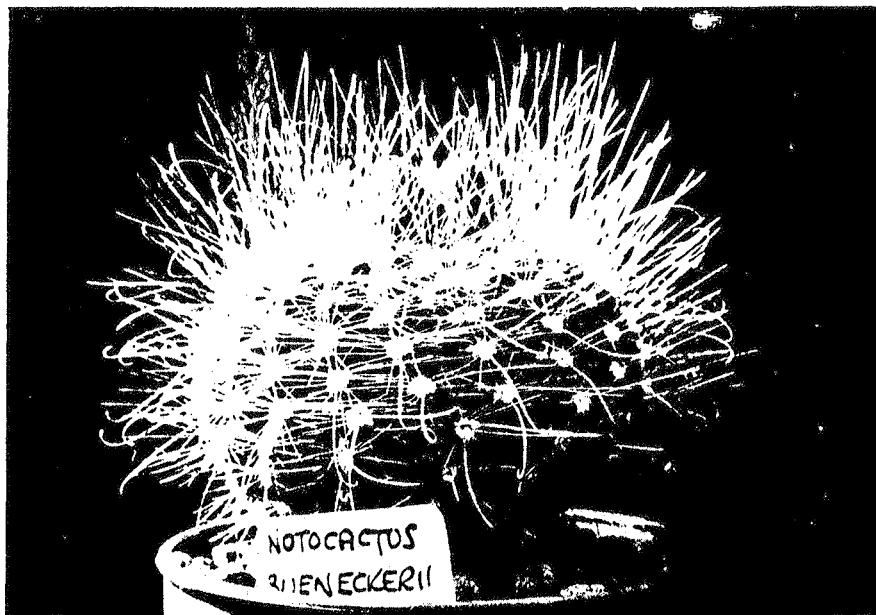
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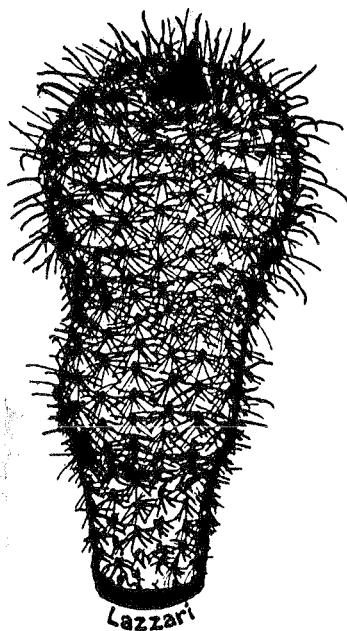
NEOCHILENIA
NIGRISCOPARIA

in the collection of H. Middleditch

CARL J. LAZZARI



NOTOCTATUS BUENECKERI
Collection and Photograph - A.W.Craig



Frailea Horstii

Nearly twice natural
size - in the artist's
collection

THE GENUS DISCOCACTUS (Pfeiff)

Extract from a lecture by Dr. Albert Simo of Bad Schallerbach, 9.12.67.

Reported by Dr. Alfred Bayr, President G.O.K., in the G.O.K. Newsletter.

Translated by K. Wood-Allum.

Literature on the genus *Discocactus* contains many contradictory statements and also assertions which do not stand up to a thorough examination. This is easily explained. The writers did not have enough living plants, and descriptions were made on the basis partly of collected material and in recent years with the help of photographs, and partly on existing, but unsatisfactory descriptions. There are those who throw doubt on the justification for the genus *Discocactus*, and amongst more recent writers there are those who are of the opinion that *Discocactus* would be better included under *Gymnocalycium* or *Wigginsia* (*Malacocarpus*). Whoever involves himself in a thorough study of these interesting plants, which are remarkable for their respectable size and their peculiar, beautiful flowers, as Dr. Simo has done, and grows them for years, observing them carefully, must reach the conviction that *Discocactus* is a justified genus and that its inclusion with *Gymnocalycium* or *Wigginsia* cannot be justified.

Since in most cases the characteristics of the genus are described only sparsely, or completely imperfectly, an attempt has been made to characterise them more precisely in the following descriptions:

PLANT BODY round, crown flat to appreciably domed with a small to medium cephalium not exceeding 4 cm. high. Cephalium wool white, shaded grey-white to yellowish, with or without a few or many short to long bristly spines.

RIBS mostly numerous, the number varying according to the size of the plant. Somewhat broad basally, forming clearly defined protuberances or only slight protuberances. The protuberances coarse, in some species mammiform, often somewhat slanted.

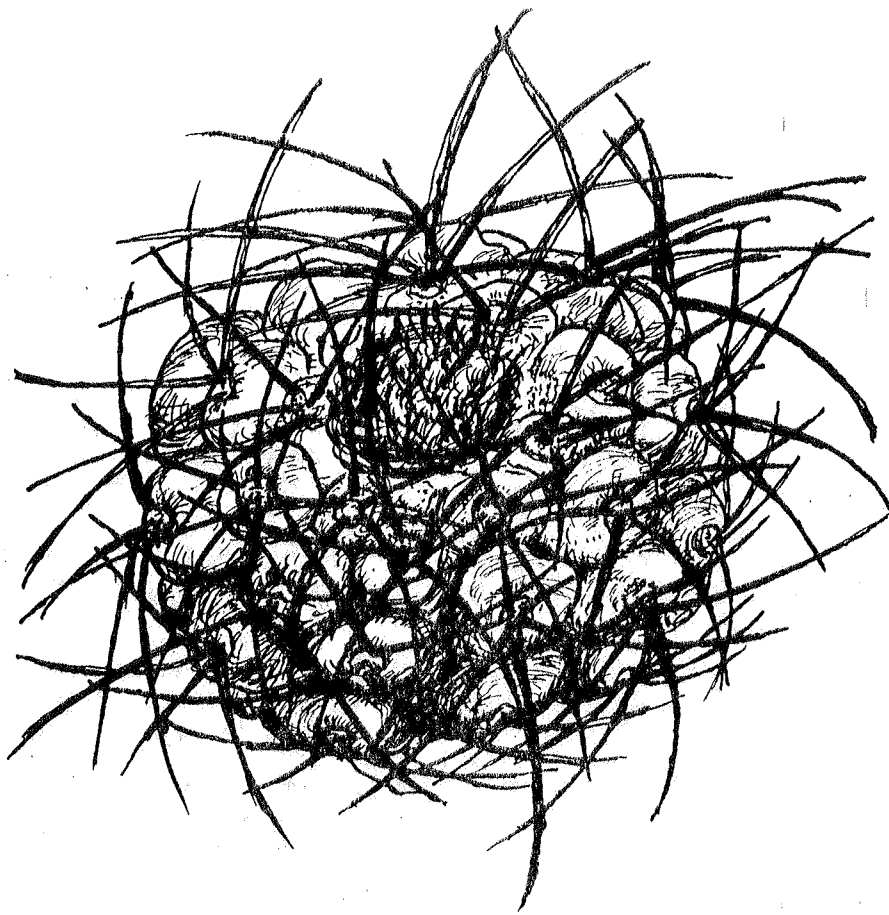
SPINES mostly strong, single or numerous, sometimes clearly thickened basally, adpressed to slightly protruding. Only one species, (*D. subnudus*), was described as spineless.

FLOWERS emerging from towards the periphery of the cephalium. Funnel-shaped to lightly cup-shaped, only fully open at night, scented. Ovary round to slightly oval, naked. Receptacle bare basally, with scales or scale leaves, but neither hirsute nor woolly in the upper section. Scale leaves either protruding or inclined slightly downwards. Outer petals often turned downwards when flower is fully open, inner petals lanceolate, arranged in two rows, protruding horizontally. Nectary open, narrow to fairly wide, very long, constituting almost half the receptacle. Stamens short, spanning from above the nectary to the end of the receptacle, which is always narrow. Anthers large, the highest protruding above the receptacle. Style remarkably small to medium large, never reaching the upper end of the receptacle and therefore not visible from outside. Stigma scarcely open to strong and slightly radiating.

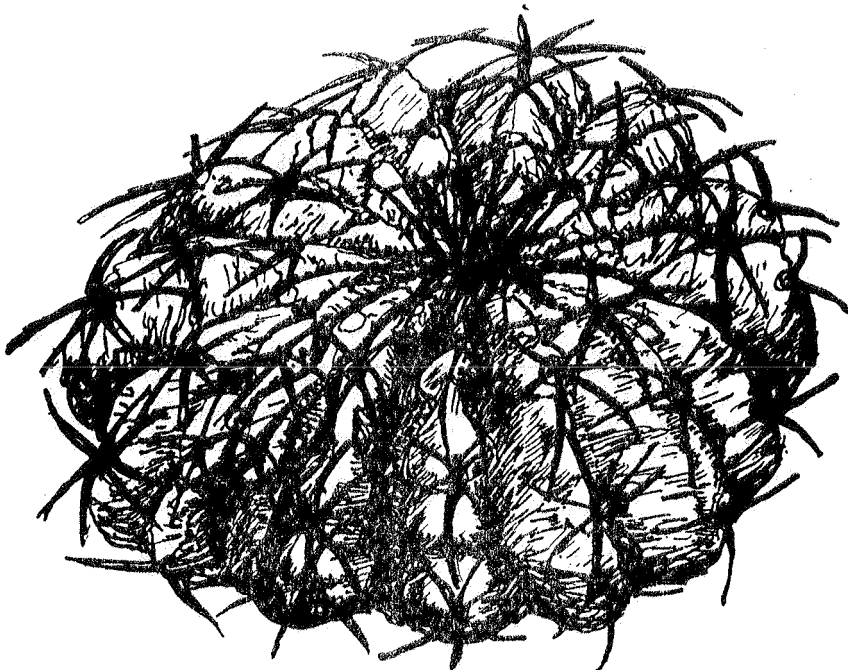
FRUIT longish, round, pulpy, white or pink to bright red, closed at the top with a peculiar operculum, surmounted by the dried remains of the flower. In the course of further development a pedicel is formed basally, the length of which depends on the height of the cephalium. By means of this pedicel and the lateral pressure of the cephalium the seed capsule is forced out of the cephalium. The fruit, which is originally white, dries, becomes cardboard-like and opens by means of one or several longitudinal splits.

SEED medium large to large (2 x 2.5 mm.), shiny black, testa with numerous pointed warts in rows.

The habitat is Brazil, Paraguay and, according to the latest discovery, Bolivia. The following species of those already known or described can be seen in cultivation: *D. heptacanthus*, *alteolens*, *boliviensis*, *hartmannii*, as well as *placentiformis* and *insignis*. It seems remarkable that *D. tricornis*, already described 120 years ago by Monville, the habitat of which is also Brazil (according to Voll in Diamantina) has not been imported in recent years. The remaining species, such as *D. subnudus*,



DISCOCACTUS sp. nov. H.U. 195.
Collection - E.W. Barnes



DISCOCACTUS TRICORNIS v. GIGANTEA
Collection - E.W. Barnes

bahiensis and zehntneri can never have been grown in Europe. *D. subnudus*, whose habitat is the shore region of Bahia, could no longer be found, despite an extensive search.

Now to the individual species, which, as mentioned above, are in the collections of Dr. Simo and the Linz Botanical Gardens.

D. heptacanthus. (seven spined) the available plants have six spines, two seedlings are however seven spined. The diameter is given as 10 - 15 cm. Body dark green, ribs divided into more or less large warts. Areoles longish, at first with slight woolly felt which soon disappears. According to some articles, they grow singly, our plants offsetting willingly (also *D. alteolens*) and could therefore form groups in habitat. Bristles protruding from cephalium, spines begin to form immediately in place of the earlier bristles. The receptacle very narrow and long, petals a beautiful white. This species has no central spine.

D. alteolens. This variety was also sold as *D. tricornis* (tricornis - three spined) In this species three spines are predominant. They are strong and rough, whilst the variable number of secondary spines are thin and very stiff. The main spine, which points downwards, is slightly carinate, the carina emerges with age. The body is coarsely warty. The cephalium, initially white and later grey, is variable in height. Prolific flowerer. Mostly several flowers emerge from the cephalium. A characteristic of the species seems to be that the scale leaves and outer petals are brownish red and that the white inner petals often bend sharply inwards.

D. boliviensis. This species was imported several years ago by K.H. Uhlig. There are two forms, the strongly warted and the less warty. On each rib there are two to three areoles, and on a big plant even more. From these grow two to three very rough spines, variable in colour. Subsidiary spines are more or less in evidence. This species is the only one of the known species with a cephalium without bristles. Flowers scarcely different from preceding species. As with these the flowers do not emerge from the middle of the cephalium but more from the periphery.

D. tricornis. Only an illustration from Werdermann's book could be shown of this species which was found in Brazil at Diamantina. It is characteristic of this species that the ribs form mammiform tubercles.

D. hartmannii. This species, which was described in 1900, comes from Paraguay and also from the Campos on the River Capivary. They are extremely variable plants in colour of body, ribs, tubercles and colour of spines. The areoles bear three large, strong, reddish-yellow main spines and three to five weaker subsidiary spines. It is typical of this plant that the areoles soon dry and give it a sickly, not very pretty appearance. The cephalium is particularly splendid since a large number of reddish spines protrude from it. The flowers develop quickly, whether the weather is sunny or rainy. They begin to develop at 1700 hours and are complete in the early hours of the night, and by the following morning the flower has faded. In bad weather the flowers remain for twenty-four hours. The pure white petals are somewhat stronger than those of the above-mentioned species.

There are also two forms of this species. The second form is distinguished by essentially stronger spines as well as a prominent central spine.

D. placentiformis. Su - ka - flor in Wohlen/AG put plants under the description *D. tricornis* H. U. 105 on to the market which turned out to be the much sought after *D. placentiformis*. The colour of the plant body is blue-green, the ribs are not too obviously warty, the areoles scarcely depressed. In comparison with *D. alteolens* and *boliviensis* the spines are clearly increased in number. But here too there are three main spines, of which the lowest is by far the longest. The brown spines are carminate, lie close to the plant body and are surrounded by a fine skin, which gives them a greyish-violet shimmer. New spines are dark red. The cephalium is 2.5 - 3 cm. high. A remarkable feature of this species is that the petals get smaller towards the centre of the flower.

D. insignis. Very similar to the foregoing in habitat and colour of plant body, spines are however fewer but thickened basally. The main spine, which is the longest, points downwards. A characteristic is the rose red bud and the equally rose red scale leaves, whilst the inner petals, as in all other species of *Discocactus*, are

white. The pedicel is very long. The shape of the black seed is different from that of the other species. The warts on the testa are still there, but they are not so pointed.

Dr. Simo attributes to the pedicel (fruit stalk) on *Discocactus* a special systematic significance. *Melocactus* also form one, as well as the remarkable operculum on the seed capsule. *Wigginsia* (*Malacocarpus*) also has this operculum but does not exhibit a pedicel.

As far as the cultivation of *Discocactus* is concerned, let it be said that, contrary to what has been written, they require generous watering. Dr. Simo's plants are put outside in the summer in full sun, but also sometimes in heavy rain. In the winter they are grown at room temperature and must be watered once a week. The plants flourish with this treatment and flower readily in summer.

They are therefore ideally suited for the amateur and should, more than in the past, find a place in our collections. Their size is impressive and because of their flat shape, their mighty spines and the cephalium they are so clearly distinguished from other genera.

Comments on *Discocactus*

...from K. V. Mortimer: "I agree entirely that on an examination of live plants of *Discocacti* that it is quite inconceivable that they should be lumped with *Gymnocalycium* or *Wigginsia* (*Malacocarpus*) unless all these and all other globular cacti are classified as '*Globulocactus*' or a similar genus.

"*Discocactus tricornis* is in cultivation as are a number of other Brazilian species - these having been collected and distributed during the last two to three years.

"My own plants of *D. heptacanthus* and *D. alteolens* both offset very freely - those on the former have aerial roots like an *Echinopsis* and root extremely easily. The *D. alteolens* offsets are much more difficult to root and do not graft well either.

"*D. tricornis* forms its cephalium when considerably smaller than the two foregoing species and is apparently more difficult to flower.

"I have not seen the other species mentioned. There are a number of new plants from Brazil which include a species which superficially resembles a coryphantha of the radians type with small fine spined radials and no real central spines, quite unlike the heavy spines of other *Discocactus* species.

"In my experience in England, these plants are not as easy to grow as Dr. Simo finds. They require a minimum of about 55°F. Whilst they certainly will thrive on plenty of water in summer, they are very intolerant of water in winter - rotting readily if damp. They are not easy to establish as imported plants owing to excessive shrivelling in transit drawing the rootstock up inside the plant. They thrive in a sunny position in a very open compost, with me, but in view of price and difficulties of rooting, less experienced cultivators would be wise to beware of this genus - don't forget winter minimum temperatures should be similar to *Melocactus* (55°F+).

"I have a few spare plants of *Discocactus alteolens* which I should be pleased to exchange for other species."

...from J. D. Donald: "I congratulate Dr. Albert Simo on a first rate introduction and survey of the genus and I agree almost entirely with all he has to say. I fully endorse Dr. Mortimer's comments, particularly on the difficulties of growing them (let alone keeping them alive) in England. If one can grow *Melocactus* successfully then you should have no fears for growing *Discocactus*. Anyone who has grown these plants even for quite a short time would clearly appreciate that they have little in common with *Gymnocalycium* or *Wigginsia* (*Malacocarpus*) but have much in common with *Melocactus*. In fact one could be excused in thinking that *Discocacti* are mostly large flowered *Melocacti*.

"Since Dr. Simo gave his lecture there have been very considerable imports of

these plants into Europe and many of the species he does not mention are now ^{more} readily available than those he does mention. Both *D. heptacanthus* and *D. alteolens* are now much less common in collections than *D. tricornis* or *D. gebutneri*, like a number of the type mentioned by Dr. Mortimer as resembling superficially *Coryphantha radians* or others which resemble *Coryphantha elephantidens*.

"I would question Dr. Simo's identification of HU 105 as definitely *D. placentiformis* rather than *D. tricornis*. All the HU 105 plants imported into England appear to be genuine *tricornis* with three strong spines and occasionally up to three very minor spines per areole, whereas the genuine *placentiformis*, which I have yet to see in England, has six or seven quite strong spines per areole. It may well be that in fact *tricornis* itself is a variety of the old *placentiformis*. There is a danger of overdescription of species of *Discocactus* just as there is in *Melocactus*. Local variation within individual species appears to be quite extensive, and also the size to which individual species can grow in certain localities may well be quite different from others; the *tricornis* form *gigantea* HU 146 is such an example.

"Similarly I would challenge any real separation between *D. heptacanthus* and *D. boliviensis* - I think they are the same species and in fact within this species group I would also include *D. alteolens* as the really dominant species with *heptacanthus* and *boliviensis* merely forms of it. The only clear difference between *boliviensis* and the others is the apparent lack of bristles in the cephalium. I appreciate though that others might still wish to retain a separate status for each of these plants. Geographically they are part of the Matto Grosso flora which extends into eastern Bolivia.

"*D. zehntneri* is a very distinct plant and has an appearance totally different from the other species. It has the basic flattened body but with low ribs and low tubercles, and 8 - 12 long, thin, pure white spines per areole; a bright green epidermis, and it produces a very woolly cephalium with only a few yellow bristles from which arise relatively short tubed (for the genus) white flowers. Some forms of *zehntneri* do not appear to produce any bristles in the cephalium.

"The second form of *D. hartmannii* mentioned by Dr. Simo with the stronger spines and prominent central spine has also been found in Brazil as well as Paraguay.

"All the HU species Nos. 190 to 200 inc. are interesting."

... from E.W. Barnes: "I too agree that *Discocacti* are very hard to grow in this country and collected plants are very difficult to establish. If they are rootless when received they are even more difficult to establish and rooting is best and quickest in pure peat, after which I feel a very acid compost suits them best: I grow mine in a mixture of leafmould, fine gravel, and rotted wood debris. They are very much harder to over-winter than *Melocacti* and semi-rootless plants soon perish if given much water. Well rooted plants will stand light spraying and this seems to prevent too much shrivelling which can be quite excessive as they must be kept in a rather warm position at all times. In summer they like plenty of water and a position near the glass. If one is going to lose one's *Discocacti* it will certainly be in late autumn or winter.

"I too question Dr. Simo's identification of HU 105 as definitely *D. placentiformis*. To me, my HU105 is typically *D. tricornis*.

"The HU 195 illustrated here which I had from Uebelmann some time ago - already rooted - is growing quite well. This plant has a cephalium and I managed to collect some seed (from previous flowers) from it and this has now germinated and I now have small seedlings. I have also tried *D. boliviensis* from seed and this has come along well enough.

"HU 195 has very strong spines; these are dark brown and strongly curved. They are grooved down the centre on the upper surface and have slightly serrated edges. The tips tend to go soft and split into individual groups of fibres. The cephalium is composed of greyish buff wool and long, thin, mid-brown bristly spines; these too are curved."

THE LINZ BOTANICAL GARDENS

Reported by Dr. A. Bayr, President, G. O. K.

Translated by E. W. Bently from June 1968 Newsletter of the G. O. K.

At the monthly meeting in May 1968 (of the Linz group of the G. O. K.) Herr Obergartner Stefan Schatzl from the Linz Botanic Garden held a slide show on the cacti of the type collection of the Linz Botanic Garden that had been imported in past years and had flowered for the first time this year. It was very gratifying that Herr Schatzl did not merely confine himself to showing his well-known first-class colour slides, but gave very valuable facts about the systematics - and problematics! - of the plants shown - which demonstrated once more how thoroughly he concerns himself with every single one of the plants contained in the large type-collection.

This year, with 61 items, newcomers have been comparatively few. These came from the collecting of Herr Walter Rausch and arrived in Linz via Herr Ing. Maly. It can be expected however, that in the course of the summer considerable new arrivals will be received, since the firm SU-KA-FLOR has imported about 7000 plants collected by Herr Uebelmann himself, in which many new things should be found. In the first five months of the present year cactus systematics has been enriched by a new genus: Uebelmannia, a genus which is surely justified. In this genus the species formerly under HU field numbers have received names. They are: Uebelmannia pectinifera (formerly HU 106), Ueb. minensis and Ueb. buiningii (presumably the former HU 141). In this genus belongs also Ueb. gummifera formerly placed in the genus Parodia. The Uebelmannias here have unfortunately not yet bloomed. But perhaps Ueb. pectinifera flowered for Herr Andreae in Bensheim.

The last imports of 1967 overwintered very well and this year brought forth the first buds very early: with the subsequent flowers came some surprises. First of all flowered a large plant received as *Gymnocalycium uruguayense*. The strong doubt on receipt of the plant whether, since the article in Vol. 1 of the (Swiss) Sukkulantenkunde, the usual confusion of this species with another had happened, proved to be justified. *G. uruguayense* flowers so-called "elderberry colour" (or lilac?), but our plant flowered yellow. It fitted clearly the description of the yellow flowering *Gymnocal. artigas* that is related to the equally yellow flowering *G. guerkeanum*, *G. leeanum* and *G. netrelianum*.

As in *G. guerkeanum* the flowers are more or less unisexual, i.e. in one plant the stamens are well developed and full of pollen, in contrast the stigma is stunted. In another it is exactly the other way, the stamens are stunted and pollen-less and the stigma is strongly developed. Fruiting and seed collection in this species is therefore difficult because one must fully flower simultaneously a male and a female plant for pollination.

A somewhat problematical species is *Gymnocalycium platense*, that was found and described in 1896 in the Sierra Ventana in Buenos Aires province in mid-Argentina. Later were also included in this species plants from northern provinces, that on account of the variability between localities confused the species picture. Our plant only partly agreed with the original description: instead of 7 outer spines, according to the original description 7-9; centre spine should be wanting, but now and then from an areole however springs a middle spine. The flower should be fairly slender, the ovary noticeably wide-scaled. The flower colour is white, reddish within.

The first imports of *Gymnocalycium gibbosum* came in the autumn of 1966. The home of this good species is southern Argentina: Rio Negro, Santa Cruz, Sierra Ventana: the type locality lies at the mouth of the Rio Chubut on the plain and on the hills. This species is extraordinarily rich in forms (var. nobile, fennelli, nigrum, leucodictyon, ferox, schlumbergeri, leucanthum, polygonum, leonensis, guerardii). *G. gibbosum* is like many Gymno. species. The various localities exhibit forms that merge into each other and so are difficult or quite impossible to separate. Only extreme examples of particular forms can be clearly separated.

One of the best new imports is *Gymnocalycium oenanthemum*. This species described by Backeberg in "Blattern für Kakteenkunde" 1934 was first mentioned by Frič. That for a long time after this no imports arrived threw doubt on this species. What can be seen in European collections is most variable and often is something quite different (e.g. *G. mazanense* - *breviflorum*). Characteristic were comblike

flattened outer spines, without centre spine, pale lilac coloured flowers. Now Herr Walter Rausch has happened to find this fine species again. The imports received agree with the description fairly well, the number of the outer spines 5-7, but there also occur plants with a centre spine. At present nothing can be said about the flower, since the plants have been scarcely a week in the type collection.

A genus that this year most pleasantly surprised us with its rich flower production, but also presents a heap of new problems is the genus *Notocactus*. In recent years numerous new *Notocacti* have come to hand, also into the Linz Collection, e.g. *Notoc. horstii*, *uebelmannianus*, *linkii*, *crassigibbus*, *acutus* and *buiningii*.

But not only novelties but also older, known species have come as imports into our collection: *Noto. concinnus*, *apricus*, *tabularis*, *megapotamicus*, *mueller-melchersi* and *mammulosus* and brought problems with them. As an example Herr Schatzl took *Notoc. concinnus*, *apricus*, *tabularis*. Their home is the region of Uruguay and South Brazil around Maldonado. If until recently one thought that the genus *Gymnocalycium* was rich in problems while knowledge of other genera was quite well sorted out, a thorough observation of the *Notocacti* just as of *Lobivias* and *Parodias* will indicate the same problems, not to say the same confusion.

A comparison of characters from the original descriptions give the following picture:

	<u>concinnus</u>	<u>apricus</u>	<u>tabularis</u>
Body	flat-round with smooth green crown	broad, spherical, clumping, light green	flat spherical blue-green
Crown	widely depressed tuberculate	surrounded with yellow-red spines	sunken
Ribs	18, blunt	15-20 at first felted	16-23 white felted
Outer spines	10-12 bristle-like, light yellow	18-20 bristle-like	16-18, thin needle-like transparent
Centre spines	4 cross-wise	4 larger, somewhat reddish	4 crosswise, slightly curved
Flower	7cm, white woolly brown-bristled	8cm, tube robust	6cm, white-woolly brown-bristled.
Stamens	outer yellow, inner carmine red	outer yellow, inner red	tube carmine red within, also stamens and stigma

One must truly ask where, strictly speaking, are the significant differences?

Herr Schatzl produced pictures of a number of flowering *Notocacti*. The finest perhaps was *N. uebelmannianus* with its, for a *Notocactus*, quite astonishing blue-violet flowers. Also splendid, however, are the yellow bloomers: *N. linkii*, *crassigibbus*, *arachnites*, or belonging to the *N. ottonis* type, *megapotannicus*, *mueller-melchersii* and many others. Under the name *N. securituberculatus* is concealed perhaps *N. uruguayensis* which was mentioned by Mueller-Melchers in "Sukkulantenkunde"; it is a fantastic bloomer with almost double the number of perianth leaves of *N. ottonis*. It arrived in a consignment with *N. concinnus* var. *joadii* and *N. caespitosus*. Unfortunately there is not enough space to give here the many phytographical details that Herr Schatzl gave with the various pictures.

... Comments from R. Ginns: "The variability in both *Gymno. platense* and *G. gibbosum* is so great that, unless our plants are imports from known localities, it is difficult to be certain that we have the correct species. This is particularly the case with plants raised from European seeds which vary enormously. I often ask myself when looking at my plants 'Is this natural variation or is it due to hybridisation?'

"Surely Herr Schatzl has made a mistake when he says that *Gym. oenanthemum* is characterised by pale lilac flowers. The species was described by Backeberg and in *Die Cactaceae* he gives the flower colour as wine red. My own plant agrees in having comblike, flattened outer spines and no centrals, with flowers of as good a red as any in the genus.

"It is unfortunate that we cannot see the pictures of these new imports of supposedly well known species so that we can check up on the plants in cultivation bearing these names.

"I look forward to the flowering of *Notocactus uebelmannianus*. Blue-violet flowers are not only astonishing for a *Notocactus* but for any cactus. I cannot recollect any - but perhaps my colour sense is different from Herr Schatzl's."

NOTOCACTUS BUENEKERI (Buin) Buxbaum.

Syn. *Parodia buenekeri* Buining in *Succulenta* 1962; viii, 99. Transferred to *Notocactus* by Buxbaum in *Kakt, u. a. Sukk.* 17: 195 October 1966.

This beautiful plant was discovered by Herr F. Beuneker in Brazil in 1961. It is closely related to *Notocactus brevihamata* (Haage) and *Notocactus alacriportana* (Backbg & Voll) which also occur in Brazil. All these plants were originally described as *Parodias* but they did not fit easily into this genus, being isolated geographically from the main distribution of *Parodia* in Bolivia and northern Argentina. All three remained comparatively rare in cultivation until the recent expeditions of Horst, Uebelmann and others made the plants freely available. Closer studies of these plants - particularly of the seed, fruit, and flower showed that they were in reality much closer to *Notocactus* than *Parodia* and accordingly Buxbaum and Krainz have effected the transfer.

The plant illustrated here (p. 74) is typical of the original form described by Albert Buining with the long thin hooked spines and large yellow flowers. Other forms have since been discovered with shorter spines, smaller flowers and some with hardly any hooked spines at all - in which case they appear to integrate with *Notocactus alacriportanus*. A variety with darker spines has been described as *v. senescens* which may be met as "*Parodia senescens*".

J. D. Donald.

Some Observations on *Notocactus buenekeri* from A. W. Craig:

"The plant in the accompanying illustration was obtained in 1967 from Dodonaeus. It was app. $1\frac{1}{4}$ " dia. over the spines and was grafted on *Trichocereus spachianus* stock. It grew rapidly until by the following spring it was $2\frac{1}{2}$ " across and looking much too large for the stock. With much trepidation I decided that the stock and scion must go their separate ways even though there were a number of buds visible in the crown.

"The surgery having taken place, the plant was laid upon its side for about a month to ensure a good callus before attempting to reroot. During this time the plant shrivelled considerably but still the buds continued to grow and then flowered profusely.

"After this, I placed the plant on a pot containing 80% coarse sand and 20% peat and gave regular overhead sprays. Roots started to form within a week and within six weeks the plant had not only regained its former size but had grown to over $3\frac{1}{2}$ " dia. and was in need of repotting, the roots filling the 3" pot and growing out of the drainage hole.

"The dried flowers remained on the plant until early October, when I decided to remove them. To my surprise I found seed had been set even though no fruit had been noticeable and as the plant was in a separate house from my other *Notocacti* and *Parodia*, the seed may well be true. A small quantity of this seed has been sown and has proved to be viable."

PARODIA BUENEKERI. Buin.

Translated from Succulenta Vol. 41 No. 8 1962 by A.W. Craig.

Body somewhat flattened globular with deeply sunken apex, approx. 5 cm. high and 6 cm. dia., glossy green, without tap root. Ribs approx. 20, running vertically, app. 8 mm. apart with somewhat hump shaped glossy tubercles under the areoles. Areoles 3 mm. dia., with grey wool, later bare; the uppermost ones without spines.

Radial and central spines frequently brush-like around the crown, later the radial spines becoming more adpressed and the central spines erect.

Radial spines straight, initially colourless white or with brown tip, the lower ones more brown, later becoming more grey-brown. Approx. 8 spines from 6 to 23 mm. long, on both sides of the areole, one pair of shorter spines pointing upwards and one pair pointing downwards, app. 4 mm. long, the lateral spines overlapping.

Central spines 5-6, at first colourless white or with zones of white and brown, tip brown, frequently also entirely brown to red-brown, all later grey-brown, straight but frequently a single one bent at the tip, up to 3 cm. long and sometimes even longer, thickened in bulbous fashion at the base.

Flowers $3\frac{1}{2}$ -4 cm. long and wide, glossy golden colour with a slight scent. Flower tube green with small lanceolate scales, axils with brownish wool and a few dark brown setose hairs up to 5 mm. long. Petals lanceolate, wavy (?) (literally = buckled, A.W.C.) outer row up to 2 cm. long and 3 mm. wide and a further series up to 1.7 cm. long and 2.5 mm. wide. Outer petals extend into the flower tube scales. Pistil and stamens arise directly from the ovary; stamens whitish, spread out over the whole flower tube, very slender and up to 1 cm., anthers golden, style approx. 2.5 cm. long and $\frac{3}{4}$ mm. thick, whitish with app. 4 cream coloured stigmas projecting above the flower and the stamens.

Fruit about 8 mm. long and 10 mm. diameter with the dried flower remains persisting, thinly covered woolly and white-haired areoles. Seeds \pm 1 mm. diameter, helmet shaped, finely granular skin with large white hilum.

These plants grow on bare flat ground amongst moss covered rocks at an altitude of about 1,400 m. (4,300 ft.) on the boundary of the departments of Rio Grande do Sul and Santa Catarina, in Brazil. (See map, Chileans No. 7 - H. M.). It is related to *Parodia brevihamata* Haage, but differs in the much longer non-hooked central spines, the very large flower and the non-spiral forming ribs standing 8 mm. apart.

It is not difficult to distinguish this species from the four other *Parodias* originating from Brazil, namely the previously mentioned *Parodia brevihamata* Haage, *Parodia alacriportana* Bkbg, *Parodia gummifera* Bkbg and the unknown *Parodia brasiliensis* Speg.

This plant flowers here very easily and readily sets fruit and viable seed, so that soon this species should be propagated and become a beautiful new acquisition in our collections.

This plant is named by me after Herr F. Bueneker of Brazil, who sent me a description and a specimen of these handsome plants, discovered by him in 1961.

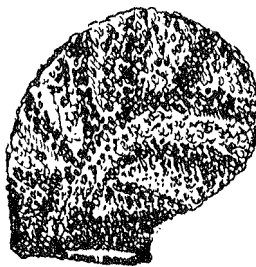
SOUTH AMERICAN CACTI SEED. By D.J. Lewis.

Following the notes on cacti seed in the "Chileans" Nos. 10, pp 18-20 and 11, pp 42-44, some *Neochilenia* have been sketched for comparison. Quite a few seed from various *Neochilenia* were examined and many were so close to both A or B that a separate sketch of each would be of little value.

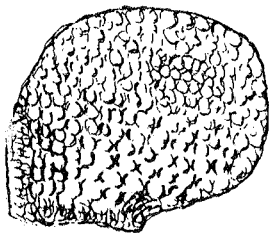
Sketch A is of seed of *N. glabrescens* and B is of *N. pygmaea*. It was of interest to note that both had a corrugated testa case as though the embryo had shrunk as seed ripening took place. In the hollows between the ribs on the testa the cells are partially covered by a light brown cellular material so giving the seed the lighter colouring. The only apparent difference between the two seeds is the size and rib pattern.



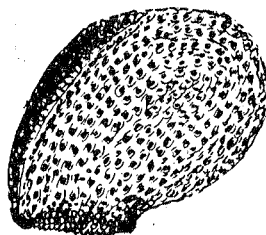
A.



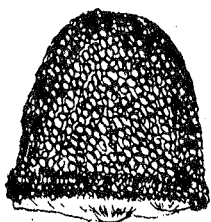
B.



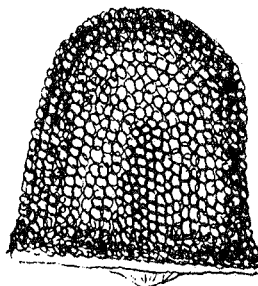
C.



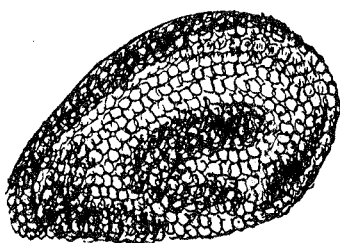
D.



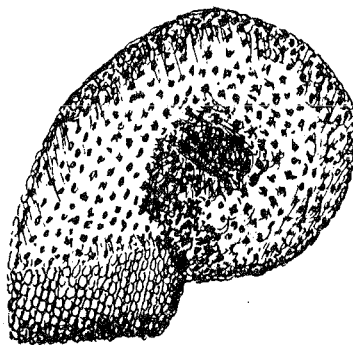
E.



F.



G.



H.

SOUTH AMERICAN CACTI SEED.
D. J. Lewis

Handwritten signature

The other two *Neochilenias* are *N. malleolata* - seed C - and *N. esmeraldana* - seed D. These two exhibit distinct differences: *N. malleolata* has shiny seed and low rounded testa cells, whereas *N. esmeraldana* has a light brown testa with each cell having an area of darker tissue, giving a spotted appearance. There is also a dorsal rib which is absent in the other seeds.

The main feature the four seeds have in common is their shape and size, the hilum also being similar in outline and position.

The next two are *Notocactus horstii* - seed E - and *Notocactus ottonis* - seed F - which shows the difference in size between the two whilst the family resemblance is obvious.

The last two seeds show some characters in common although they are from quite distinct genera. Seed G is a *Copiapoa* and H is *Trichocereus* species from de Pinya. The *Copiapoa* has a shiny black testa and there is a well developed dorsal rib. Note also how the embryo must curve round inside the testa case. The *Trichocereus* is interesting in having a black pitted testa case, a slight dorsal rib and an area of different testa cells around the hilum: here they are small, round and in lines.

If any readers find that seed from their plants differs from those in the sketches - beyond the normal degree of variation that can be expected within a species - then it may be that either the seed sketched or those being compared are from plants not correctly named. This is not impossible with home produced seed and even with habitat collected seed.

The author would be pleased to receive small quantities - say half a dozen - seeds of any species of South American cacti for study purposes, those of *Parodia*, *Neoporteria*, *Copiapoa* or *Notocactus* for preference.

THE GENUS *MEDIOLOBIVIA* Backeberg

History: The plants which fall within this genus are very closely allied with those in the genera *Aylostera* and *Rebutia* in body habit, flowers, fruit and seed. It is perhaps not surprising, therefore, that we find a few species from each of these present genera were originally included in Schumann's genus *Rebutia*. This genus was founded by Karl Schumann in 1895 with *R. minuscula* as the type species. In 1922 Drs. Britton and Rose could describe six species of *Rebutia* in 'The Cactaceae' and quoted their origin as the high Andes of Southern Bolivia and N.W. Argentina.

Amongst these six species were *Rebutia pygmaea*, with numerous small, dwarf, tubercles and a thick tap root; also *Rebutia pseudominuscula* Speg. with hairy and bristly flower tubes. In 1923 Spegazzini established the genus *Aylostera* based on *A. pseudominuscula* as type species. The distinguishing characteristic of this genus was the thickened wall of the flower tube which grows as one with the style - this being described as an 'occluded' style.

Later some more plants were discovered in the high Andes of Bolivia with *Rebutia*-like flowers, having the free style of *Rebutia*, but with the hairy-tubed flowers of *Aylostera*. Many of these newly discovered plants found their way to Czechoslovakia where Frič described one of the new discoveries as *Rebutia einsteinii*; others appeared in Kreuzinger's catalogue for 1935. Some of these plants had a similar habit to *Rebutia pygmaea*, having many dwarf columnar heads and numerous close-spaced dwarf tubercles and at the base of the flower tube they had a short length of thickened tube wall, contiguous with the style. These plants were separated off from *Rebutia* as *Digitorebutia* Frič & Krzng. Although the genus was not validly published at that time it was later validly published as *Digitorebutia* Frič, Krzng. & Buining.

Other plants which became available to Frič exhibited *Rebutia*-like flowers with the style and tube wall quite separate but with woolly and bristly flower tubes like *Aylostera*. These were described by Frič and later classified as *Setirebutia* (Frič) Krzng. Yet other plants exhibited short-tubed campanulate flowers and

these were separated as *Cylindrorebutia* Frič & Krzng. Neither of these two genera - *Setirebutia* or *Cylindrorebutia* - have been validly published.

Very few of the plants in these three genera associated with Frič's name found their way into Britain for many years. These generic names were neither well publicised nor well known, whereas the genus *Mediolobivia*, validly established by Backeberg to cover the same group of plants, was widely publicised and became much better known.

Backeberg was a professional photographer and an amateur cactus collector - generally he viewed plants both as a camera sees them and as most amateur collectors do, seeing the visible external characteristics of a flowering plant, with rather less emphasis on the internal structure of the flower - which tends to be more the approach of the botanist. For this reason Backeberg tended to lay great stress upon the variation in the hairiness of flower tubes and rather less on other floral characteristics, as in his division of *Neoporteriae*, and in dividing *Matucana*/*Submatucana*, etc. In this vein, having accepted Spegazzini's *Aylostera*, Backeberg divided the remaining *Rebutinae* between *Rebutia* sensu stricta with naked flower tubes and *Mediolobivia* with hairy and woolly flower tubes.

In 1956 Buxbaum proposed reuniting *Rebutia*, *Aylostera*, *Mediolobivia* and *Digitorebutia* into *Rebutia*. Buining and Donald have subsequently (*Sukkulentkunde* VII/VIII 103, 1963) put forward a classification based on the reunification, which divides the combined Buxbaum genus *Rebutia* into two subgenera - *Rebutia* and *Aylostera*. This division is based on the typical botanical approach of flower structure - subgenus *Rebutia* having a free style, subgenus *Aylostera* having an occluded or partly occluded style. Each subgenus is further classified in sections, each section being more or less comparable (with but few exceptional species) with the sections of Frič and of Backeberg, as follows:-

<u>Frič</u>	<u>Backeberg</u>	<u>Buining & Donald</u>
<i>Rebutia</i>	<i>Rebutia</i> s/g <i>Rebutia</i>	<i>Rebutia</i> s/g <i>Rebutia</i> sect. <i>Rebutia</i>
<i>Setirebutia</i>	<i>Mediolobivia</i> s/g <i>Mediolobivia</i>	<i>Rebutia</i> s/g <i>Rebutia</i> sect. <i>Setirebutia</i>
<i>Cylindrorebutia</i>	<i>Mediolobivia</i> s/g <i>Pygmaelobivia</i> sect. <i>Conoideae</i>	<i>Rebutia</i> s/g <i>Rebutia</i> sect. <i>Cylindrorebutia</i>
<i>Digitorebutia</i>	<i>Mediolobivia</i> s/g <i>Pygmaelobivia</i> sect. <i>Pygmeae</i>	<i>Rebutia</i> s/g <i>Aylostera</i> sect. <i>Digitorebutia</i>
<i>Mediorebutia</i>	<i>Rebutia</i> s/g <i>Neorebutia</i>	<i>Rebutia</i> s/g <i>Aylostera</i> sect. <i>Mediorebutia</i>
<i>Echinorebutia</i> (<i>Aylostera</i>)	<i>Aylostera</i>	<i>Rebutia</i> s/g <i>Aylostera</i> sect. <i>Aylostera</i>

Habitat: *Mediolobivia* - it being convenient to use this Backeberg name to cover the plants under review - comes from the high Andes of NW Argentina and SW Bolivia. In these latitudes this great range of mountains are at their broadest - some 400 miles wide. In character they are far from a continuous series of jagged peaks within these latitudes. There is, indeed, a string of high peaks on both the east and west sides of the range; these slope down quite abruptly to the foothills and the piedmont. Between these border ranges which rise to 16,000 feet and in places to even greater altitudes, the land is rather lower.

The major feature is a great elevated plateau called the Altiplano with an altitude of between 12,000 and 13,000 feet which runs through the Bolivian Andes from Lake Titicaca on the border with Peru, southwards into Argentina where it becomes divided into numerous small basins by many low ranges of hills.

The Altiplano is covered with wind and water borne material eroded from the surrounding border ranges, with almost imperceptible gradients. The western side of the Altiplano is bordered by a range of volcanic peaks beyond which is the Chile-

Peru coastal desert. (See Chileans No. 2 pp 1-3 and No. 4 pp 1-2). The northernmost part of the Altiplano is bounded to the east by the high but comparatively narrow chain of the Eastern Cordilleras, rising to 21,000 ft. in places.

South of latitude 17° , however, a great block of sandstone up to 150 miles wide is interposed between the Altiplano and the eastern flanks of the Andes, averaging 14,000 ft. in altitude but with peaks up to 16,000 ft. It is fairly well dissected by river valleys, many running towards the S. E. in Bolivia. South of the border with Argentina, the Altiplano is separated from the lowlands by very old pre-Cambrian rocks, reducing to some 75 miles in width, but still about 14,000 ft. in elevation.

Between the high Andes and the lowlands there are a series of frontal ranges averaging some fifty miles in width and between 2,000 and 6,000 ft. in height. These frontal ranges are of alternate beds of shale and sandstone, the strata being both faulted and folded. (See Chileans No. 10 p. 4).

As the on-hill winds must rise on reaching the Andes, they are induced to part with their remaining moisture, so the eastern flanks of the Andes in Bolivia and N. W. Argentina receive more rain than either the highlands or lowlands at either side. These flanks receive sufficient rainfall throughout the year to maintain a covering of forest. As the annual rainfall decreases in both quantity and regularity as one goes southwards, so the forest changes from subtropical, through semi-deciduous, to hardwood. The forest occurs up to 6,000 ft. altitude, where it gives way to grass, low bushes, and xerophytic vegetation, which continues up to about 14,000 ft. altitude.

In N. W. Bolivia, the rivers take a less indirect course to the lowlands than in eastern Peru (see Chileans No. 11 pp. 62-63) so that in the Yungas of Bolivia the valleys are less deep and less steep-sided than those found in Peru, but are still only traversable on foot in few places. Vegetation covering is good and there are very few dry-bottom valleys, as in Peru. South of Cochabamba the rivers again run parallel to the eastern flanks, so the valleys all have dry bottoms with some scrub vegetation on the upper, windward slopes. As the rainfall here is greatly reduced in comparison with that in eastern Peru, the erosive power of the rivers is very much less so the valleys are generally not as deep and steep-sided.

The heaviest period of rainfall in this part of the Andes is between November and March, when the North Atlantic Trades sweep over the Amazon basin. In the northernmost Altiplano the downpour in this season turns trails into an impassable series of mudholes, bringing all vehicular traffic to a halt, whilst raging streams disgorge turgid brown waters hundreds of yards into the placid blue waters of Lake Titicaca. South of latitude 17° the greater width of the sandstone inner hills separates the Altiplano from the eastern flanks and from winds less heavy with moisture. Thus the Altiplano is unaffected by seasonal rains except around Lake Titicaca. South of this Lake only shallow salt lakes or dry salt pans are found in depressions in the general surface level. South of 17° latitude the inner eastern ranges also receive less moisture, amounting to some 10-15" per annum altogether, on the moister flanks. The high uplands of N. W. Argentina behind the forest belt receive a similar rainfall.

It is on the inner eastern heights, above the forest limit of 6,000 ft. altitude, that we find *Mediolobivia* growing and, indeed, *Rebutia* and *Aylostera*, too. The *Mediolobivia* are found in the lee of the high eastern peaks, on the sandstone uplands, and do not appear to extend westwards into the alluvial and detritus surface deposits of the Altiplano. A few species are found in N. W. Bolivia where the rainfall tops 20" per annum but the great majority grow in locations with an annual rainfall of less than 15" per year.

The *Digitorebutia* are found at the highest altitudes, between 3,400 and 4,500 m. altitude (10,600 - 14,00 ft.) the *Setirebutia* and *Cylindrorebutia* occurring at a lower average altitude.

The average daytime winter temperature at the upper limit of the forest (approx. 6,000 ft.) will be about 50°F in the latitude of Salta and 55°F in the latitude of La Paz, rising to 70°F in summer. Night temperatures will drop to freezing point in winter.

At the upper limit of vegetation - about 14,00 ft., summer daytime temperatures will touch 45° F with frost at nights. Winter daytime temperatures will be down to 15° F of frost and night time temperatures well below that, as this is getting near the permanent snow line.

It would seem to be reasonable to conclude from this that *Mediolobivia* must be capable of withstanding very cold conditions in habitat.

H. Middleditch

Comments from J. D. Donald.

"Only the followers of Backeberg now accept generic status for these plants - all others prefer to consider them at best only a sub-genus of *Rebutia*, most prefer an even more reduced status e.g. *Sectio*.

"Britton and Rose did not describe six new species, they merely put six old dwarf echinocactus into *Rebutia*, in 1922.

"*Rebutia pygmaea* is not really a *Mediolobivia sensu stricta* - which have affinities with *Rebutia* - but a *Digitorebutia* (*Pygmaeolobivia*) which have affinities with *Aylostera*. It was Backeberg's mistake to put them into his genus *Mediolobivia*.

"In the late twenties Frič discovered a number of new species of *Rebutia* - amongst them were *Rebutia einsteinii* which he described in 1931 and *Rebutia haagii* in 1930. Other collectors in the field, including Oreste Marsoner and Curt Backeberg, retraced Frič's steps and found additional species. Backeberg beat Frič to the post in describing many of these new species initially at *Rebutia* but then, as the generic fever bit him, as *Mediolobivia* and *Aylostera*.

"It is important to note that at this time Frič accepted *Digitorebutia* as allied to *Rebutia* but Backeberg did not. Both he and Willy Wessner thought that these plants were dwarf *Lobivias* (i.e. *Pygmaeolobivia*) and described them as *Lobivia* subgenus *Pygmaeolobivia*. It was not until 1942 that Backeberg placed them in *Mediolobivia* - and this after the valid publication of *Digitorebutia* by Frič, Kreuzinger and Buining, in 1941.

"Frič never really accepted *Aylostera* but always preferred to use his own *Echinorebutia* instead. It was only in 1938 that he and Kreuzinger finally conceded the priority of Spegazzini's *Aylostera* over *Echinorebutia*."

Comments from R. Ginns

"I grow a reasonable number of *Mediolobivias* but I don't think I can profitably comment except upon the statement '*Mediolobivia* - it being convenient to use this Backeberg name to cover the plants under review'. This is the crux of the matter when it comes to naming as a name is given to anything so that it can be conveniently referred to. Which is more convenient - *Mediolobivia* or *Rebutia* subgenus *Rebutia* section *Setirebutia*? Names are for convenience; relationships can be dealt with in the textbooks for those interested. Personally I should never confuse a *Mediolobivia* with a *Rebutia* when in bud or flower, or even when dormant.

"The following quotation in a botanical magazine having nothing to do with cacti but dealing with the renaming of narcissus species is apposite:-

'To make a name for learning
When other ways are barred
Take something very easy
And make it very hard'

Piet Hein"

PARODIA

From the East German Parodia study group.

In 1966 Walter Weskamp and Gunter Konigs wrote in a review of described and undescribed Parodias published in K. u. a. S., "The wealth of new finds of recent years stems from the ever greater penetration of the gigantic area of total distribution of this genus in Southern Brazil, North Argentina, Paraguay and Bolivia. Finds by Buenecker, Cardenas, Lembcke - to name only a few, especially however by Ritter, causes the flood of names, numbers, and other like designations to increase, so that reviewing by the Parodia lover becomes steadily more difficult."

Sorting out currently known and undescribed species attracts the attention and interest of the specialist collector. The situation today is unfortunately no different to what it was in 1966 - one might even say that it is even more confused. A flood of new names and species are to be found in nearly every dealers list. In a foreign list of 1967 there were found about 80 spp. under the description of Parodia species from Salta, Tarija, Catamarca, etc.

In order to sort out this position, and forward a serious investigation, interested Parodia enthusiasts met together in Dresden. Georg Mette of Leipzig who initiated the meeting was chosen as chairman of the working group and Herr Kunze from Leipzig as Secretary-Treasurer.

After much discussion it was agreed to adopt the Backeberg system. After Britton and Rose, on whose system Backeberg's work is based, Die Cactaceae is the only comprehensive work in the field of cactus research that we have. Some detailed works that depart from Backeberg would have validity in this respect when they have been recognised on the basis of fundamental investigation within the group. Herr Krasucka and Jahn undertook the task of checking the correctness of the emending of the Brazilian Parodias by Professor Buxbaum and to report to the group.

With the object of obtaining seeds, members engaged to deposit rare species with one member to ensure pollination.

There followed a discourse on the classic Parodias described by Prof. Werdermann. Herr Jahn reminded members that the Parodia stuemeri in our collections is not the species described by Prof. Werdermann which, according to the original diagnosis, flowers yellowish orange. One imported plant acquired by the name Parodia stuemeri showed flowers for the first time last autumn that were a deep dark red. This was not P. stuemeri then, but P. pseudostuemeri. On the basis of the original description and the foregoing import, this latter can plainly be identified as P. pseudostuemeri. The true P. stuemeri is not to be found in the collections of the group. An error is hardly possible on this question since Werdermann's description is unique in its thoroughness and exactness.

A comparison was made between P. schwebsiana (Werd) Bkbg and P. tarabucina Card. first described some years ago. The original diagnoses of both species brought out the difference clearly. This comparison was necessary because in some collections P. schwebsiana v. applanata stands under the name P. tarabucina. Here a detailed clarification was desirable.

The new P. matthesina W. Hein was discussed - this species should be described in a forthcoming Kakteen-Sukkulanten. From a study of the diagnosis the group concluded that this species cannot be described properly according to the international rules of nomenclature, since neither the place of origin nor the seeds of this nomen nudum are known. Besides, only one example of this alleged species exists, the holotype could not be placed in one of the I.O.S. designated Institutes. The group advised the author to publish the species under a nom prov. with his working notes, to keep firmly within the rules of international nomenclature for a valid publication.

The new description of Parodia gokrausiana W. Hein came up for discussion, the authenticity of whose description has been questioned by foreign authorities. In this connection it would be referred to P. gigantea Frič.

The group look forward to co-operation with all collectors the world over who are interested in Parodia.

Translated by E. W. Bentley, adapted by H. Middleditch.

CULTIVATION OF PARODIAS - from E. W. Putnam.

I have a fair number of species and the only one that has ever given me any real trouble was a small plant of *P. nivosa* which lost its roots and was very troublesome to get going again. However, it recovered and has flourished ever since, flowering regularly and profusely. I discovered many years ago that *Parodia chrysacanthion* disliked being planted in a deep pot. After transferring it to a wide and shallow half-pot it grew apace and has become the most outstanding flowering cactus in my greenhouse. It has visited many a show and won many a prize, and no wonder, for it is hardly ever out of flower. Year in, year out, it flowers all the year round, rarely going more than a week or two without producing a few blooms. Today (October 30th) it has seven flowers wide open.

I have flowered *P. maassii* at about 3 inches diameter, quite a young plant, although many believe that it has to be very large to flower. *P. suprema* has flowered for me for two years ... I would call the flowers on my plant a dusky blood-red, but it would be better if we used standard colour charts for describing flower colours. Like some other contributors, I am hopeless at describing colours and am probably very slightly colour-blind, as I find my descriptions are sometimes regarded with amazement by others!

P. echinus is a fine, strong-growing plant. Mine has become quite an impressive column now and flowers very freely. *P. maxima*, clearly related to *P. maassii* by its spination, is a vigorous grower but I have yet to flower it. *P. tilcarensis* is a beauty and I am told it can have a wide range of flower colour. Mine is deep orange.

I find from my notebooks that I have flowered fifteen differently named *Parodias* and that all flower annually like clockwork once they start. I have seen the splendid *P. aureispina* mentioned by Mr. Linney and in fact I awarded it a prize at the British Timken show in 1968 where, to my mind anyway, it easily beat a number of other very fine cacti.

Parodia is a splendid and colourful genus, full of variety. It has the special merit that the plants themselves are very beautiful, whether in flower or not. Few other South American cacti can match them for attractive spine formations and the plants always have a very bright and lively appearance which is very appealing.

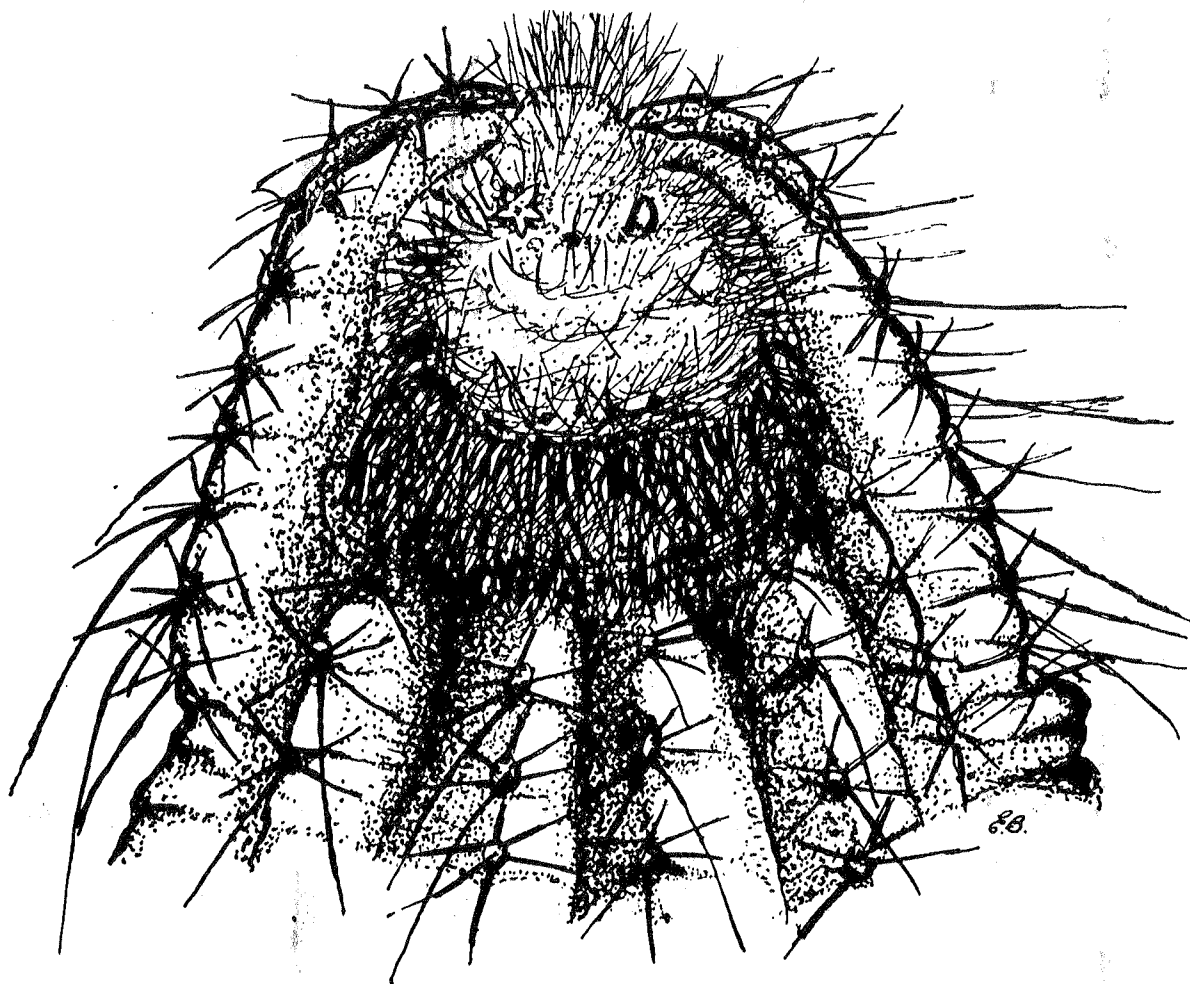
CEPHALOCEREUS BREVICYLINDRICUS n.n. by E.W. Barnes.

The plant shown in the accompanying sketches was obtained from Uebelmann and carried a cephalium when received. Growth has been only just perceptible.

The cephalium is divided into three sections. The basal section is composed of long, rather stout bristles and has no wool whatever. Matted amongst these bristles is a large amount of floral debris which must have been there for some years from the look of it. The middle section has quite a good mat of wool and strong, yellow bristles protrude through it. This section is the most interesting as flowers and fruit are produced from it. The upper section has much wool and many thin bristles and continues right to the growing point in a narrowing wedge. No flowers nor fruits are produced from this section at all. It is possible to see that these two sections are divided up by transverse strips of wool, possibly denoting a year's growth?

This plant is rather unattractive as a mature specimen, as the cephalium distorts growth at one side. However, it is interesting to note that the outline of the cephalium partly makes up for the flattening of the ribs, i.e. it is widest at the base and tapers to its apex, when viewed from the side.

The flowers of *C. brevicylindricus* are pale greenish yellow and very small, about 0.5 cm. in diameter and 1 cm. long, curved downwards like *Bolivocereus samaipatanus*; the tube appears to taper slightly and terminates in a few wide-opening pointed petals. One flower has been shown on the sketch. The buds remain fully formed for days and suddenly start to elongate in the late afternoon. Towards the evening they open and remain open all night. They may stay partly open the following day, if the weather is cool, but rarely longer. I have detected a very faint

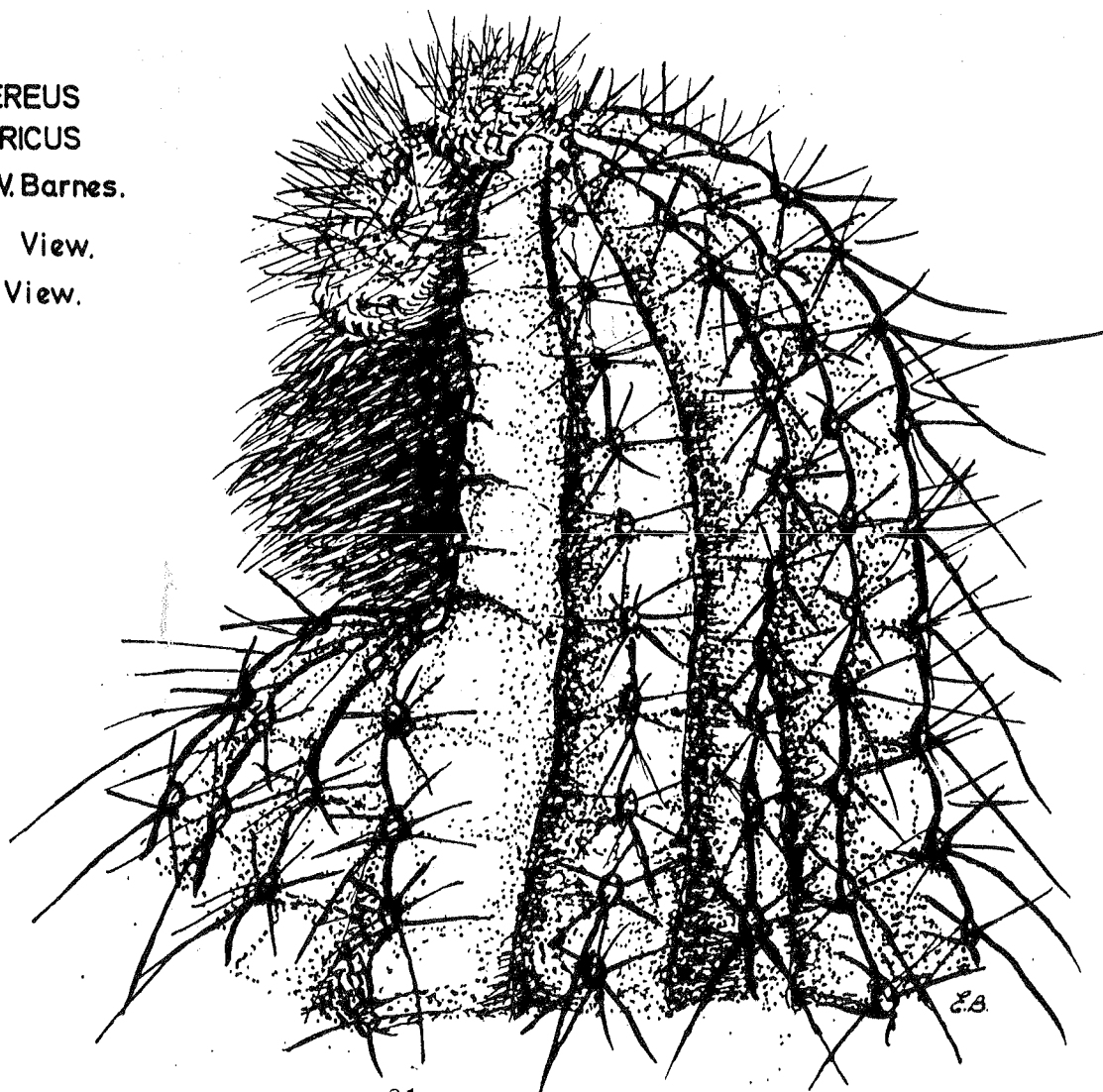


CEPHALOCEREUS
BREVICYLINDRICUS

Collection - E.W. Barnes.

Above - Front View.

Right - Side View.



scent from them at dusk. They appear always in crops and I have not yet had a solitary flower. No seed has been set as yet, but I have no doubt that it will be, as the flower is strikingly like that of *Melocactus* in some ways and if this plant behaves in the same way it could well be months before the fruits are produced.

This plant was rootless when I received it and only had about a 1" stub of rootstock left, plus a tuberous node which I removed as it looked rather doubtful to me. I gave slight bottom heat and sprayed it overhead with tepid water twice a day. During the time it took to root it grew slowly without pause and became very dehydrated in the process. It flowered a number of times even before it had made any roots at all, each crop coinciding with a period of warmer weather (not necessarily sunny) - all flowers opening together on a warm evening. Roots were produced and lost a number of times over a period of three months until I eventually potted it into a mixture of fine gravel, sand, leafmould, rotten wood debris and a little loam and J.I. base fertiliser. This is quite an acid compost and also one I find best for *Uebelmannia*. It has to be well draining and very loose or the roots are lost readily after the first heavy watering. I keep the plant at a minimum winter temperature of 50°F on the coldest nights and give a heavy spraying each day.

P.S. This plant is now showing signs of producing pups round the base.

.....from A.W. Craig: "I received a plant of *Cephalocereus brevicylindricus* from Su-ka-flor in June '68. It had very few roots and what there were had clearly been cut back at some time previous to receipt. I kept it on slight bottom heat with occasional watering and by August there was some sign of growth at the tip of the cephalium although the plant did not appear to be fully turgid and still appears like this (November)."

.....from D. Angus: "I received a plant of *Cephalocereus brevicylindricus* from Uebelmann in April '68. On examination on arrival I found it had no rootstock whatsoever. There was a circular depression in the base suggesting that the roots may have been cut off completely at the neck or else that the plant was a pup and had been cut cleanly off a parent plant. I put this plant on a peat-sand mixture in a shady position under the staging and watered it from above along with the rest of my collection. Within two to three weeks it had started to produce roots; by misadventure I allowed it to go dry for two or three weeks in midsummer which resulted in the plant losing its roots and so far I have not been able to re-establish it."

(In our slide library we have a slide of this plant, donated by D. Angus)

CHILE AND ITS FLORA

A lecture given by Paul Weisser to the 1968 Annual Meeting of the Austrian Cactus Society (G.O.K.) in Salzburg; reported by Alfred Bayr, President of the G.O.K. in the G.O.K. Newsletter. Translated by E.W. Bentley.

When any one speaks about Chile, we usually think first of three things - of Chilean nitrates, of the famous ski country, and of the earthquakes. In this lecture I will talk about this country which has been independent since 1833, which has great mineral wealth and includes the greatest copper mine in the world.

This country extends 4,300 km. (some 800 miles) from north to south and embraces a wide range of climates, from the desolate waste of Atacama through the semi-desert, the forest, to the Antarctic tundra. Cacti occur only in the central and northern part of the country. The most southerly location is near Concepcion in an area of volcanic sand. The further north you go, the more noticeable cacti become. However, north of Copiapo cacti are found only in the damper places, as on the coast, where the mist ensures a certain minimum humidity. The Atacama Desert, the driest place in the world, is virtually plant-free.

In the interior of the country near Concepcion, huge areas are covered with volcanic sand. Here grows a primitive species of cactus, *Maihuea poeppigii* which forms into clumps. This region is for the most part forested with *Pinus*

insignis, and Chile loses much woodland through fire.

In central Chile lies the important harbour of Valparaiso, a city of 400,000 inhabitants. In the neighbourhood Herr Friedrich Ritter - perhaps the most important and successful collector of cacti - has made his home on a piece of land acquired from the lecturer's father. The whole width of this part of the country forms a most impressive sight, from the Pacific to the highest mountain in the New World, Aconcagua, whose peak is just in Argentina. Fronting the Pacific are the coastal cordilleras; behind is the long valley, and as a majestic background, the Andes themselves.

For cactus growers the vicinity of Campana is especially rich, with the occurrence of *Trichocereus chilensis* and *Horridocactus garaventali*. A gorgeous picture showed a mighty *Trichocereus chilensis* fully clothed with a pale red leafless parasitic plant that is called locally 'quintral del quisco'. In the 'Palm Valley' of Ocoa there grows an endemic thick-stemmed palm that is unfortunately felled for the honey it yields. From the fallen trunks there flows out for some seven months a sap that is thickened into the 'palm honey' syrup. Each palm yields 400 litres of sap from which 60 litres of syrup is obtained. *Opuntia ficus indica* has been introduced here; its numerous large fruits are very juicy and are eagerly eaten by the inhabitants for refreshment.

Inland lies the capital, Santiago, with over two million inhabitants. From here one reaches the bathing beaches on the coast within half an hour westwards by car, eastwards in the same time the ski slopes of the Andes. Slides of this region displayed localities of *Erdisia spiniflora*, of the Andean Edelweiss, and of a rosette-leaved violet.

The Andes are the home of the condor; in earlier times it was hunted by the inhabitants who enclosed an area of land and laid attractive bait inside the fencing. The fully-gorged condors could not find sufficient take-off length to hoist themselves into the air and became easy prey.

North from Santiago stretches a steppe of stones and acacia; on southern slopes tree-high *Trichocereus* thrive. Red areas in the landscape reveal themselves as fields of paprika. On the coast *Neochilenia chilensis* is found growing. Further northwards we get into the area of the "Little North" that reaches to Copiapo. Here cacti are quite noticeable in the landscape. One sees large specimens of *Eriosyce ceratistes*, which is called 'sandillon' by the locals. Seed capsules of this *Eriosyce* contain a lot of seed - necessary because only very few germinate in the desert soil. One finds scarcely any young plants and in many places there are several plants of the same age. Often they are the result of a wetter year, when the seeds can germinate and survive.

South of Coquimbo one finds patches of forest which survive thanks to the mist. The region round La Serena is the collecting ground of Herr Wagenknecht, where many Copiapoas and *Neochilenias* have their habitat. In the Elqui valley the yearly rainfall oscillates around 150 mm. per year; in the boulders of this valley grows *Horridocactus eriosyzoides*, *Copiapoa grandiflora*, and *Eulychnia acida*. The latter has spines up to 20 cm. long, which are used as knitting needles and for the manufacture of primitive combs. Thanks to the aridity, archeological finds are well-preserved, such as fine ceramics from Inca times. The Elqui valley is watered by a stream that brings melt-water from the Andean snows. This makes it possible to harvest papaya fruits, grow fig trees and cultivate vines. The grapes are much sweeter than ours. Following a habitat slide of *Horridocactus nigrihorrida* we saw a picture of Herr Lembcke, widely known by name.

In the neighbourhood of the harbour town of Huasco - an important ore-region - grow fine candelabra cacti, that are thickly draped with *Tillandsias*, although it seldom rains (but there is the coastal mist!). (See also *Chileans* No. 2 p. 3 - H. M.). Inland are found *Neoporteria atropisnosa* and others, *Neochilenia napina* and *Eulychnia spinibarbis*. Somewhat more to the north there is found *Copiapoa carrizalensis* which forms giant clumps. As a consequence of the mist the humidity is high although the annual precipitation amounts on the average to only 26.9 mm. near Caldera, for example. Sunny days on the average number only 44, completely overcast 101 days; the rest of the year it is half overcast, sun in the morning,

mist in the afternoon.

The surrounding area is bleak desert, albeit with diverse and magnificent landscapes of high plateaux, mountain chains, salt lakes and volcanic cones. It is said that Chile is the richest country on the earth for volcanoes, some 1,500 - of which 40 are still active. Weird are the ghost towns, once thriving settlements, which were abandoned after the collapse of the saltpetre industry. We come now to the edge of the Atacama desert.

Occasionally in damp years, the phenomenon of the flowering desert occurs. About every five years the earth is covered with a thick carpet of beautiful flowers following one or more heavy rain showers. A slide showed children offering bunches of *Hippeastrum* for sale. A large bunch costs about six shillings. (Slide 14, 15, 16 & 24 in the Habitat set, see Chileans No. 6 - H.M.). The Atacama is the driest desert in the world but thanks to the influence of the Humboldt current it is not so hot. It lies at a height of 1,000 to 2,000 metres (3,000 to 6,000 ft.); it is an enchanting landscape and in it one can often see for 100 kilometres (\pm 100 miles). In general the distances by our standards are incredible. The 'Desert Express' of the Santiago-Iquique railroad takes three days and three nights for the trip.

If you wish to search for cacti, it is difficult to be successful. The earth cacti on the edge of the desert are the best fitted for the struggle for existence; the body projects only slightly above the soil (thus affording only a small transpiration surface). The strong taproot goes deep into the ground and puts out numerous side roots that are spread widely close to the surface and so are in a position to utilise the moisture provided by the mist. These were vividly depicted along with other plants such as *N. imitans*, *N. reichei*, *N. monte-amargensis*. Next we saw *Copiapoa lembckeii* (syn. *Pilocopiapoa solaris*) (? H.M.)

Antofagasta is the largest port of Chile. In the hinterland is Chuquibambilla, one of the largest mines in the world in which copper is won from the opencast workings to a depth of 350 m. (1,150 ft.) and for a length of 3 km. (about 2 miles). The surroundings are comfortless desert. To the east this district is bordered by the Andean cordilleras where, in summer, rain falls. The Indian inhabitants practise an exemplary agriculture on the basis of a good water system and terrace culture. We saw in the church of one such settlement the roof timbers made of Pasacana wood, also tables of the same material. On steep cliffs *Soehrensia* and various *Oreocereus* are found. Further north are slopes that are crossed by canyon-like valleys (quebrados). In these water will run at times and there occur stands of horse-tail up to 2 m. (6'6") high.

Arica is the northernmost town of Chile - close to the border with Peru. In the evening at a certain height a thick mist formation sets in regularly. Lying on the sand are rootless *Tillandsias* which obtain the moisture necessary for survival only from the mist. At 2,700 m. (9,000 ft.) is the region of *Browningia candelaris*; young plants could not be found here. At a higher altitude still occur massive stands of *Armatocereus*. Here in the Andes summer rain falls and a shrub vegetation occurs (see Chileans No. 4 p. 1 - H.M.). Between numerous volcanoes grow plant clumps like dark green moss which are used as fuel. Mound-like stands of *Tephrocactus* are also found, which lead into the cactus-flora of Southern Peru.

THE CLASSIFICATION OF THE GENUS *GYMNOCALYCIUM* - 2 by G. J. Swales

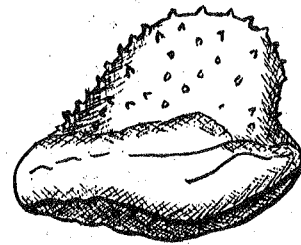
Since my brief note under this heading in the Chileans Vol. II, No. II, I have been able to examine over 100 specimens of seed from this genus. Some were kindly donated by fellow subscribers and others were purchased from the usual commercial suppliers. This may seem to be a large sample, but, in fact, much more seed needs to be examined in order to be certain that any observations and deductions made are not due to the occurrence of the odd packet of wrongly named seed (already, several have come to light, both from the amateurs and the commercial suppliers!).

According to the original classification of the genus by Frič and others in the mid 1930's there are five seed groups:-

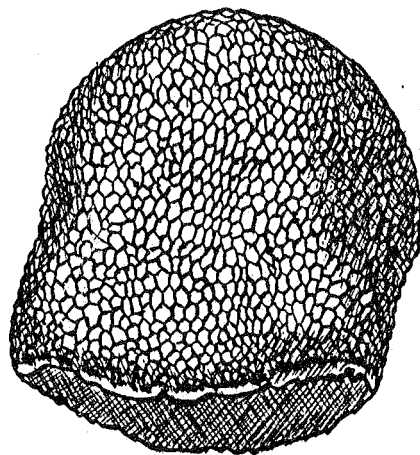
GYMNOCALYCIUM SEEDS



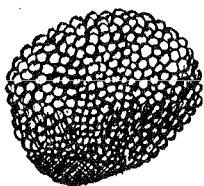
MICROSEMIINEAE



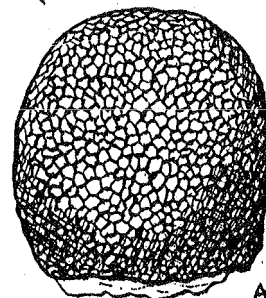
TRICHOSEMIINEAE



MACROSEMIINEAE

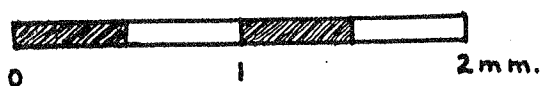


MUSCOSEMIINEAE



A.K.R

OVATISEMIINEAE



1. Ovatisemineae
2. Macrosemineae
3. Trichosemineae
4. Microsemineae
5. Muscosemineae

A typical seed from each of these groups is shown in the accompanying illustrations. A X10 hand lens is useful in examining seeds but after a while, when experience of the various types has been gained, the naked eye is often sufficient.

Unfortunately, the detailed descriptions of the characteristics of the seed groups have been published in Czech and translations are hard to come by - the printed summaries at the end of the papers (where they do occur) being tantalizingly brief. Consequently, the notes which follow are from my own limited observations but will, I hope, serve to enable those interested to classify most seed they care to examine.

The TRICHOSEMINEAE are probably the easiest to identify. The seed has a large pale hilum, the testa is a ginger-brown colour and has minute rounded projections scattered over its surface. These seeds tend to be very fragile, and if they have been at all roughly handled (e.g. passed through the post without adequate packing), they disintegrate into 'chaff'. This is often the cause of failure when growing these particular species from seed - the unfortunate purchaser has merely been planting fragments and no whole seed at all!

The MUSCOSEMINEAE are also quite easy to identify in most cases. These seeds are of medium size and a rather dull pale brown in colour. Under a lens, the testa is seen to consist of a mass of minute "blisters", some of which may appear dented and flattened due to handling. Although touching each other, these "blisters" have deep furrows between, resulting in a matt surface. The hilum is small and relatively inconspicuous.

The MICROSEMINEAE are the smallest type and are black in colour. In addition, the cells of the testa differ from those of the muscosemineae by being more closely packed and apparently thicker walled, but fairly deep furrows still occur and the result again is a matt surface. The hilum is pale in colour and relatively small.

The MACROSEMINEAE and OVATISEMINEAE are probably the most difficult to separate. They are relatively large seeds, the Macrosemineae up to 2 mm. diameter, the Ovatisemineae up to 1 mm. diameter (approx.). Size alone, however, may not be reliable, as I suspect the smallest Macrosemineae may overlap the largest Ovatisemineae. Consequently other features need to be looked for. The hilum of the Ovatisemineae appears to be only slightly depressed whilst that of the Macrosemineae is often highly depressed. Also, the Macrosemineae seem to be slightly waisted making them somewhat more tall than they are wide, while the Ovatisemineae are more nearly isodiametric. The hilum in the Macrosemineae appears to have a somewhat wavy edge while that of the other group is practically straight. Some of the seeds classed as Ovatisemineae have a coating of brownish material on the surface, usually somewhat fragmentary and thrown into folds as if the seed and testa inside have shrunk, leaving the coating several sizes too large but still in contact with the seed at most points. However, size, colour and general shape usually leave no doubt as to the grouping of such seeds.

Much more recently, Backeberg constructed a simple key by which one should be able to allocate a particular seed to its group. I am grateful to Dr. Tomanek of Brno for the translation of a version published in *Friciana Rada 1 Zprav C.1.*:-

"Black seeds:

Seeds without coating.

- | | |
|--|---|
| Large seeds, semidull black, about 2 mm. dia | 1 |
| Medium seeds, dull black, about 1 mm. dia. | 2 |
| Medium to rather small, dull black | 3 |

Seeds with coating.

- | | |
|-------------------------------|---|
| Medium seeds dull black | 4 |
|-------------------------------|---|

Seeds more or less brown:

- | | |
|------------------------------|---|
| Seeds with large hilum | 5 |
| Seeds with small hilum | 6 |

Note. The black colour of Groups 1-4 is sometimes somewhat brownish black.

If Backeberg's groups 2 & 4 are combined into a single group, then Frič's arrangement is as follows:-

Frič 1	=	Backeberg 2 & 4	=	Ovatisemineae
" 2	=	" 1	=	Macrosemineae
" 3	=	" 5	=	Trichosemineae
" 4	=	" 3	=	Microsemineae
" 5	=	" 6	=	Mucosemineae

It will be observed that Backeberg subdivided the Ovatisemineae into two groups, thus making a total of six. Later workers have elaborated on the basic arrangement by subdividing the five groups of Frič, using (as far as I can ascertain) criteria other than seed types.

Although the detailed study of the seeds of this genus is a fascinating academic exercise in itself, the aim here is to show how, having attained a working knowledge of the seed types, it may be used in conjunction with various other factors to make the naming of our plants a little easier and - possibly in the long run - to simplify the division of the genus into species so that superfluous names may be eliminated.

From time to time information collected from the *Gymnocalycium* Robin will be incorporated in these notes, especially that concerned with size, shape and colour of flowers and fruits - features which it is hoped will tie in with our groups of seeds already described here. On the other hand, any information at all regarding seeds in general, and *Gymnocalycium* in particular, will be most welcome from any of our subscribers, not necessarily members of the Robin.

FRUITING GYMNOCALYCIUM - from Dr. H. Vertongen.

"I am surprised at the small success you have had in obtaining fruits on *Gymnocalycium*s; last year I have had as many fruits as I could wish for, providing I had two plants at least of the same species in flower together.

"Within my collection of *Gymnocalycium* I have only one plant which is self-fertile and that is *G. multiflorum*. I always find that seeds produced on these plants by self-pollination are almost incapable of germination and any seedlings obtained perish after only a few months (a lack of robustness due to degeneration?).

"Amongst the seeds obtained, the most rare are:- *G. lagunillasense*, all the varieties of *G. ochoteranai* (*cinereum*, *polygonum*, *variispinum*, *tenuispinum*) *G. marquesii* v. *argentinensis*, *G. cardenasium* (of which I possess 3 very fine examples: one plant has grown as much as 15 cm. dia. plus spines), *G. zegarrae*, *spgazzini*, and many others."

ON CACTUS SAFARI IN THE ANDES From Walter Rausch, Tarija, 29th June 1968
Translated by W. Keugler from the G.O.K. Newsletter.

After half a year I think it is time that I sent a report. Today the clouds are hanging deep into the valleys and so I sit here and do some writing.

I have been walking up and down the *Sulcorebutia* homeland and I believe that I know the place as well as anyone else. I have been at 40 growing places and have recognised 9 synonymous species and, even though it may appear a paradox, I have found 9 new ones so far. In the *Mediolobivia* territory I have been, so far, at over 20 localities and yesterday I made one of the most beautiful finds: a *Mediolobivia* which looks like *Solisia pectinata*. Just as beautiful are four of the nine *Sulcorebutias* and two *Aylosteras*. Imagine you see an *Aylostera muscula*, but shining yellow! And an *Aylostera fiebrigii* v. *densiseta*, but with orange yellow spines! This event alone is worth the journey, even though there is not one *Lobivia* amongst them. (What's that I said, "worth"! Financially it's worth nothing by comparison.).

Even though the daily journey of 15 to 25 km. (10 to 15 miles) on foot still gives me pleasure, the trouble arises of how to bring away the plants. Although in any case I collect only a few examples of each kind (I know - far too few!), the plants

add up and transport here is terrible. I can't always carry a few chests round with me! I hope to get rid of a chest again in Salta by air. Unfortunately at this time of year there is not much to be done with seeds.

On one occasion I fell from a cliff - fingers hurt, but what was much worse, the exposure meter was broken. At night I dreamt one of the mice was walking round besides the Indians, then I felt I would sleep better out of doors, then - I knew I was ill!

A pair of trousers and a shirt have been worn out and the shoes are also wearing thin. Near Camargo I came to an Austrian who greeted me with the words "Well, what a sight. You look as though you have been in a war".

Although I have experienced my second winter here, only now have I felt how cold it can be. In Potosi, 4,000 m. (app. 13,000 ft.) there was snow with temperatures of -15°C ; in Sucre, 2,700 m. (app. 8,500 ft.) it was cold and had been raining; here in Tarija at 2,000 m. (about 6,500 ft.) there are sharp white frosts in the mornings and the mountains are covered by deep clouds; at Tilcara 2,700 m., the temperature falls to -17°C - and there are cacti all round! This is for guidance for cultivation - or do you know why cacti die in Europe? From the cold? From dampness?!

Here in *C. strassii* country, where Hoffmann "rediscovered" *C. straussii* (although Ritter had already found it years before - likewise in Tarija) I can now add: there are *C. straussii* in Tarija, to the south to Santa Victoria, to the north to El Palmas. It would be worth an article about the different localities where there are cacti and where there are none. The statements in literature only give locations approximately as the collectors very often have not been at the places recorded at all.

I am looking forward to coming back to Salta. After three months the post will have accumulated and I can read all the latest news. After that I am going to Buenos Aires, there my Dutchman is waiting for me, with whom I will look for *Notocacti* for three months.

THE GENUS SUBMATUCANA Bkbg and the AREQUIPA - MATUCANA PROBLEM

By Dr. Albert Simo and Stefan Schatzl. Translated from the 1964 G.O.K. Newsletter by R. Moreton. (Continued from Chileans No. 11 pp 47-49)

Submatucana currundayensis (cont.)

Seedlings as well as imported plants soon become, in Buining's culture as well as ours, taller than wide, individual seedlings even shown a definite cereoid growth. The strongly built flowers arise in the region of the apex of the plant, only exceptionally from the older areoles. The beautiful salmon coloured flower is, due to this unique shade, differentiated from all others in this genus. The flower tube is strongly built, hairy, zygomorphic and with the stamens in bunches, the stigma being somewhat extended beyond the anthers. A cross-section of the flower shows a large nectary, the remaining details being as stated for the previously mentioned species. It is only distinguished from the previous ones by its strong spination, by the irregularly defined tubercles, by the salmon coloured flower and the habitat being still further South.

It is thought that the species which Backeberg illustrated in "Die Cactaceae" Vol. 2 p. 1063 as *Submatucana* Sp. ? found by Prof. Ellenburg in north-east Peru should be mentioned here. Judging by body and flower shape this also belongs to *Submatucana*, closely related to the species *aurantiaca*, possibly identical, since the flower and its build are the same. The long spines which the illustration shows at the apex appear only in fully developed plants; in the young state they are globular, later becoming elongated. The young spines are short and more strongly curved.

In "Succulenta" 1959 Vol. I Buining described Ritter's *Matucana* FR299 as *Matucana ritteri*. This plant also came from northern Peru, from the area of Otuzco in Dept. Libertad. According to Ritter's information; remaining comparatively small and flat, also free flowering. It has the typical *Matucana* ribs, divided into tubercles, widened at the base, young tubercles bordered by a V shaped crevice

with a groove passing axially through it, directed crookedly upwards. Areoles not depressed, with white wool and round-oval in shape. Spines strong and definitely curved. Seedlings of local culture show a peculiar spine colouration with zones of reddish brown, then yellow, with a blackish base. Flowers more slender than the previous species, but likewise definitely hairy. Colour dark red. A flower cross section shows that this species is different to previous ones in that the nectary is substantially smaller, the diaphragm strong, the primary stamens only bundled together for a short distance, soon diverging laterally and associating with the remaining stamens, an occurrence only to be seen in this genus. Nectary tissue largely situated at the base of the diaphragm, base of the stigma with only slight conical widening (about 50%).

From seeds of FR299 distinctly different plants have arisen, one following Buining's description above, the second distinguished by more columnar growth, strongly tubercled ribs, large round areoles, less curved spines and the peculiar spine colouration of *Matucana ritteri* v. *ritteri*. Flower analysis is still outstanding due to lack of flowers. Buining is of the opinion that this plant is a form of *Matucana* (sensu Ritter), although the columnar growth the strong but slender tubercles show a great relationship to *Submatucana currundayensis*.

In Autumn 1959 we received a grafted propagation of an original plant from the firm Winter as *Matucana paucicostata*. Backeberg placed this plant likewise in his genus *Submatucana*. In culture *S. paucicostata* is not difficult, free flowering, frequently opening several flowers at once. This notable flat, disk-like species (soon becoming wide columnar) is easy to recognise. It has substantially narrower ribs, reduced however to definite light green tubercles which are compressed vertically with narrow dorsal and ventral furrows. The tubercles are noticeably narrowed, so that the tubercles appear almost like warts. The areoles are circular with grey-white wool, slightly depressed. The radial spines and the sometimes missing centrals are yellow grey with a dark tip, of medium thickness, flexible and hardly capable of sticking in. Their number and length is variable. Flower slender, white haired, red. The flower cross section shows an exceptionally small nectary, the diaphragm being as usual, primary stamen united to high up the tube. The base of the stigma is not widened and the nectary tissue is entirely restricted to the lower side of the diaphragm.

Hutchison found a plant likewise having a habitat in North Peru which Backeberg illustrated in "Die Cactaceae" Vol. 6, p. 3707 and placed in *Submatucana*. This new species appeared to be very closely related to *S. paucicostata* but is distinguished from it by the stronger and wider ribs, plumper tubercles which are not much compressed vertically, spination somewhat more robust, stiffer, sharper and rather darker (brownish). Areoles woolly, soon becoming naked. The flower is however a typical, thickly haired *Submatucana* flower, closely resembling *S. paucicostata*, only differing in colour. Flower tube with many greenish, pointed scales and conspicuous, almost white hair. In cross section the nectary is much narrowed due to the projection of the nectary tissue on the base of the upwards slanting diaphragm. Primary stamens as usual bundled together and united to a considerable height. Base of the stigma conically widened. Exceptional here is the pigmentation of the primary stamens, which pigmentation also spreads partly to the nectary tissue. It seems that this is not of staminoidal origin, as it undoubtedly appears at first, but a pigmentation of the base of the stamens.

MATUCANA Britton and Rose

A perusal of Succulenta, Backeberg's Lexicon, Kakteen und andere Sukkulanten, etc., would appear to yield the following species of *Matucana* - which will be divided into *Matucana* and *Submatucana* by Backeberg:-

aurantiaca FR 596	megalantha
aureiflora FR 1310	(= calvenscens)
(= <i>Incaica aureiflora</i> Ritter)	multicolor
blancii	(= <i>haynei</i> v. <i>multicolor</i>)
blancii v. <i>nigriarmata</i>	myriacantha
breviflora	oreodoxa FR 1311
calvenscens FR 593	(= <i>Eomatucana oreodoxa</i> Ritt)

celendinsis FR 692
 cereoides
 comacephala FR 587
 crinifera FR 595
 currundayensis FR 164
 elongata FR 142c
 formosa FR 658, FR 1073
 v. minor FR 1076
 fruticosa FR 1307
 hastifera FR 1306
 haynei FR 142
 v. erectipetala
 v. gigartha
 herzogiana
 v. atrispina
 hystrix
 v. atrispina
 v. umadeavoides
 intertexta FR 693
 madisinorum

paucicostata FR 597
 rarissima FR 178
 ritterii FR 299
 robusta FR 565
 supertexta FR 690
 variabilis
 v. fuscata
 weberbaueri FR 1304
 winteriana
 yanganusensis FR 592
 v. grandiflora
 v. salmonea
 v. parviflorum
 v. longistyla
 v. coloris-spendida
 v. fuscispina
 v. setosa
 v. albispina
 (= weberbaueri v. blancii)
 v. suberecta

In our last issue (p. 49) we suggested that Matucana were not easy to flower in Britain, but R. E. Hollingsbee says: "I believe it is a fallacy that Matucanas are difficult to flower in Britain. This is probably thought to be so because there are not many mature specimens about as yet. I am just bringing into flower for the first time an imported plant (ex Winter) of aurantiaca. The bud is deep yellow and perfectly regular in shape, emerging through a mass a thin spines of golden brown colour. I have had the plant for over seven years! It has always been grown fairly close to the glass (polythene lined in the past). The bud was first noted on October 19th but had obviously been there for some time since it was then already about $\frac{3}{4}$ " tall and about $\frac{3}{8}$ " in diameter."

Also successful this year, R. Senior tells the Chileans that his Matucana ritteri and aurantiaca both flowered this year.

From G. W. Sykes, we hear: "I have a number of Matucana imports, such as M. winteri and comacephala.. Both are elongated with age, but smothered in long reflexed spines. My M. aurantiaca, now the size of an orange, has lately produced a number of single, almost cleistogamous flowers of the most exquisite nasturtium shade. This plant is totally unlike the two preceding plants, being devoid of long, twisting, white or yellow spines. In contrast its body is glossy green, the shorter brown spines being insignificant by comparison."

And shortly afterwards he wrote: "You will remember that I commented on the 'cleistogamous' appearance of my Matucana aurantiaca - I was fortunate in observing it open the other day. Evidently the sun will persuade it to open just as Fraileas will open spasmodically. The flower tube was funnelform, the pericarp light brown and hairy. The petals were orange/red and the stigma and anthers were yellow. It has other buds to come (this in October - H. M.) thus behaving like a sub-equator plant, carrying its flowering period probably into late November.

"Another Matucana with somewhat similar shape and coloration and also in bud is M. crinifera. Its name has been queried, but lacking an authoritative description its name stays. It has a simple globose body, green with twelve (plus) radiating spines, light red passing to greyish/white with black tip. The central spine app. 2.5 cms. and upcurved. This contrasts with the red spines on M. aurantiaca, radiating but shorter, central spine straight. The flower I eagerly await."

From R. E. Martin we hear that: "The Matucana intertexta that flowered for me did so during the second week of July, lasting for 5 days in good condition and then began to decline. My Matucana paucicostata also flowered but only lasted for two days; the tube here was exactly the same colour as the flower petals. The tube had a series of very fine parallel grooves from base to petal, each rib carrying a few scales tipped with green. I feel that there is a striking similarity between Seticereus icosagonus in regard to the flower in colour, tube, and general structure - at least with my plants. I did try to set seed but without success.

"I would think that my *M. paucicostata* is app. 8-9 years old, on its own roots in a 4" pan; it has quite a few offsets around the base. *Matucana aurantiaca* is on its own roots but only a six year old seedling of my own sowing. It flowered for the first time in early September and lasted for four days; the remaining buds just in sight at the moment will not, I think, come to anything this season."

From New Zealand Mrs L.E. McIntosh observes that "I have six different *Matucana* flowering at present. The stigma is hidden by the tight bunch of stamens for the first day and whilst the stamens stay in a close bunch, the stigma appears to grow and extend well beyond the rest of the flower. The flowers usually last between three and five days.

FRAILEA CHRYSACANTHA: Hrabě sp.n.

Syn. *Frailea chrysacantha* Frič n.n.

(Translated by Mrs H.Allcock from 'Kaktusy' 65, Czechoslovak Cactus Society).

The body is globose, about 25 mm. in diam., in cultivation old plants become slightly columnar; the underground part forms a strong tap root. The epidermis is grey-green. Grows singly. The depression in the crown is completely covered by spines. It has 16-18 low, straight ribs, divided into six-sided tubercles. The areoles are covered by a yellow-brown felt. Young spines form at first little brushes and only later open out. The yellow colour with a slightly green tint of young spines differs from the yellow-brown colour of spines on older areoles. There are 12-17 radial spines; they are straight, 3-4mm long, radiating away from the body; the upper ones are shorter. Central spines number 4-6, are about 5 mm. long and point in all directions and it is difficult to distinguish them from radials.

Flowers are about 20-35 mm. long and wide. Inner petals are yellow, widely lanceolate, outer ones are of the same shape, yellow, with a green tip, with a green-brown line running down the middle on the outside. Flowers of plants growing in shade have flowers 33-35 mm. in diameter. The base of the flower is covered by green scales, white wool, and 20 mm. long deep auburn bristles. The stigma is yellow with 7-8 lobes and hairy. Anthers are pale yellow, stamens yellow.

The fruit is about 5 mm. wide, green and is covered with white - slightly brownish - wool, and with dark auburn bristles 10-25 mm. long. These come up 5-6 together from the green hollow of the scales which are green, with a reddish tip. Seeds are 1.8-2.0 mm. in size, dark brown.

This species is cleistogamous like other *Fraileas*, but it only starts to set seed when it is 20 mm. or more in diameter i.e. when the plant is 3-4 years old.

I have been informed by Herr Simon (W.Germany) that this species originates in the collection of A.V.Frič, who brought it together with other *Frailea* species before World War Two to Zurich to Herr Krainz, who has been cultivating it from that time under the name of *Fr. chrysacantha*. It does exist in other collections here and abroad, often under the name *F. chrysacantha* or *chrysacanthion*.

It is strange that A.V.Frič does not mention this species in one of his articles. It is equally interesting that we do not find the species described in any of Backeberg's works and - as far as I could ascertain by any other authors. Comparing this to *Frailea* species already described, and to plants observed but not yet validly described, it is evident that *Fr. chrysacantha* is a new species.

A NOVELTY FROM BRAZIL - FRAILEA HORSTII by Vitezlav Hrabě

(Translated by D.W. Haigh from "Kaktusky" - Czechoslovakia).

When, in the autumn of 1965 I thought of sending an order to the Swiss firm Su-ka-flor (Uebelmann) for nine imported Fraileas from Brazil marked on the price-list by the mysterious cipher HU, some of my sceptical friends warned me that they would turn out to be plants I already have, someone pulling a fast one, etc. All the same, I did send the order and I wasn't sorry. Or rather, I was sorry because of the nine Fraileas I ordered only six arrived, the rest were sold out. And all of them, except for one dried up mummy, were beautiful, healthy plants, as mysterious as their labels - HU. 12b, 13, 65, 75. All stood the winter well, and in the spring buds started to appear. During the summer they all flowered, some more than once, and they all set seed; this once more disposes of the theory that Fraileas must be pollinated by a different plant.

The most impressive of these Brazilian imports, both as regards form and flower, is Frailea HU.13, which was given the name *F.horstii* in honour of its finder, Mr. Horst, last year. It has not even had a published description yet, though this must come soon (see illustration on p.74). I first found the name in the journal *Kakteen und andere Sukkulenten* (1966 - 10) in the Su-ka-flor firm's advertisement.

Frailea horstii is a very interesting plant, its body and spines are somewhat reminiscent of the wellknown *F.gracillima*, but it is of more robust growth overall. The open flower is about 40 mm. across and 30 mm. long, yellow, the ends of the petals slightly serrated, and the lower part of the throat is red. Compared with other species (except for *F.asteroides*), the fruit is conspicuously large, about 14 mm. broad and up to 30 mm. long including its brush of red-brown bristles.

In size and shape the seeds are completely different from *F.gracillima*. Thus it is a species whose precise affinities can not yet be ascertained completely; nevertheless, *F.horstii* is one of the prettiest and, so far as flowers go, is without equal among the Fraileas.

SULCOREBUTIA

..... from R.E. Hollingsbee: "Referring to the notes in recent editions of the Chileans on *Sulcorebutias*, I have about 30 plants, mostly grafted on *Trichocereus spachianus* or *macrogonus*, but including three imported forms of *S.kruegerii* and one of *S.tiraquensis*. The latter differs greatly in its dense armament compared with most plants of this species I have seen. Although a mature growing plant, for some reason it has not flowered during the three years I have had it.

"My reference to difficulty in rooting offsets of this genus referred only to a specimen of *S.steinbachii* which at one stage "threw" a lot of pups but has now stopped, leaving four large offsets. After trying unsuccessfully to root smallish offsets I gave up in despair. Since then, however, I have succeeded in establishing a small offset of *S.caniqueralii*.

"Regarding roots from offsets while still on the parent plant I have seen this only with an imported specimen of *S.kruegerii* which appears to have grown with part of the stem submerged in reddish brown sandstone soil. A similar sized cultivated specimen grown on its own roots in somewhat similar conditions did not do the same.

"Flowering regularly each year are *S.kruegerii* (flower colour seems to vary according to the weather) *S.steinbachii* (two forms) and *S.lepida* - both the latter with metallic sheen to petals and colours difficult to record accurately on colour film of several makes tried, using an exposure meter. This difficulty was also experienced with *S.mentosa* and *S.sucrensis* which flowered for the first time this year. *S.glomeriseta* (genuine type) also flowered this year.

"I can certainly confirm the observation about wrongly named plants of *S.glomeriseta* - I have been caught twice! One plant came from a Dutch grower as *Aylostera glomeriseta* and was obviously either *Aylostera muscula* or *A.fiebrigii* variety *densiseta*; the second came from an English grower. A nice double header it came as *Rebutia "glomisetia"* and was, on flowering seen to be *R.senilis* variety *kesselringiana*.

S. glomeriseta is, of course, quite distinctive in its fine needle-like and fairly long yellow spines which have a distinct foxy red tint viewed overall, and stand out from the plant. "

.....from I. le Page: "I have a number of *Sulcorebutia* from de Herdt which are now making nice sized plants and should flower soon. They are grafted and I should like very much to remove them from their stocks but I haven't the courage to do so yet. Perhaps I should try rooting offsets when they are of decent size. This is one genera that I have been singularly unsuccessful in raising from seed, having tried on a number of occasions and failed to germinate a single one. "

(Any comments or suggestions on raising *Sulcorebutia* from seed will be very welcome - H. M.)

.....from Mrs. J. Mullard: "After hearing Mr. Donald's advice at Grantley Hall (the N. C. & S. S. weekend), we beheaded two *Sulcorebutia* from their grafts leaving a small amount of scion on each stock. *S. mentosa* has not produced any offsets from the remaining scion but the remaining piece of *S. sucrensii* has produced two plantlets. We put them both on bottom heat to begin with, with gentle sprays, but they were not happy, so they now sit on sand in the semi-dark and are much happier. *S. mentosa* rooted nicely but we lost the *sucrensii* - I will try again with the plantlets next spring. "

.....from E. W. Barnes: "I find I have little difficulty in rooting beheaded *Sulcorebutias*; at the moment I have rooting - *tunariensis*, *tiraquensis*, *lepida*, *kruegeri*, and *steinbachii*. I am using Levington seed compost as a rooting medium. I have as seedlings *menessesii*, *tunariensis*, *lepida*, and *weingartioides* (this from my own plant).

"I notice that the thickened fleshy root develops on young seedlings, whilst cuttings take 18 months or so to do the same but these are then untypical as there are a number of thickened roots instead of one. "

.....from R. E. Senior: "This year I have been chopping the scions off some of de Herdt's grafts. So far, *S. kruegeri*, *mentosa*, and *lepida*, have rooted. "

EXTRACTS FROM THE COPIAPOA ROBIN

.....from H. Middleditch: "None of my *Copiapoa* have yet flowered for me, but the body forms and characteristics of these plants exhibit some interesting details. My plant of *C. cinerascens*, although small, is of distinctive appearance, with ten quite clearcut ribs with almost no spiral to them. There is one central spine and 7-9 radials, the two smallest ones projecting upwards, the remaining 5-7 projecting sideways and downwards, all pretty well parallel to the body. The epidermis has a rather peculiar deckled look and, when examined under the magnifying glass, seems to consist of a great many minute spots. I suppose that they could be the cause of the slight bronze sheen on the deep green body. On the other hand they may be similar to those which can be seen with the naked eye on *C. montana*, where the body seems at first to be a very pale green, but on closer examination proves to be a grass-green colour with a covering of whitish spots that do not entirely obscure the basic green of the body, but which coalesce in places to become either closer or thicker so that the body appears to be almost white.

"Under the magnifying glass, *C. cinerea* also has rather a deckled appearance as if this, too, might be a cultivated form of the 'bloom' one associates with imported specimens of this genus. "

.....from Miss E. M. Colley: "I have about a dozen species of *Copiapoa* which are in a greenhouse without winter heating so they are kept bone dry during the winter. Two of my plants have been grown from seed which I acquired as sp. n. J. 20, I do not know the source. The plant body is a fresh green with light brown spines. One of these seedlings has divided dichotomously into two growing centres.

"I have a *C. carrizalensis* which is quite a distinctive plant; mine is now about 1½" wide by 1" high, with a grey-green finely mottled body and five black spines at each areole, the lower three being longer than the upper two."

.....from C.C. Baxter: "I must say right away that none of my 16 Copiapos have yet flowered either. I have a plant of *C. krainziana* v. *scopulina* where the spines are stronger and stiffer than the type and stand out very straight from the body. I received the plant as *C. scopulina* but I see that Backeberg classifies it as a variety of *krainziana*.

"My first Copiapos were *C. haseltoniana* which I raised from Winter's seed in 1963. They are now some 3" dia. over the body and the two plants I kept differ slightly from each other, agreeing with the two forms mentioned by Mr. Ginns in the N.C. & S.S. Journal for June 1965.

"My Copiapoa *humilis* (ex van Donkelaar) does not agree with that described by H. Middleditch, (with needle like black spines 3 cm. long in the crown). My plant in a 3" pot, is beginning to clump freely from the base and has the shortest and finest spines of any of my plants, none being longer than 0.5 c.m. and grey brown in colour. Do the long spines only appear when the plant reaches flowering size, and is it usual to see a Copiapoa forming a clump of the size of my plant without the central body being damaged?

"This year I sowed seeds of 23 species of Copiapoa from different sources. Most of the seedlings have grown strongly, much faster than (say) Mammillarias or Rebutias even and after 4½ months the largest seedlings are about ¼ to 3/8" dia. - which to me is fast growth. Unless the rate of growth of the seedlings slows up it is hard to see why grafting is necessary.

"The plants even on their own roots do not seem to be fussy in cultivation and appear to enjoy full sun and in the case of all my Copiapoa grown under these conditions the bodies exhibit the minute spots referred to by H. Middleditch."

.....from G. Sykes: "My interest in Copiapoa was stimulated when I obtained a plant of *C. krainziana* from a local nurseryman. To me it is the finest possible globular cactus, certainly my favourite. Unfortunately, I have not flowered it, nor yet any of my others. The outstanding characteristic of *krainziana* - now 4" in body dia. - is the magnificent curved, glass-like spines, of equal thickness and numbering about 16-20, up to 1½" long."

.....from E.W. Bentley: "I envy anyone with a *C. krainziana* 4" in diameter! I have four plants of this species, two on their own roots, another (grafted) is named *C. krainziana* f. *bruinispina*. The body is purplish like a seedling *cinerea*. The older spines are glassy but the new spines are brown - very brown at the tip - less so towards the base. This name was given to me by Wouters.

"I find that few species germinate well from seed and certain species - *cinerea*, *haseltoniana*, *humilis*, *lembckei*, *streptocaulon* and *montana* come up more frequently than others. I suppose that that is why these species are more easily available.

"It is possible that Miss Colley's J. 20 is *C. chanaralensis* - it fits the description. She will find J. 20 given as the ref. no. of seed of *C. marginata* var. *chanaral* in Abbey Brook's catalogue of 1966 and 67. I believe the 'J' series are collected by Lembcke. Is *C. de chanaral* the same as *C. chanaralensis* - which is figured in the Lexicon?

"I have a *C. Valle de Huasco* on its own roots from Sargent and it isn't doing too well. I suspect that I have given it too much sun. Do any Copiapos grow in part shade? With regard to the greyish bloom on Copiapos I suggest that this comes with age irrespective of whether the plant has grown in the wild or in cultivation.

"My *C. lembckei* is a grafted plant about 3¾" that came via Wouters from Lembcke himself - so that this is one of my Copiapos that I am tolerably sure has a correct name! It obviously is not like G. Syke's plant! The spines are brown and the areoles cream - almost pale orange, like some *haseltonianas*. It is interesting that on two occasions two ribs (the same two each time) have fused for a short distance, each

time giving a double areole i. e. two areoles side by side and confluent."

... from J. W. Welch: "I have two seedlings of *C. barquitenensis* - a new dwarf species I believe - from De Herdt's seed, sown in a peat-sand mixture. The seedling still in this soil is not doing very well, whilst nearby *Pelecyphora* and *Turbinicarpus* are growing faster than *Rebutias* and *Melocacti*, *Lophophora* and *Echinocactus horizionthalonus* almost as fast. The other is grafted on to a small *Echinopsis* offset - still on the parent plant - and is growing well. It is producing thin jet black spines."

... from P. Beeston (N. Z.): "It may be that *Copiapoas* are easier to flower in our conditions and climate than in England, for I have had *humilis*, *montana*, and *intermedia* in flower for me. I now have about 26 species of *Copiapoas*, my largest plant being *C. krainziana* which is $3\frac{1}{2}$ " in diameter with two offsets each about $1\frac{1}{2}$ " in dia - so far it has shown no sign of buds. On the three which do flower for me the wool at the growing head becomes very dense before the buds do appear and they are quite well developed before they become visible through the wool. Flowers have a slight pungent smell and once a plant starts flowering it flowers almost continuously throughout the summer."

... from A. Sadd (N. Z.): "I have about a dozen *Copiapoas* of which *montana* and *humilis* have flowered. My *C. humilis* is 4.5 cm. dia. and 3.2 cm. high with one reddish central spine \pm 1.2 cm. long and 10 white radials - 3 mm. long. *C. pseudo-coquimbana* v. *vulgata* is 5.1 cm. high and 5 cm. dia. with 9 slightly curved brown spines up to 1.9 cm. long; this one had several attacks of sunburn and the stem is marked in a few places. *C. hypogaea* v. *barquitenensis* is producing something from the junction of the stock and the scion which I suppose is an offset, but it is pale pink!

"What I feel I do need badly is a full descriptive key to the genus, in English. Backeberg's keys are not always very good and I think that this Robin could well aim towards compiling such a key. I realise that to construct a key is far from easy, but if a start can be made then we can pick it to pieces and so gradually work towards a satisfactory key."

... from Mrs. McIntosh (N. Z.): "My growing conditions differ from the two previous contributors - the summers in Hawkes Bay are considerably drier and winter milder, although we do get up to 18° of frost in June. We have ten hours daylight in midwinter (June) and 17 hours in midsummer. My compost is one third each of very rich compost, granulated pumice and fine gravel.

"The oldest of my *Copiapoas* - *humilis*, *montana*, *cinerea*, *haseltoniana*, will be six years old now and were grown from offsets from originally collected plants. They all flower profusely throughout the summer and, with the exception of *C. haseltoniana*, have offsetted freely. *C. krainziana*, *fiedleriana*, *pepiniana*, *bridgesii*, and *calderana* - also offsets from the same source - have been growing for me for only a year and have not yet flowered. *C. lembckeii* and *carrizalensis* flowered this year for the first time; they were purchased as seedlings four years ago.

"The flowers are all alike, a pale creamy yellow, not very large - $1\frac{1}{2}$ " across - almost transparent, and they do not appear to have a tube. The filaments and anthers are of the same colour and are in two rows, the first row open wide and lying on the petals (almost reaching to the edge of them) the second row stand up round the style which is also of the same shade and fully 1" long with 5 or 6 lobes. They last for two or three days, depending on the weather and have a pleasing perfume. They are also self fertile. I have never seen a berry but the matted wool is always full of seed and these germinate freely round the plants.

"They are grown in the hottest part of my glasshouse and the temperature in there today (Feb. 3rd) at noon was 120°F. The roof is novaroorf (a plastic sheet) and the glass windows are partly whitewashed for the summer. The plants need - and get - copious watering, poured over the plants, the water being slightly warmed.

"The wool which appears at flowering time is very thick, covering about the top third of the plants (like *Malacocarpus*). The wool colour varies with each plant; *C. haseltoniana* has a rusty orange colour to match the plant, *C. montana* is pale grey

and *C. humilis* is white. The first two mentioned carry the 'bloom' so heavy that you would think that they had been dotted with talc.

"My plants are all growing on their own roots in plastic pots."

.....from R. Zahra (Malta): "I think that there are two things which can damage *Copiapoa*, these are too much water in winter and too much sun in summer. All our rain falls in winter and in summer skies are cloudless and it is very hot. Because of this I keep all my *Copiapoa* in a shaded greenhouse so I can control conditions a little. However, *Copiapoas* don't seem to flower very readily here.

"Amongst my plants is *C. dura*, slow growing with spines that are straight and jet black when young but turn to a light grey when old. *C. cuprea* has black spines as well but these are curved backwards towards the body and so the appearance is very different from that of *C. dura*.

"Some say that *C. de Vallenar* = *C. applanata*. I have raised *C. applanata* from seed sown in 1966. I now have four seedlings $\frac{3}{4}$ " in size and they are all very different from my *C. de Vallenar*, which came from Max Schliepfer. Its spines are reddish-grey whilst those of *C. applanata* are black. I have grafted two of the *C. applanata* seedlings on to *Selenicereus*. These produced better spines than those on their own roots and they also grew a little faster. What is important is that the shape and number of the tubercles on the grafted plants changed. They became smaller and doubled in number. This, together with the better spines on the grafted plants, makes the two pairs quite different. In this case it is very difficult to make a key. Are we going to base a key on grafted plants or on those on their own roots?"

COLLECTING NEOPORTERIANAEfrom R. Zahra, Malta.

"I collect only cacti, not that other succulents do not interest me, but I do not have enough space. I take great pleasure in raising my plants from seed and every year I sow some 80 different species, mostly South American species. I started collecting six years ago and since then I have managed to build up a collection of about 700 plants of about 500 different species.

I have done well with seeds from the start and I have five year old *Espostoas* and *Haageocerei* 9" high. In the past I was very interested in South American cerei and so I have a large number of *Espostoa*, *Haageocerei*, *Oreocerei*, *Eulychnia*, *Cleistocacti*, and so on. However, since three years ago my main interest shifted towards *Copiapoa*, *Notocacti*, and *Neoporterias*.

In Malta the sky is without any clouds for nine months of the year but we get up to 30" of rainfall annually. This falls in very heavy showers between October and February. (This is a rather similar climate to the eastern Andes of Bolivia - H.M.). In October and March we get some hailstorms and the individual hailstones sometimes reach $\frac{3}{4}$ " in diameter. Because of this we prefer to keep our plants in a greenhouse. At the same time the summer sunlight is very strong and oddly enough imported specimens of large plants are known to have been scorched by the sun. My greenhouse is thus heavily shaded and the roof is made of white P. V. C. Temperatures inside reach 115°F in the summer and because of this I have to water twice a week. The plants like this treatment and grow fairly quickly even on their own roots. It is perhaps enough to say that one year old *Neoporterias* are $\frac{3}{4}$ " in diameter. In the winter the temperature outside is always above 36°F.

I have a plant that I have not seen mentioned in 'The Chileans' and that is *Pyrrhocactus uebelmannianus*."

Regarding this last species, this name appeared at the Keuntz nursery on our 1968 Cactus Tour of the Riviera; the plants in the bed were labelled *Neoporteria* No. 4 but Madame Keuntz named them *P. uebelmannianus* when it came to packing them up. Plants were offered by Max Schliepfer two or three years ago under this title and the following descriptions are taken from plants of H. Middleditch:-

Neoporteria No. 4 ex Schliepfer. Ribs 13, acute, deep grooves. In very small plants there are 10 radial spines, spreading, central spines one, black, 5-10 mm. long in the crown, incurving, very thin. Later the radial spines grow longer and not quite as spreading. The body is a dark purply green. The areoles are small - some 2 mm. long by 1.5 mm. wide, white oval. This plant now about one inch in diameter.

Pyrrhocactus No. 4 = *P. uebelmannianus* ex Keuntz. Plant about $2\frac{1}{2}$ " across the body. Body dark purple, slightly mottled. Ribs 13, acute, grooves between deep - app. 1 cm. deep. Early growth app. 10 radials, 1 central spine + 5 mm. long, areoles 2 mm. by 1.5 mm. Present growth has 10 - 12 spines, black, all incurving, very thin, radials and centrals not distinguishable, standing well away from body - spreading only slightly, longest 3.5 - 4 cm. long, one or two much shorter at the top of the areole. Areoles white, about 4 to 4.5 mm. long and 2 mm. side, about 1.50 cm. apart on the ribs.

.....from J.D. Donald: "This plant (illustrated on our front cover) is not new at all - it is none other than *Neoporteria* (*Nichelia*) *nigriscoparia* (Bkbg) Don. & Rowl. You can see a fine illustration in *Die Cactaceae* Vol. VI p. 3786 as Abb. 3434. This species was never very common and so did not get well known - then the plant was rediscovered and rapidly propagated in other hands without recognition.

The flower is certainly not a true *Neoporteria* but rather a mixture of characters - it has the typical *Nichelia* shape to the flower i.e. relatively short tubed and a wide opening throat and the nichelian display of perianth segments - the colour of the flower is not typically *Nichelia* but rather in between the mauve-violet of the true *Neoporteria* and the pinky straw colour of many *Nichelia* flowers. The fruit is quite distinct and forms a thick berry that hardly elongates on maturity."

Well, that's one more doubtful specimen correctly named. Our *Neoporteria* Robin is now back from New Zealand and on its second round in the U.K. There are vacancies for two more participants - H.M.

SEED RAISING

.....from R. Ginns: "Too many fancy mixtures and methods are used for seed raising. I get excellent results by using my standard mixture of leafmould and sand and treating the seeds as I do any other seeds, such as stocks or lettuces, apart from bottom heat early in the year.

"I really think there ought to be a distinction made on the Chileans seed list between seeds obtained by careful hand pollination and those formed by haphazard means. I shall mark mine as probable hybrids. It would be a pity if the Chileans are responsible for the proliferation of indiscriminate hybrids wrongly named as true species. There is too much of this already amongst the *Rebutias*. However, I agree with the comments (in *Chileans* No. II p. 70) that even commercial nurseries send out hybrid seed, unfortunately - I have received such myself."

.....from N.W. Ivory: "I read the article in No. 11 of *The Chileans* on seed-raising - this is a subject that interests me a great deal. I have used a soil-less compost of my own mixture for the past three years. This is composed of equal parts by volume of Irish moss peat (not sedge) fine grade horticultural vermiculite, and a fine sharp grit (not sand) plus John Innes base fertiliser. A quarter inch layer of the grit is placed on the top of the compost and the seed sown in this. Unless the seedlings are vigorous growers, they are not transplanted until they are at least one year old, sometimes even larger than this. I get good results this way.

"I have tried many other composts, soil and soil-less - including *Levingtons* and others of my own devising and I have found that the majority suffer from a rapid growth of algae, moss, and liverwort."

(I think many of us would be interested to know if this compost is used with top or bottom watering or with spraying, with or without bottom heat; also whether this

system has been tried on the smaller Parodia seed or with Sulcorebutia? - H. M.).

PHOTOGRAPHING CACTI

Conveying details of body, flower, and fruit characteristics of our plants to fellow cactophiles can be rather difficult when it comes to forms or shapes. Perhaps there is no better way of conveying an accurate impression of fine detail than a close-up photograph. But one immediately supposes that this will require special techniques and expensive equipment - as E. W. Barnes writes to the Chileans "I have buds on many of my new Notocacti and wish I had a camera which would take close-up shots. My own cheap one takes them down to 18" - far too far away! I shall have to save up for one, but have no idea what I should buy. I don't want a very sophisticated or expensive one, but a simple one that I can keep for nothing but cacti photography. I know the expensive ones take better shots etc., but I cannot afford one so that's that."

It is perfectly true that to take photographs under difficult conditions of light and shade, or of moving objects, etc., rather more sophisticated photographic equipment is required, but it should not be thought that a good quality slide cannot be obtained with fairly simple equipment. Perfectly adequate slides can be taken by a relatively cheap and simple camera though often a little more patience and effort may be required to produce them.

To be able to convey detail, the plant - or plant and flower - should fill the viewing frame of the camera and hence should fill the print or slide; the field of view at the subject should probably be about 4" x 5" and the camera may require to be some 12" from the plant. Most cameras will focus down to within 2.5 ft. of the subject, when the field of view is about 15" x 12". The problem, therefore, is one of finding a means of getting closer to the subject but keeping the plant in focus.

With the less expensive type of camera i.e. without a 'reflex' viewfinder, a supplementary lens can be used. These lenses can be purchased comparatively cheaply (under £1) and clip or screw on to the front of the existing lens so reducing the lower limit of focussing. The most common sizes are Nos. 1, 2 and 3 diopter allowing focussing down to the region of 9". Any combination of these supplementary lenses may be used to bring the range down even further, but this greatly reduces the depth of field and makes accurate focus ing very difficult.

The great advantage of supplementary lenses is that the exposure required is the same as that indicated for the camera lens without attachments. On the other hand, the focussing distance indicated on the camera is not correct when using the supplementary lens, also steps must be taken to counteract parallax.

For any particular supplementary or close-up lens a table is usually supplied which converts the normal camera lens distance reading to those required with the close-up lens. To ensure correct focus ing the camera should be set up in front of the subject - a tripod is best for this - and the camera lens to subject distance measured accurately.

Parallax occurs because in most non-reflex cameras the view-finder is about 1.5 inches above the lens and possibly also to one side. Thus the lens and view-finder have slightly different fields of vision, this only being of some consequence at the short distances we are considering. Allowance must be made for this either by focussing at an imaginary object displaced from the subject plant by the same amount as the view-finder is displaced from the lens, or by using a square of card, offset the requisite amount from the plant, centering the view-finder on it and removing the card just before pressing the shutter. Alternatively a wire frame with the appropriate offset can be clipped to the camera.

By dint of care, patience, and experience, this method will produce good, close-up photographs, but there is plenty of scope for error. With the more expensive single lens reflex camera, the problem of parallax does not arise because the subject plant is actually viewed through the lens and you photograph exactly what you see; when the plant is in focus in the viewfinder it is in focus for the lens; the depth of field in the viewfinder is that for the lens. This type of camera is thus more complicated

and expensive to make but much simpler to use, for the purpose outlined by E.W. Barnes. The minimum focal distance for any single lens reflex camera can be reduced by using extension tubes (or bellows) on the lens fitting. Again you see in the viewfinder what the lens sees, so if it fills the frame and is in focus in the viewfinder it will come out that way on the print or slide. You can get the lens within 3" of the plant by this means.

With an extension tube the exposure indicated should be adjusted in accordance with a table usually supplied with the camera. As this is virtually the only possible source of error, it will be seen that a single lens reflex camera is quite simple to use and so is very suitable for taking a single plant or closer detail.

A set of extension tubes will cost app. £4-£5; bellows will cost from £8 upwards. An s.l.r. camera can cost anywhere about £30. Patience and a careful scrutiny of sales and second-hand offers in camera shops and photographic journals (e.g. Amateur Photographer) can yield very satisfactory equipment at half this price.

A.W. Craig & H. Middleditch

(Our robin on Photographing cacti is now on its third round. It caters for users of both S.L.R. and other types of camera.

Further notes on using a camera for photographing individual plants or for close-up work will appear in our next issue - H.M.)

THE PHOTOGRAPHIC ROBIN

This Robin has quickly settled down to discussing the ways and means of producing a photograph of the sort we expect to find in our slide library or in this Journal - a photograph of a single plant which conveys to the viewer a clear idea of the habit of the plant or of its flowers.

Having this aim in mind, the Robin members generally agreed that there were two extremes which it was desirable to avoid - firstly having the plant occupying so little of the picture that it looks lost and insignificant and secondly, getting so close to the plant that spine tips or even parts of the body are cut off by the margin of the picture. Having the plant just filling the frame was indeed the ideal to be aimed at.

'The Chileans' have received a number of black and white photographs of very interesting plants but unfortunately the prints were not suitable for reproduction because of a distracting background - part of the staging or of the greenhouse, perhaps. All Robin members agreed that a completely neutral background was essential for a good photograph. Alan Craig observes: "Most of my photographs are taken against a background of plywood painted with a matt black colour poster". David Lewis adds: "When taking plant portraits in b & w or colour, a backcloth is desirable. I have green, dark blue, light blue, and black ones. A dark plant body and spination may require a light rather than a dark background." Bob Hollingsbee says: "I use black, dark blue, light blue or pin, card". Harry Middleditch: "Always uses a piece of black velvet as a background".

To further the objective of giving the viewer a good picture of the plant, it was agreed that it was undesirable to try and include both plant and pot in the picture - as much of the pot as possible should be cut out of the field of view. Similarly, the plant label should not constitute a distraction from the main subject. Some Robin members preferred to have a label included in their slide, whilst others did not, but this obviously depends upon personal preference. Transparent plastic labels were felt to be rather the unattainable ideal of inconspicuousness, whilst the midget tee label was both small and had the advantage that being 1" wide it provided a very useful standard scale of size.

Following discussion on what to include in the viewfinder, Alan Craig suggests: "I believe it is an asset when a shot is taken of a grafted plant, to include enough of the stock so that the genus at least can be recognised, since it can have an effect on the mode of growth of the scion".

Problems of assessing exposure are discussed. Alan Craig says: "The difficulty

which I find hardest to overcome is in obtaining a good slide of both plant and flower together. If the body is correctly exposed, the flower is overexposed or if the flower exposure is correct the body is too dark. I wonder if it is possible to obtain both plant and flower correctly exposed - by using reflectors to focus extra light upon the body of the plant only". Harry Middleditch expresses a like difficulty and suggests: "If you offer your lightmeter to the plant body and then to the flower - into the flower - you may obtain with a red flower double the light reflection that the meter reads off the body, and with a yellow flower, three times the light reflection given by the body. This means that whatever exposure is chosen for the shot will be wrong; this situation may be avoided by either:

- (a) taking the flower in sideways profile where the light reflection does not differ too greatly from that read off the body,
- (b) look directly into the flower, more or less filling the frame with the flower(s), using the flower lightmeter reading for the exposure,
- (c) pick a dull or overcast day when the Weston meter reading is less than 25, when there will be much less difference between the lightmeter reading on body and flower;
- (d) use a method of Mr. Kennewell's and set up at either side of the neutral background, angled to it, but out of the field of view, two stiff shiny white sheets which will reflect more light on to the body".

Colin Williams included some slides in the Robin which were quite free of either over-exposure of the flower or under-exposure of the body and suggests that to get these results 'you will probably find that the best lighting for taking photographs is a lightly overcast day when harsh shadows are absent."

Various preferences are expressed for side or overhead or other means of lighting the plant; Colin Williams sums it up nicely in saying 'lighting depends on the aim of the photograph. Surface texture will be shown best by very oblique lighting, an overall soft lighting will avoid heavy shadows and give less contrast range on the subject, contra-jour photographs can be used to illustrate the transparency of some petals. The list of possibilities is endless. It all depends on what the photographer wants, and what appeals to one person is anathema to another.'

For those wishing to do some winter reading in preparation for the next shooting season, Bob Hollingsbee provides a very useful list of books, which could well be obtained either from or through a local library:-

Colour photomicrography,	C.H.S. Tupholme,	Faber 1961	42/-
Close up colour photography,	C.H.S. Tupholme,	Faber	63/-
Camera close up,	O.R. Croy,	Focal Press	37/6
Exakta manual		Focal Press 1966	50/-
Copying and reproduction,	O.R. Croy,	Focal Press	42/-
Close range photography,	C.H. Adams,	Focal Press, 1956	
Photography in the garden,	T.L. Gunn,	Collingridge	
Creative table top photography,		Fountain Press	35/-
Close up photography, Photofacts series No.38		Fountain Press	2/6
Still life, Photofacts series No.27		Fountain Press	2/6

Further discussion took place on aspects which will be covered in our next article.

COLLECTORS' CORNER

..... from J.W. Kerridge: "My *Winteria aurispina* has put up a marvellous show this last summer, in flower most of the time with 20-25 flowers out at a time, coming at about monthly intervals. It is still growing bedded out with a free root run and appears quite happy."

..... from A. Johnston: "My plant of *Winteria aureispina* seems to be growing well this winter so it gets a dribble of water now and again. I have three offsets on it now and the main stem is starting to lean over."

..... from D.W. Sargent: "My consignment of plants from Peru finally arrived. The first plant unwrapped was rotten and my heart sank when I thought of the money

laid out on them, but to my delight the next 50 were perfect ... in fact I had less than 20 losses out of over 700 plants so I am feeling much relieved.

"Although I have been growing and importing plants for nearly 20 years, I still get a big thrill at receiving a consignment of plants from abroad, especially species I have never seen before. To see 100 Islayas spread out on the kitchen table is quite a sight!

"However, I am not too certain that some of the names are correct, especially amongst the Matucana, but I have had sincere offers of help from three members of the Chileans (J.D.Donald, K.V.Mortimer, R.Moreton) so I think I am in good hands. I should think that between us we should identify most.

"My supplier writes to say he is now on a collecting trip in the extreme south of Peru and says he has found quite a few plants which he cannot identify (though this does not mean they are new discoveries of course). Amongst them he says he has found are: 'near Tacna close to where Islaya krainziana grows - a new and completely different Islaya. Near Ilo a small growing Islaya with large yellow blossoms ... yet another different Islaya in the upper Chappara valley ... in the nazca valley a Melocactus not in any book ... 9,000 ft. above Moquegua a new Neowerdermannia ... At least five different unknown Arequipa ... a new Mila found 600 miles south of any previously reported Mila ... and new Matucanas and Lobivias.'

"Examples of these and others are due to arrive here about March. In the spring he will be making a trip to Chile, Bolivia and Argentina to collect more plants. He said that he has been staying with a tribe of Indians who still practise head shrinking so I hope he doesn't send off a crate of those! "

SLIDE LIBRARY

More slides have been received during the year and the stock of slides now available covers a much wider range of South American genera. Almost all slides are of a single species and are principally intended as an aid to identification. Full details of our stock are available from the slide librarian (S.A.E. with enquiries, please).

Owing to the change in U.K. postal rates the charge for the loan of slides in the U.K. must now be raised to 2/6 per set.

ERRATA - No.11

Owing to an oversight, acknowledgement was not made to J.D.Donald for the notes on *Sulcorebutia arenacea*, appearing on p.56 of our last issue. The reference to *Gymnocalycium 'ungens'* on p.54 should, of course, have read *G.pungens*.

CONTINENTAL CACTUS TOUR - 1969

Since the publication of our previous Journal, we have heard from the Editor of the East German Cactus Journal, who resides in Dresden - "We would be very pleased to welcome you and your friends here in Dresden during your 1969 Cactus Tour. We would endeavour to prepare for you a comprehensive picture of our cultivation and collection of cacti and other succulents. There are members both in the Dresden branch and detached who will gladly afford you and your friends a glimpse of the cactophiles in East Germany."

We have also heard from the Secretary of the Czechoslovak Cactus Society in Brno who has kindly offered to arrange for us to see some local collections there and also recommends the Linz gardens (which we visited in 1964) as well worth a stop en route.

SUBSCRIPTION 1969-70

A subscription renewal form for the year 1969-70 will accompany our March Journal.

Owing to the inexorable rise in printing costs we are obliged to ask for 17/6 for our next year's subscription, in order to maintain the present standard and content of this Journal.

STUDY GROUPS/ROUND ROBINS

English	Cleistocacti	A.A.Sadd, 26 Carlisle St., Island Bay, Wellington S.2, New Zealand.
	Copiapoa	D.J.Lewis, 16 Brundall Crescent, Cyntwell, Cardiff, CF5 4RU.
	Epiphytes	A.J.S.McMillan, 5 Oakfield Road, Bristol, BS8 2AJ.
	Frailea	J.Forrest, Beechfield House, Meikle Earnock Road, Hamilton, Scotland.
	Gymnocalycium	G.H.Swales, 5 Hillcrest, Middle Herrington, Sunderland, Co.Durham.
	Hydroponic Culture	P.R.Hallett, Llaregyb, 20 The Garth, Bull Bay, Amlwch, Anglesey.
	Lobivia	R.E.Hollingsbee, 46 Markland Road, Dover, Kent.
	Mediolobivia	Contact the Chileans
	Miniature Opuntia	D.E.Watling, 52 Frances Road, Windsor, Berks.
	Neoporteriae	H.Middleditch, 5 Lyons Avenue, Hetton le Hole, Co.Durham.
	Notocactinae	K.H.Halstead, Little Firtrees, Wellington Close, Dibden Purlieu, Southampton.
	Parodia	A.Johnston, 11 Malvern Road, Scunthorpe, Lincs.
	Photographing Cacti	A.W.Craig, 16 Skeeby Close, Hartburn, Stockton on Tees, Teesside.
	Sulcorebutia	Contact the Chileans
	Trichocereus	N.T.Hann, 30 Copse Avenue, West Wickham, Kent.
German	Chileans. Echinopsis, Epiphytes. Gymnocalycium. Islaya. Parodia. Rebutia & Lobivia - W.Kinzel, 53 Duisdorf/Bonn, Bonhoefferstrasse 16, West Germany.	

THE CHILEANS

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Slide Librarian	A.W.Craig, 16 Skeeby Close, Hartburn, Stockton on Tees, Teesside.