

Uebelmannia gummifera (Photo: H. Middleditch)

In the November 1967 issue of the Dutch Cactus Society Journal 'Succulenta', A.F.H. Buining published the new genus *Uebelmannia*. The type plant of the new genus is *Uebelmannia gummifera*, previously known as *Parodia gummifera*. There are now three species of this genus available, *U. gummifera* (Bkbg & Voll) Buining, *U. pectinifera* Buining HU 106 (syn. *U. magnificatus* n.n.) and also *Uebelmannia* sp. n. HU 141 (syn. *U. quartziticola* n.n.).

Buining writes that:-

"The plants which now belong to this new genus are close to *Parodia*, *Notocactus* and *Frailea* but are separated on account of their particular habit, bloom and fruit, but mainly by their divergent seed structure. It is already a year since F. Ritter wrote to me to say that he had again found *Parodia gummifera* (B & V), and that a new genus must be set up for this plant. Since flowers had eluded him, this task was impossible for him until now.

"From Dr. F. Buxbaum I received a most accurate description of some seeds I had sent to him, for which I here record my thanks.

"These studies, with the descriptions of other species following later (probably 4 articles), are the outcome of a journey of mine from November 1966 to the middle of February 1967, made through an important part of Brazil, collecting with my friend Leopold Horst from the State of Rio Grande do Sul. The splendid province of Minas Gerais, where we found these plants, is often very difficult of access, so that not all the mountains are known or have been investigated for cacti. Indeed, Brazil is, as far as the cactus family is concerned, but yet only superficially explored, almost entirely on account of the vast extent of the country. Undoubtedly this splendid and botanically so interesting land will yet be able to bring forth many surprises.

"This genus is named by me after Herr W. Uebelmann of Wohlen, Switzerland who, by financing the expeditions of Herr Leopold Horst, gave the impetus to the discovery of a number of interesting new cacti."

In view of the comments which one sees from time to time regarding the problems of correctly identifying certain species of South American cacti owing to the paucity of the description provided by the original author, it is perhaps of interest to compare the validating diagnosis in Latin with that in Dutch; so, from the Latin -

"Bodies spherical to oblong, very hard, verrucose, tap root slender, ribs prominent, more or less divided into tubercles; flowers funnel shaped; ovary and flower tube with small lanceolate scales with spiny tips, clothed in the axils of the scales with hair and thick wool. Seeds oblique ovoid or obliquely pyriform, coarsely wrinkled, hilum and micropylar pore depressed, the surrounding edge thickened, perisperm absent, embryo fairly hooked"; and from the Dutch - "Body globular to columnar, very hard, with thin taproot; skin covered with warts; ribs vertical, less or more divided into nipple-like knobs; flower considerable, short funneliform with clearly defined ovary from which the funneliform tube widens out; the ovary with small scales, the flower tube loosely clothed in larger, narrow lanceolate elongated scales ending in a spiny tip; the axils of the scales with very abundant long woolly to silky hairs and long, soft or stiff, somewhat prickly, brush-like spines; flower petals elongated lanceolate; bottom of the flower tube with a short narrow nectary, above which the stamens being; primary and secondary stamens occur without distinct separation; the lowermost lines of stamens are nearly vertical, the remainder tangential with respect to the wall of the tube as far as the edge (top? H. M.); fruit cask-shape to oblong, very juicy, the very thin epidermis covered merely with very fine (small? H. M.) areoles, which carry wool and bristly spines in the axils. Seeds obliquely eggshaped to obliquely pearshaped, somewhat flattened at the sides with depressed hilum inclusive of the micropyle; hilum with a thick, enlarged, turned-over skin at the edge, narrow to broad oval, more or less strongly angular and somewhat narrowed around the micropyle; epidermis in general coarsely wrinkled either shiny black, densely covered with knobular warts or dark red-brown and covered with fine, flat warts; perisperm absent. Embryo (strongly succulent) more or less hookshaped, with considerable round cotyledons.

Origin. Up to the present, exclusively discovered in the state of Minas Gerais, Brazil.

Type. *Parodia gummifera* Bkbg & Voll in Arq. Jard. Bot. Rio de Jan. 9: 169 (1949)"

Uebelmannia pectinifera was described and illustrated in the Dec 1967 N.C. & S.S. Journal. *Uebelmannia gummifera* was also described in the Nov. 1967 Succulenta. We hear from E.W. Barnes regarding HU 141 "Uhlig offered seeds of HU 141 this year as a *Discocactus*, but the HU 141 plant I obtained from Uebelmann doesn't look much like a *Discocactus*. Indeed, this plant is like no other cactus that I have seen; it is 5cm in diameter by 5cm tall. Body colour is greyish green with deep purple markings around the black, woolly crown and down between each rib. The epidermis is warty and has a slight sheen. It appears to be rough, but when felt with the finger it is found to be very smooth and slippery. Ribs 18, deep, narrow, notched into very pronounced tubercles. Areoles bare, radial spines 3-5, 1 cm. long, projecting outwards and curving; central spine 2 cm. long, curving upwards. All spines at first brownish grey, later ash grey.

"The deep purple markings on the body of HU 141 are most prominent at the crown of the plant, extending down and between the rows of tubercles, eventually fading to a pale purple-grey at the base of the plant. The tubercles are irregularly tinged with purple, most of this is confined to the tubercle base. The areoles are brownish at first, later bare".

(Our contributor has sketched a seed of HU 141 showing them to be very similar to the illustration accompanying Buining's article in Succulenta in respect of shape, the wrinkled and warty testa, the hilum and micropylar pore depressed with the surrounding edge thickened).

THOSE CORKY ERIOCACTI

In The Chileans No.7 p.14, reference was made to a feature common to many of the larger plants of Eriocactus which have been imported into Europe - the top of the columnar body having a lively green colour whilst the remainder was a dirty corky grey.

A single slide seen during Mhr. Buining's talk provided the explanation for this phenomenon the greater part of the plant body, with the exception of the very top, was seen to be covered with a thin layer of lichen. This can also be seen in the excellent illustration accompanying the article on Uebelmennia pectinifera in the December Journal of the N.C.&.S.S.

On many of our habitat slides of cacti in Chile (The Chileans No.6 p.p.16-17) one can see lichen growing on surrounding rocks. All this seems a little strange to one normally accustomed to finding lichens in shady moist situations in England, commonly in woodland.

However, a perusal of 'Plants without flowers' (H. Bastin; Hutchinson) yields some illuminating information on lichens. It appears that all living plants can be divided into four categories; firstly, those which are without chlorophyll - bacteria and fungi; secondly, those with chlorophyll but without flowers - the algae, mosses and ferns; thirdly, plants with flowers which form the great bulk of plant life as we know it on the earth today. Fourthly, there are the lichens which, strictly speaking, are not a single kind of plant at all, but two sorts in one.

The main body envelope of lichen - called the mycelium - is a fungus and this contains a number of unicellular or filamentous algae, both together forming an organic whole. A fungus has no chlorophyll and so is incapable of photosynthesis. Its 'roots' or hyphae must feed as a parasite upon another living thing, or as a saprophyte upon dead animals or plants. An alga grows in the presence of abundant water; unlike fungi it contains chlorophyll and fabricates cell-construction chemicals from its surroundings like any other green plant.

In a lichen, the relationship between these two sorts of plant is symbiotic i.e. the two sorts of plant, otherwise unrelated, live together for mutual benefit. The algae share with the fungus the food products which the algae can manufacture and the fungus cannot, whilst the fungus soaks up and conserves moisture without which the algae would remain merely in suspended animation. Granted a sufficiency of sunlight, a lichen, regarded as a whole, requires nothing but a little mineral food - which it takes in solution - and can provide itself with carbon from the carbon dioxide in the air like an ordinary green plant.

The upshot of all this is that lichens can flourish in situations such as the sunbaked surface of a granite boulder, where neither of the partners to the union could exist independently.

Has anyone with an imported corky specimen had any success in persuading the coating of Brazilian lichen to grow?

COLLECTING ISLAYA IN PERU

By W. Hoffman. Translated from 'Kakteen und a. Sukkulanten' for September and October 1965 by H. Middleditch).

One of the most impressive cross-sections through the cactus flora in the western flanks of the Peruvian Cordillera was offered to us in our journey that led through the valley of the Rio Majes by way of Chuquibamba to the high Puna plateau by Pampacola.

The surroundings of the Hacienda Ongro in the Rio Majes are formed of a series of terraces, and at the foot of the steeply rising mountains is a type location similar to that at which Rauh discovered Islaya grandis and its variety brevispina. This is the furthestmost inland location of the genus Islaya (75 Km from the coast), the other part lying immediately beside the coast of the Pacific Ocean. It appears paradoxical that the varieties with essentially smaller bodies inhabit the moist-air zone of the 'Garua' mist, whilst Islaya grandis reaches 50 cm. high but yet only very rarely receives dews and - just as all other varieties - never knows rain.

This location situated among the slopes of the Western Cordillera makes even the statement of Forster apparently credible, that *Islaya islayensis* Bkbg (syn. *Echinocactus islayensis* Forst) was 'found on a volcano'. Till now one would not have recollected with confidence the suggestion; that this sort could be so situated, which the collector himself supposed to be at the foot of one of the many volcanoes, which through its height appeared very close even in the Andean foothills.

For four full days now we have collected only *Islaya*, whose locations are reasonably easy to reach from the Pan American highway. The abundance of the collected material already made an overnight sleep in the van impossible yesterday, and so we arrived at the Humboldt household with additional plants being accommodated not in the overladen van but on the luggage rack.

At the start of our four days we gave our collecting number H 784 to a plant on the cliffs between the ports of Mollendo and Matarani at 180 m. above sea level. Judged by its top, these are similar plants to *Islaya mollendensis*, which Backeberg reported up-country. Above Matarani there followed at 800m. above sea level *Islaya minor*, logged as H 785.

The high desert plateau between La Joya and the river valleys of Suihus and Vitor offered the possibility of growth to only a few *Tillandsias*. In this locality, the nearest *Islaya* we collected was in the costal hill range at 900m. elevation. This *Islaya*, with the collection number H 787, is so essentially distinctive from those hitherto validly published, that we can regard it with confidence as something new. The flattened globular, extremely short-spined plants flower in this location both pale red and also yellow. Their small bodies almost disappear into the fine covering of volcanic soil. The less sparse appearances of *Tillandsia* and, even further, the presence of *Haageocereus* presupposes a regular and strong mist-formation for the location of this new *Islaya*.

Even before the appearance of my published description, F. Ritter also collected these for himself as *Islaya divaricatiflora*, when at the time my finds were still undescribed. It is doubtless identical with my collection number H 787.

Islaya brevicylindrica is uphill from Camana, very numerous at a location from which one still sees the boundless Pacific Ocean. At times they were as large as *Islaya grandis*; from that species however, they may readily be differentiated through the often club-like growth, the bright, close packed radial spines, the long - often somewhat curved - dark pointed central spines and the irregular outline of the flower.

We slept through one small earthquake in the van near the Rio Ocona, which speaks both for the lightness of the earthquake and the depth of our sleep. From this tremor came numerous rock falls which we met later during our journey on the road.

After *Islaya copiapoides* and *Islaya grandiflorens*, and some var. *tenuispina*, some plants appeared in the surroundings of Puerto Chalo that I for one consider undescribed. I found them in the clefts of volcanic rocks, which contrasted well with the yellow top surrounded by dense brittle spines. Both in the case of these H 791 and the H 792 discovered south of Nazca, the as-yet unobserved flowers will decide their identification. H 792 is not identical with *Islaya bicolor* reported from these provinces. It is the northern most representative of those from South Peru, and looks in habitat strikingly like the southern most species, *Islaya krainziana* Ritt, which is confined to Northern Chile.

In our next issue we hope to publish a comprehensive article on *Islaya* written for the Chileans by one of our German subscribers.

The places mentioned by Herr Hoffman may be located on the map on the front cover.

COLLECTING NEOPORTERIANAE

..... From D. Lewis, Cardiff.

"My interest in Chilean cacti started whilst in Germany with the Forces when I visited Winter's nursery at Frankfurt. I acquired many seeds and subsequently sowed these and now my plants are as big as those I saw in 1957 at Frau Winter's and flowering just as well. Among the Chileans flowering in April this year (1967) for me I had *N. heteracantha*, *Ch. napina* and *Ch. reicheii*, all on their own roots. The *Ch. reicheii*, for example, are now about 3" high and 1" dia., with a narrow neck and a multiple tap root. The body is a mid to dark green, the spines being a milk chocolate brown colour.

All my cacti have a dry winter resting period. The Chilean globular cacti rest from October to about mid-March, depending on the amount of flower bud showing. My plants are expected to show flower before they receive water - a threat which has worked very well this year. To encourage bud formation, I do mist spray lightly on mild evenings in spring but little water reaches the pot.

The globular Chileans are housed close under the glass in a very light greenhouse without any shade. I have to be careful not to turn the plants round as the side then facing the sun would either turn yellow or actually scorch the plant tissue white. My Chilean plants are in a mixture of pots: the plastic pots tend to grow the plants quicker, but due to moisture retention in the soil such plants may be more susceptible to soil born diseases.

I vary my compost slightly for various cacti; white or heavily spined plants I usually give more bone meal in the general John Innes No.2 plus flint grit - my usual mixture. I add mortar rubble for plants from limestone areas and extra peat for plants from acid, marsh, or jungle cacti.

The plants I still (for the moment) call *Chileorebutia napina* and *reicheii* actually collapse during the winter rest. *Napina* looks like a two-thirds empty gas bag and *reicheii* a half-closed concertina".

On this question of the continued use of the term '*Chileorebutia*', E.W. Putnam feels that its use should be discontinued, quite apart from it being invalid, because it can lead to so much confusion in show classes for *Rebutia*, since the majority of collectors are still not familiar with the distinction between *Rebutia*, *Sulcorebutia* and *Chileorebutia*.

On this point, H. Middleditch comments: "It is of course quite right to say that we are incorrect in continuing to use the designation *Chileorebutia*. However, purely from the view of convenience, I find it delineates the quite interesting group of plants from Northern Chile with very short spines. Those coming to mind are *Chileorebutia napina*, *lembckei*, *reicheii*, *aerocarpa*, *kraussii*, *malleolata*, *duripulpa*, *esmeraldana*, *mitis* and *glabrescens*. Of themselves I find they make a compact and interesting group. *Ch. saxifraga* - at least the plant I have under that name - does not appear to me to fall in so closely in general appearance with those aforementioned".

"Several subscribers have written to say they are trying one or two of the "*Chileorebutia*" on their own roots, but the plants owned by our contributor above seem to have been established on their own roots as long as any I know of, without either suffering from any apparent uncommon difficulty of cultivation, or - at the other extreme - going columnar and floppy. There is an excellent slide of these two plants in our slide pool, donated by their owner".

..... from E.W. Bentley.

"In their article on 'The reunion of the Genus *Neoporteria*' in the G.B. Society Journal, Rowley and Donald refer to the fruits of *Neochilenia* as 'initially dry'. What does this mean? I now have fruits on my recently flowered *N. paucicostatus* and *N. hankeana*. All have fruits $\frac{1}{2}$ " tall and very fleshy looking - I haven't yet cut one across, but by no stretch of the imagination can they be described as dry".

Comments from H. Middleditch:-

This just shows how deceptive appearances can be! Perhaps I should quote (in full, to ensure that it remains in context) an extract from an article by Dr. Priessnitz in the G.O.K. newsletter, another part of which appeared in our No.3 issue:-

"Ritter defines the genus *Chileorebutia* with the type plant *Ch. reichei* with the following characteristics:-

'Body low and small (much smaller than *Pyrrhocactus*) without ribs, covered with round warts, hemispherical to cylindrical, small, depressed. Small areoles, sunken in the tip of the tubercle, tuberous root, with or without a narrowing at the neck, small radial spines, radiating, rarely missing. One central spine - often missing. Flowers very large, on the crown of the plant or half way down, lasting several days, closed at night. Ovary and tube provided with small narrow scales and an abundance of white wool, sometimes mixed with fine supple spines in varying numbers. Fruit red, seldom green. The seed grains ripen long before the fruit and the seed-net grows no further. The fruit enlarges therefore after the seed is ripe, so that the seed is finally united by a carpel-bag in the upper part of the fruit. One characteristic which is therefore not only typical of *Islaya*, where Backeberg describes it as a generic characteristic.

The fruit drops off the plant when finally ripe, and through the mantle of wool and bristle which envelopes it, gives the wind an opportunity to blow it about. At the same time, the seed-net which holds the grains coagulates in one sticky mass which dries up, so that the seed becomes free by and by, getting out through the basal opening'.

"This type of seed distribution is above all very typical of *Ch. aerocarpa*, whose woolly coat is very plentiful. The distribution of seed by *Islaya* is analogous to *Chileorebutia*. Ritter throws open the question whether it is a generic relationship or convergence. The answer to that question is given by Buxbaum's latest researches. According to him, the flower of *Islaya* is scarcely distinguishable from *Neoporteria* except by its dense hairiness. The primitive characteristic still exhibited by the seed places it very near to *Pyrrhocactus* and it could be assumed that it is an early branch from *Neoporteria*. Therefore he puts *Islaya* into the sub-tribe *Neoporteriae*.

"The seed distribution through wind-blown fruits, according to Ritter, is different from *Pyrrhocactus*, *Horridocactus*, and *Neochilenia*. There the fruit cells and the seed grains ripen at the same time. The seed net remains on the fruit cell walls, it all dries out together and sets free the seed grains together. These drop out through the opening at the bottom of the fruit and usually remain on the crown of the plant".

During the 1966 growing season, my *N. hankeana* flowered and I subsequently noticed the pinky green seed pods, which later appeared to be even longer and pinker. By misadventure I knocked one of these off the plant and was intrigued to see one or two ripe, dry seeds drop out of the hole in the bottom of the fruit where it had been attached to the areole.

On closer examination it seemed that although the outside of the seedpod was quite fleshy and unwrinkled and seemed nowhere near ripe, it looked as though the inside was hollow and perhaps held some more ripe seeds. I cut it up lengthways with a razor blade and discovered that there were indeed more ripe, dry seeds inside whilst the wall of the fruit was still quite fleshy and pink and about 2mm thick at the centre.

During the 1967 growing season I tried to watch the seed pods rather more closely and discovered that the elongation trick was performed by more than one variety. *N. hankeana* at first set two roundish green seed pods some 4mm to 5mm in diameter. After about a fortnight they began to look a rather washy pinky green colour and convert to a more barrel shape. They continued to elongate and grow pinker until they were about 2 cm. high and quite a bright mid-pink colour. A third flower also set seed about a fortnight later, but presumably because of the dull weather it took about a month to start to go pink and elongate.

Also during this season, *P. intermedius* has set a dark purple-black seed pod about 4mm dia. which has also started to elongate and become pinkish after about three weeks. *Pyrrhocactus* Santiago No. 12 set three seed pods, about 9mm dia., dark purple, with isolated scales terminating in a minute bright pink bristle.

Again after some three weeks these too started to elongate and are now about 3.5 cm. high and some 1 cm. in diameter at midlength, a bright mid-pink colour overall.

Of great interest this season has been my first flower on an *Islaya* - *I. maritima*. This set seed as a bright red berry some 4mm dia. After about a fortnight this had started to elongate up to about 1 cm high, still a brilliant shiny pink-red colour overall, with a few tufts of fine white hairs.

Whilst on the Riviera on the Cactus Tour in 1967, I came across a seed pod on a *Morawetzia doelziana*, which was nearly 1½" in dia, bright uniform pale green, quite without hair or bristles. The interior was hollow and contained loose, ripe seeds although the wall of the fruit was still fleshy and some 3mm thick, turgid and smooth on both exterior and interior.

I suppose that there could be other species of South American cacti which produce this type of fruit, i.e. with ripe, dry seeds in an unripe, unwrinkled, thick-walled shell.

RESPONSE TO 'NEWER NOTOCACTI' (Chileans No. 7)

..... From J.D. Donald

'I have grown *N. herteri* for the last ten years or so and the plant is now about 4" in diameter. It has the finest of all *Notocactus* flowers, being a deep magenta to light purple in colour with a brilliant satiny sheen. The newer imports of this plant appear to be close to the original in spination, rib count and shape, but have yet to flower.

Notocactus horstii tends to be rather more cylindrical in habit than *herteri*, the latter being typically much broader than tall. *N. horstii* flowers are much smaller and do not open so fully as *herteri*; they are bright orange in colour whilst the style is yellow and not red in this species. I believe it is a big mistake to make the familiar blood red style of the older *Notocacti* and *Wigginsias* (*Malacocarpus* - H.M.) a diagnostic feature for the genus. There is now plenty of evidence that this is not a prerequisite. Forms do exist that do not possess a blood red style and these plants are nevertheless true *Notocacti* (not *Brasilicactus* or *Eriocactus* or *Parodia*). This point was made several times by Mhr. Buining during his lecture on *Notocactus* and allies. Backeberg even admits yellow stigmas (see *Die Cactaceae* III p. 1638) are possible. *N. ottonis* v. *brasiliensis* has yellow stigmas and they have been reported also for *N. linkii* and *N. mueller-melchersii*. Ritter also makes the same point in his article in *Taxon*.

Eriocactus magnificus is a cylindrical plant, not globular, and the body colour is a distinct bluish colour, pale bluish green, certainly not dull dark green. The body colour contrasts beautifully with the golden spines from the closely set areoles on the sharp edges of the ribs.

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

'*Parodia*' *bueneckeri*, *alacriportana* and *brevihamata* and several of the new Brazilian *Parodia* species from the Horst expeditions, are included in *Notocactus* on the basis of the flower structure and seed characteristics; none have red stigmas.

Of the gymnocalycioid *Notocactus* mentioned, all are certainly similar morphologically and I cannot really see the need for separated species for *N. crassigibbus* and *N. arachnites* - varietal status at best for one of them. The flower of *N. uebelmannianus*, a very deep magenta, is quite distinct from the other two which are typical (except in size) of the traditional *Notocactus*.

An easy way to tell a *Notocactus* from a *Gymnocalycium* is by the position of the areole. In *Gymnocalycium* the areole is on the top of the tubercle whilst in *Notocactus* the areole lies in the fold between the tubercles. Generally the *Notocactus* has a woolly crown, whilst the *Gymnocalycium* has an almost naked crown.

This latter characteristic is more obvious in mature plants than in seedlings and young plants'.

..... From E.W. Barnes.

'I find the newer *Notocacti* extremely interesting and I have obtained quite a few species this year from both Uhlig and Uebelmann, amongst which are the following collected plants :-

N. longispinus - this looks a little like *Wigginsia prolifera* but is without offsets. Ribs 16, acute, notched, areoles 4mm dia. with much cream wool. Spines stout, ash grey (brown at first) radials 8, 1.5cm. long, central spine 1.7cm, stronger. My plant is 7cm dia. and has evidently flowered, but not for me yet.

N. werdermannianus - looks like *N. mammulosus* but with reddish spines. I don't think that this particular plant is the genuine *N. werdermannianus* as it is said to have 20 or so ribs, mine has only 15.

N. acutus - somewhat similar in appearance to *N. arechavaletai*, but with sharper ribs, spines red, curved, 1 cm long, rather stiff, radials 5 centrals 1. Areoles white, 2mm dia. I have collected some seed from an old pod which was present on this plant when I received it.

N. fuscus - spines numerous, long stout, slightly curving, pinkish at first, ash grey later, all spines with a dark tip. Radials 1 cm thin, pressed against the plant body, centrals 4, much stronger, variously curved and twisting in different directions. They completely cloth the crown and appear to be longest here - about 3cm long. Ribs 19. This plant looks more like a *Neoporterio*!

N. uebelmannionus is similar to *N. crossigibbus* but has 13 ribs, cream felted areoles and extraordinary spines which are pale grey, very flexible, twisting in all directions, some times turning through 360° and crossing back over themselves so they look like a pig's tail! Radials 7, somewhat pressed against the plant body and taking the contours of the broad, rounded ribs, app. 1.5cm long. Central spine 2 cm long sometimes standing out from the plant, sometimes pressed against it, but always twisted. My plant is 8cm dia. and has flowered but I missed seeing the flowers.

N. tenuicylindricus - similar to *caespitosus* (= *minimus*?) but without the hooked central spines. Incidentally the *N. minimus* which I received from Uhlig has brown, very hooked centrals whereas the *N. minimus* ex. Uebelmann has red, very slightly hooked centrals. I am looking forward to flowering these in order to make comparisons.'

..... From K.H. Halstead.

'On a recent visit to Clive Innes I saw one or two *N. minimus* which closely resembled my *N. caespitosus* which seems to indicate that these two are closely related if not one and the same. I see that Uebelmann classifies them as the same in his latest catalogue.

My *Parodia bueneckeri* has flowered for me and I managed a photograph. I am still not entirely convinced that this is a *Notocactus* and would certainly like to examine some seed.

I also have trouble with *N. schumannianus*, not with the roots but with brown spots occurring on the skin, particularly in winter. I feel that this species should be kept at a slightly warmer temperature and the watering stopped earlier than with other plants. Loss of roots is most probably due to the compost not being open enough. I assessed this from the replies received in the *Notocactus* Round Robin in respect of *N. scopa*. It appeared that those collectors with a richer

compost seemed to overwater whilst those with a more gritty compost underwatered and the results were similar - loss of roots.

Further to my comments on 'Newer Notocacti' in The Chileans No.7. p.14, my *N. herteri* was examined by Mhr Buining who said that it was untypical of the true version and like many others imported from Holland was probably *N. herteri* x *rutilans*. He also inferred that Backeberg's description was incorrect'.

Also in a previous issue of 'The Chileans' (Vol 1. No.4) one of the characteristics which Backeberg used to divide *Notocactus* from *Eriocactus* and *Brasilicactus* was shown to be the violet pistil (covering shades from purple to red). Mhr Buining has now brought back evidence from Brazil to disprove this. In his recent talks on *Notocactus* he referred to several species where he had observed groups of plants with yellow stigmas, growing in company with others of the same species having the purple stigma. He showed slides of *N. ottonis* with a yellow stigma to illustrate this point. The reddish style predominates in the Uruguayan species but the further north one proceeds, so does the dominance of these red coloured styles recede with mixed types from pure orange to pale pink and deep purple.

It is interesting to note that flower colours now vary considerably from purplish red in *N. herteri* to reddish orange in *N. horstii* and even pale pink in *N. rutilans*, in addition to the accepted yellow in the majority of species.

One interesting disclosure by Mhr Buining is the truth about *N. muricatus*. Most collectors in Europe have a type which is close to *N. apricus*. The description in both Borg and Backeberg is apparently the Ringler version and not that of the original author, Otto, which shows the true species to be very much like a many ribbed (13-15) *N. ottonis*, with a rather short flower.

..... From H. Middleditch

'I seem to have been remarkably unsuccessful with cultivating Notocacti; very few plants exhibit a satisfactory rate of growth and I find one of my Notocacti without roots far too often - the latest casualty being *N. schumannianus*.

Following this experience over several seasons, I have continued watering through October and November this year ('67) with interesting results. *Graesnerii* and *leninghausii* are growing well, *haselbergii* has failed to pass away - a distinct improvement on previous seasons - whilst a *caespitosus* grafted on *Eriocereus* stock is growing like a bomb, with good spine formation. With these results to hand, I am trying to keep my newer Notocacti growing well into winter too.'

CULTIVATION OF GRAFTED PLANTS

From P. Beeston in New Zealand, has come the query 'Few collections in New Zealand seem to contain grafted plants and I have just recently acquired one or two myself. Could you tell me if they require any special treatment?'

Perhaps the best way of approaching the question of cultivating grafted plants is first to consider the purpose or advantages of using grafts. The best-known grafted plants are our ordinary fruit trees and roses. The chief reason for grafting here is that a number of plants of a new variety can be produced and sold quickly. Apples and pears cannot be grown from cuttings, so must be grafted on to suitable stocks. Again, numerous scions can be cut from one new seedling variety. With cacti, too, the grafting of small seedlings can quickly produce many plants of commercial size, so giving many more collectors the chance of introducing them to their own collection.

Many of the less easily grown cacti species tend to be rather slow of growth and shy to bloom. For many collectors, the process of discovering the correct tactics of when to water, when to spray, when to shade, and so on, provide many hours of enjoyment until one produces a micro-climate which suits the plant so that it responds with steady growth and regular flowers. Other

collectors are keen to push a seedling on to obtain a reasonably mature plant whose body and flower characteristics can be compared with others in a group, with the minimum delay. Many grafted plants will indeed bloom sooner than a plant of the same species on its own roots. A good example of this was seen during our 1963 Continental Tour, where both Mhr Buining, President of the Dutch Cactus Society, and the 'Succulenta' collection at Wageningen, had plants of *Blossfeldia* growing both on their own roots and on a graft. The former were low growing, a dirty brown colour, wrinkled, and very small; the grafted plants were green, well over double the size for the same age, obviously fit and healthy, with signs of flowering. The grafted specimens represented the European greenhouse grown form, differing from those on their own roots which were probably nearer to the habitat form.

Another field of application for grafting is on vines and an interesting example is afforded by the vines growing on the Island of Madeira, which were established well over a century ago. In 1852 a fungus blight, *Oidium tuckeri*, swept through many of the vineyards, causing some to be abandoned before it was discovered that sulphur was a satisfactory control. But worse was to follow some twenty years later - this time the plague was a sucking insect, *Phylloxera vastatrix*, which attacked the roots and quickly killed the vines. The solution was sought by the introduction of American vines that were practically immune to the insect, which had already been encountered in America. The new vines were vigorous and gave an enormous yield, but unfortunately the flavour of the grapes proved poor on the Madeira soil and it was found necessary to use the American vines as rootstock on to which the more delicately flavoured local varieties were grafted. The vigorous understock increased the yield but in no way altered the high quality of the grafted scion.

With fruit trees, attention has to be given to the selection of rootstock, as certain undesirable features can be transmitted to a scion; thus some crab apple trees have a twisting, straggly growth, a characteristic which can be transmitted to the scion. Some hybrid tea roses grow much better on certain briar stocks than on others.

In a similar way with cacti one might expect better growth to be exhibited by grafted cacti when graft and stock are most compatible. Grafting stocks most frequently encountered are: *Hylocereus guatemalensis*, *Echinopsis* spp., *Myrtillocereus geometrizans*, *Trichocerei* such as *T. spachianus*, *T. macrogonus*, *T. pachanoi*, *Eriocereus* (*Harrisia*), and *Platyopuntia*.

Epiphytic stocks are normally used for very small seedlings and can only be expected to carry a scion for a very brief period.

Echinopsis stocks appear to be more suitable, generally, for the smaller seedlings, since the stock appears to become exhausted after a period - indeed quite rapidly when used as a stock for strongly growing species. On the other hand, I have a *Notocactus leninghausii* which has grown satisfactorily for three years grafted on to an *Echinopsis*. The scion is now approaching 4" in height and over 2" in diameter and the stock still appears to be in reasonable condition.

Also in good condition after a full year is *Mammillaria herreae* on an *Echinopsis* stock which is about 1½" in dia and still somewhat larger than the scion; the stock is a full rounded green without a mark or a wrinkle. I suspect that the excellent condition of the stock is due largely to the slow growing nature of the scion which matches the nature of the stock. Conversely, the use of a stronger growing stock for this plant might result in a bloated scion or other cultivation problems. Similar satisfactory growth on *Echinopsis* stock might perhaps be anticipated for a reasonably lengthy period with other slow growing species.

Myrtillocactus geometrizans is very useful as a grafting stock as it readily makes a union with some species which are less easy to graft on more strongly growing stocks. It will support a much wider range of species for a longer period of time than *Echinopsis*. It seems to be very susceptible to damage and deterioration in cultivation, this being commonly ascribed to coldness in winter. In its natural habitat the plant does not have to endure frost, so that spraying or watering at an unsuitable time, or an inadequately drained compost, can result in the stock rotting off at very short notice indeed. Less severe damage produces corky patches on the stock which reduces its effectiveness as a feed-pump for the scion.

Perhaps the most common grafting stock is *Trichocereus spachianus*, which can be used for almost any species. It is not quite as 'soft' as *Echinopsis* or *Myrtillocactus*, so that it requires a little more care during grafting, but it will carry a strongly growing scion for much longer than an *Echinopsis* and it is not as susceptible to damage from occasional low winter temperature as *Myrtillocactus*, since it is subjected to winter temperatures below freezing in its habitat. It grows principally on the mountain chains running southwards into 'La Pampa' from the southern rim of the high Puna, in a region which receives barely 10" of rainfall per year - rather less on hillsides in the rain shadow. Most of this rainfall arrives in the summer months i.e. December - January - February, when the intense low pressure (anti-cyclone) over the Gran Chaco draws in moisture-bearing winds from north, east and south.

Another *Trichocereus* widely used as grafting stock is *T. pachanoi* which emanates from Ecuador, from the semi-desert which is confined to a fairly narrow coastal strip - this right on the coast, not some miles inland as it is in Peru and Chile. This coastal semi-desert is produced mainly by the cool Humboldt current flowing offshore and the onshore winds cooled by this water. The cool Humboldt current follows the coast of Chile in a northward direction and then the coast of Peru in a north-westerly direction; at Ecuador the coastline turns roughly north-eastwards but the Humboldt current continues to flow north-westerly and then westerly towards the Galapagos Islands. In addition a warm offshore current from the north flows as far south as the Gulf of Guayaquil. The power of the Humboldt current to produce a coastal desert is thus greatly weakened in the latitude of Ecuador. Proceeding inland, the coastal zone of xerophytic vegetation grades into a tropical jungle, with one of the heaviest annual rainfalls of anywhere in the world. The coast has upwards of 10" of rain per annum but in addition to this the garua brings moisture as mist.

This habitat is not entirely frost free for there are cold cloudless nights, but the equatorial latitude provides an almost all-year round growing season. Because of these characteristics of the habitat climate, *Trichocereus pachanoi* is a more strongly growing stock than any of the preceding. This characteristic makes grafting a little more difficult, since the stock is tougher and the cell wall less flexible. Once a graft on this stock is away, however, it is normally very good as the scion can grow in any season without being affected by a seasonal growth rhythm of the stock. This stock seems to be quite unaffected by queer winter temperatures, by corkiness of the epidermis, or by low-sun scorch, etc. In these respects it is distinctly better than *Myrtillocactus geometrizans*.

We come next to *Eriocereus* (*Harrisia*) - which is perhaps the traditional grafting stock. This comes from the Western slopes of the Andes in Bolivia and North Argentina. In its habitat the rainfall comes mainly in the summer months of October to April, but in cultivation this plant appears to be quite capable of adapting itself to growing in the northern hemisphere summer. It appears to be the equal of *T. pachanoi* in its resistance to errors of cultivation but has the further advantage that the use or withholding of water will afford better control over the growth of the scion. This stock grows in a habitat with over twice the annual rainfall of *T. spachianus* and with a little moisture available out of the rainy season. It thus tends to give a steadier and more controllable growth of the scion. It will carry a scion for more than one season without difficulty. In general terms it is the best type of stock for grafting purposes.

Platyopuntia is widely used by commercial growers on the continent for grafting stock, mainly - one supposes - because a largish stock plant will produce a faster supply of grafting stock than any of the species considered above. *Cylindropuntia* can also be used and this is most commonly found carrying other *Opuntiae*, such as *O. pachypus* or *Tephrocacti*. It would appear quite probable that this is an example of the most suitable matching of the stock and the scion, of which so little appears to be clearly defined. I have three plants of *Opuntia strobiliformis*, one supposedly on its own roots (in fact without any roots) one grafted on *Cylindropuntia* stock, of which the latter is in by far the best condition. I also have three *Tephrocactus floccosus*, one on its own roots (with roots) one grafted on *Trichocereus* stock and one on *Cylindropuntia* stock, again the latter being in the best condition.

The Dutch Research Institute I.V.T. at Wageningen use *Pereskopsis* (a *cylindropuntia*) as their standard grafting stock to bring on seedlings from four to eight weeks old, but I am not aware of its use to any extent elsewhere.

The first step in the care of a grafted plant, therefore, is to look at the grafting stock and decide whether you feel that that species would be better on another stock for your conditions.

When your plants are in growth, keep a regular look out for pups thrown out by the grafting stock. These should be removed as soon as possible since they will only grow at the expense of the scion. *Echinopsis* are very prone to throwing out pups and this can be greatly reduced by cutting all the areoles off the stock. *Trichocereus spachianus* are rather less troublesome in producing offsets, *T. macrogonus* and *T. pachanoi* even less so, whilst *Eriocereus* appear to be least trouble of all in this regard.

An unsuitably matched stock and scion can bring watering problems. I have both *Toumeyia pseudomacrothale* and *Toumeyia lophophoroides* grafted on *Trichocereus spachianus* stocks. These are both in clay pots which are plunged in 2" - 3" of peat-sand mixture which is normally kept damp during the summer. When the stock sets away into growth it presumably has a fairly reliable supply of water and both scions have been badly cracked by the sudden intake of water. It seems probable that they may have done better on a more steady - growing *Trichocereus pachanoi* or on *Eriocereus*.

To sum up, the basic cultivation requirements for grafted plants are:-

1. Select your stock.
2. De-pup stock regularly.
3. Don't overwater slow-growing scions on sharp-growing stock.

H. Middleditch.

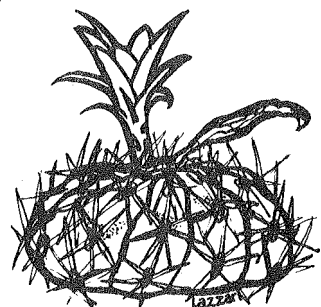
AN INTRODUCTION TO MATUCANA

Plants of the genus *Matucana* originate from Peru, at fairly elevated altitudes in the Andes. A review of this genus appeared in an article in the Czechoslovak Cactus Society Journal and this is reproduced below.

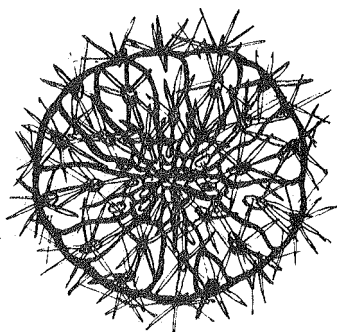
The flowers of *Matucana* are long and tubular in shape, mainly red in colour, day opening, with the outermost petals of the flower very strongly bent back. According to Britton and Rose, the 'flower tube and ovary is naked' - although one may observe traces of hair on the flower tube.

More recent discoveries of *Matucana* have exhibited much more hair on the flower tube, so that they did not match the original description of Britton and Rose. Backeberg set up the new genus *Submatucana* for these plants which (with the exception of one species) have broader ribs with rather more widely spaced areoles and rather fewer but stronger spines, in comparison with *Matucana sensu stricta*. The *Matucana* are found in central Peru and the *Submatucana* are found in northern Peru.

Plants of this genus are not very common in Britain; one of the least common species is *Submatucana madisinorum* which has wide, flattened ribs, very widely spaced diminutive areoles and very sparse spines. To many collectors attending the recent N.C. & S.S. Judge's course, the plant of this species which was on display there was quite unknown.



Submatucana ritteri



Submatucana madisonorum

The accompanying illustration shows this particular species in flower, as seen by T. Lavender in the collection of Mr. Marnier-Lapostolle in autumn 1967. Also shown is a less uncommon species in flower - *Submatucana ritteri*.

Plants of these two genera do not seem to flower at all readily in the North of England but in the south and west some successes have been recorded; as we might expect, they bloom quite well in New Zealand.

MATUCANA Br. & R. by Bohumil Schutz.

(Translated from "Leden" 1965 Kaktusy, Czechoslovak Cactus Society by Mrs. H. Allcock.)

Matucana is the name of a mountain town in Peru, situated at 2800m above sea level. In 1914 Dr. Rose was collecting there *Echinocactus haynei*, which had already been described in 1850. Dr. Rose found a large number of these plants on the rocky cliffs, and some were in flower: he sent a sufficient number of them to the U.S.A. In the third volume of Britton and Rose's work, published in 1922, this genus was named *Matucana* Br. & R. It was then a monotypic genus, because at that time only one species was known, namely *Matucana haynei*.

Backeberg, too, and other collectors after him, collected specimens of this genus in the vicinity of Matucana, because this town is easily accessible by rail being on the route from Lima, the capital of Peru, to Oroya and on to Cerro de Pasco. The numerous mountain valleys were not explored till after World War II, when advancing civilization made these parts accessible to motorized vehicles. During these expeditions a number of related plants were discovered, and these were all treated as separate species. But we shall come to this later.

Britton and Rose considered the main characteristic of the genus *Matucana* to be the slim, tubular, scarlet red flowers, similar to the flowers of genus *Borzicactus*. It differs from the related genus *Arequipa* in that the seedpod and flower tube are devoid of any hair. (Pericarp has scales, but no hair). Backeberg drew attention to the fact that the flowers of *Matucana* are zygomorphic and skew, and classified it in the tribe *Loxanthocerei*, sub-tribe *Brachyloxanthocerei*, together with genera *Denmoza*, *Arequipa* and *Submatucana*. All these four genera have one common characteristic: the young plants are spherical, and only with age do they grow more or less columnar. On the other hand, all the other *Loxanthocerei* are cereoid from the beginning.

In 1960, an American Journal published an article by Myron Kimnach, in which the author disputes the justification for the genus *Matucana*. Kimnach reviewed the genus *Borzicactus* and came to the conclusion that numerous other genera, which Backeberg put in the tribe *Loxanthocerei*, really constitute one and only one genus, *Borzicactus*; the decisive characteristic being the zygomorphic flower. According to Kimnach not only the genera *Loxanthocereus* and *Maritimocereus*, but also *Oreocereus*, *Morawetzia* and *Matucana* should belong here.

Simultaneously with the work of Kimnach, Albert Simo and Stefan Schatzel published an article in a German magazine; these authors came to the conclusion - on the basis of profound studies - that the genera *Matucana*, *Submatucana* and *Arequipa* were justified. They found such distinctions in the composition of both body and flowers as to make it possible to identify the individual genera with complete certainty. Backeberg too, denies in the last volume of his work the tenability of Kimnach's opinions. At the present time the matter of justification of some genera is not altogether settled and therefore the majority of cactophiles consider the genus *Matucana* as valid and Kimnach's ideas have not been put into practice.

As I mentioned earlier, the first *Matucana* to be described was *haynei*, in 1850. Other varieties were not described till 1956.

There is a difference of opinions as far as the justification of the various published species is concerned. The most grandiose opinion is that of the aforementioned Myron Kimnach, who classifies all the species and varieties as members of the one species *Borzicactus haynei*. He claims that even the plants that grow in the valley of the river Rimac near the town of *Matucana* are very variable indeed. It appears that Hutchison collected there plants which had white to yellow-brown spination, spines were soft to hard, and flowers were pale orange to deep red. A little more to the north - in the county of Ancash - the outer spines of *Matucanas* are lying close to the body; more to the south spination is much sturdier. The varieties and sub-varieties described by Rauh only confirm the variability of the original var. *haynei*. *Matucana comacephala* has hairlike outer spines, but due to the unusual variability of the plant one cannot take the existence of hair instead of spines as a characteristic of a separate species.

And here we come to a problem which is so interesting as far as *Matucana* is concerned. These plants change their appearance considerably in captivity, where spination becomes much weaker than in plants in habitat, and differences in habit are obscured to a large extent. These cactus plants are very plastic, very sensitive to their environment, and if they do not get full sun and a lot of fresh air, they grow columnar and lose their good looks. The plants that do best for me are those grown on their own roots, planted in broken brick and cultivated outdoors, protected by a frame only during continuous rains. Also Mr. Fleischer gets the best results from plants on their own roots. It is of course possible to graft these plants, and they grow well on any stock, including *Echinopsis*. I achieved the best spination by grafting on an enormous *Cereus dayamii* planted in a border without a pot. The grafts were subjected to all whims of weather*, and were not protected during the whole summer. Grafted plants, if not grown very hard, have an even greater tendency to grow columnar than plants on their own roots.

* Translator's remark: Summer in Czechoslovakia is warmer and dryer than the usual English summer.

The beautiful *Matucana multicolor* with very long, white spines makes a wonderful impression on many of us and I believe that it will lead to specialization, especially by those members who live in mountaineous regions with intensive sunshine, damp air and cool nights rich in dew. There, in open, airy soil, or better still, in soilless gravel with the aid of nutrients, *Matucanas* could easily be grown to their best advantage and form a valuable collection. A *Matucana* specialist need not be afraid of acquiring worthless hybrids. All plants of this genus are cultivated either directly from imports or from imported seed.

A NEW NAME FOR AN OLD WELL KNOWN PLANT

Translated by H. Vriend from 'Succulenta' for July 1967.

The botanists have won again; they have succeeded in finding a new name for the well known Old Man Cactus and I regret to have to add that we cannot get away from it.

International agreements exist for the correct scientific naming of plants; those agreements are acceded to throughout the world and that is very important. But, as is the case with all agreements, some disadvantages are inherent because the agreed system may produce some disagreeable results. But this we must accept; rules without disadvantages just do not exist.

One of the agreements is that the oldest name is the valid one - there are some exceptions to this rule but they do not matter here.

The Old Man Cactus, discovered in Mexico in 1823, was then described under the name *Cactus senilis* (1824). Soon afterwards the single genus *Cactus* was undergoing division as it was felt to be too embracing. In 1828 the Old Man was placed in the genus *Cereus*, in 1838 in the genus *Cephalocereus*, in 1839 in *Pilocereus* and also in *Echinocactus*. Until today he has been known as *Cephalocereus senilis*.

However it has always been overlooked that in 1838 too the Old Man Cactus was classed under the genus *Cephalophorus* by Lemaire and we were very surprised to read that somebody now finds that Lemaire published his name before May 1838 and Pfeiffer his *Cephalocereus* in November 1838. Because May is older than November the name given by Lemaire must be taken as the correct one for our Old Man Cactus.

I have reviewed the case yet again and I have only been able to confirm these findings. Lemaire did publish his name for the Old Man Cactus as *Cephalophorus senilis* Lem. first and with this we will have to be content.

That the name from Lemaire is older we can, for instance, conclude from a remark by Pfeiffer in his publication of *Cephalocereus*; he says, namely, that the new name published by Lemaire some time previously, i.e. *Cephalophorus* is not a valid one because the name *Cephalophora* already existed. But, according to the present agreements this difference is insufficient to invalidate the earlier name.

In consequence, all *Cephalocereus* species have now to be rechristened and this produces an avalanche of name changes, something which we are indeed used to with cacti. In particular, since Buxbaum merged *Pilocereus* into *Cephalocereus*, all these *Pilocereus* have now to be reclassified under *Cephalophorus*.

However tiresome all this may be we cannot do anything to oppose it; it might indeed have been better if the 'discovery' had never been made.

I do not intend to rechristen all the species here. I think that a study of this genus should be carried out first to ascertain whether that would be satisfactory. But still I make an exception for the following names:-

Cephalophorus senilis. (Haw) Lem Cact. alig. nov. Hort.
Monville, 12 (1838 before May).

syn.: *Cactus senilis* Haw., Phil. Mag. 63.41 (1824)
Cephalocereus senilis (Haw) Pfeiffer in Allg.
Gartenzeitung 6.142 (1838 Nov.)

Cephalophorus palmeri (Rose) Boom, comb. nova.

syn.: *Cephalocereus palmeri* Rose in Contr. U.S. National
Herbarium 12.24 (1913)

Cephalophorus chrysacanthus (Weber) Boom comb. nova.

syn.: *Pilocereus chrysacanthus* Weber. in Schumann
Gesamtbuch etc 178 (1897).

Now's the chance for immortality for you! Just write out all the rest of the *Cephalocereus* and *Pilocereus* species under the new genus, with your name behind as comb. nova and we will publish the list. - H.M.

SEED RAISING

..... from E.B. Thomson

I found the article on seed raising very interesting indeed. This brings me to tell you of my own successes. To lead into it slowly, I would like to comment on the fact, that most publications, letters and conversations start at one point, i.e. that one sows ones seeds in April or May and supplies heat in one form or another to enable them to germinate. Also one is to cover them with a layer or two of newspaper or other similar material, to protect them from too much direct sunlight. This method gives the seedlings some six months in which to prepare themselves for their long winter resting period.

In my greenhouse, which is nine feet in length, the staging runs the full length of the greenhouse. Underneath it, an "Eltex" paraffin heater, which measures 8ft 6 ins. is slung, approximately 12 ins. from the underside of the staging. It is first lit, towards the end of October or the beginning of November, remaining lit until the end of March and as long as the greenhouse remains well ventilated, this should have no adverse effect on either plants or seedlings.

Not long after the heater is first lit, a small space is cleared on top of the staging, corresponding with the central (or hottest) part of the heater. In this space I place some half dozen or more 3 ins half pots, filled with a soilless growing medium, consisting of ... 3 parts finely sifted peat, 3 parts fine perlite and 1 part Kaktiflor, (obtainable from H.E. Born in Germany). This medium is then soaked thoroughly in a solution of Chinosol (Potassium hydroxquinoline sulphate) or a solution of Cheshunt Compound, to prevent damping off. The seeds are then sown thinly on top of this growing medium, and polythene bags secured to the tops of the pots with elastic bands. In this way, the heater, as well as keeping the greenhouse warm, acts as a propagator for the seeds. The polythene bags provide a nice humid atmosphere in which the seeds will germinate quite happily. As well as supplying a humid atmosphere, the polythene bags will lessen the escape, by condensation, of too much water. Any excess condensation runs harmlessly down the sides of the bag, and back into the growing medium, instead of dropping onto the seedlings as it does when a piece of glass is used. Shading is not needed, as the sun, at this time of the year, is not strong enough to do any appreciable damage.

This method, apart from doing away with the extra cost of purchasing, or building a propagator, or supplying extra heat, when the greenhouse doesn't need it anyway, gives the seedlings some 11 or 12 months growing time before reaching their first major resting period. Thus ensuring that they are much stronger than their counterparts i.e. those that would only grow for some six months. (I am not sure that the practice of sowing seed in April or May is perhaps quite as general as our contributor would suggest - for the very reason he sows early himself and because there is time in winter to do it. Any comments will be welcome. - H.M.)

GYMNOCALYCIUMS

In the 'Chileans' No. 7 we suggested that fruit characteristics (colour and shape) of *Gymnocalycium* could provide a guide to identification. E.W. Putnam comments 'The fruits of gymnos are most interesting, but data is lacking (at least in my reference books) on shapes and colours. One of the S.P.I. *Gymnocalycium* Round Robins is trying to record such data, but it is a slow task as our plants are reluctant to set fruits. By cross-pollinating I have obtained some fruits this year, and I understand that the fruit arising from cross-pollination between different species retains the characters of the fruit of the female parent, so such data as I am getting may be authentic. But it is very little as yet.

You will find that Byle's dictionary of the Cactaceae gives a diagnosis of *Gymnocalycium* which includes the remark "Fruits oblong, mostly red, scaly". This is very misleading, at least with regard to colour. I have yet to see a red Gymno fruit. Such fruits as I have obtained have been slate grey to blue-black (*G. gibbosum*), grey-green (on an unnamed sp. close to *G. mostii*) and bright green (*G. multiflorum*). Other fruits I have seen elsewhere have mainly been bluish or grey-green. No-one in our Gymno group has seen a red fruit yet! *G. mazanense*, incidentally, is said to have a beautifully blue coloured fruit. I forgot to mention *G. baldianum* I have had several fruits on this species during recent years; these are dull greyish green and oblong with few but large scales.

To get fruit I cross-pollinated *G. andreae* with *G. baldianum* this year. *Andreae* set no seed, but I got viable seed from *baldianum* and have seedlings from it. Whether they are truly *andreae* x *baldianum* will remain to be seen I have three *G. baldianum* plants and the fruit could have arisen from natural pollination, not my dabblings with a camelhair brush. Next year I shall try and isolate various pairs of plants for cross-pollinating.

I hope to collate fruit data in due course, but have little to work on at the moment. In the *gibbosum* group the fruits are quite long, almost cylindrical. *G. multiflorum* has fat, squat fruits. *Baldianum* fruits are similar to *gibbosum*.... and that is about as much as I know at the moment!

(And very helpful, too. I can only record having observed my *G. mihanovichii* with long, thin, fruits of a glossy mid-green colour. Any further comments on observed fruit characteristics will be very welcome. - H.M.)

NEWS & VIEWS

In the 'Chileans' No. 7, R.E. Hollingsbee described a rather queer monstrose form of *N. nidus* v. *senilis* obtained from Japan. J.D. Donald comments that this is a virus infected form - grafting a scion on to *Opuntia tuna monstrosa* transfers the virus to the scion and produces these multiplying forms. Graeser wrote about them in K.u.a.S. some years back.

From L.E.W. King of 44 Acacia Road, London W.3., comes the enquiry 'I am anxious to obtain a copy of Backeberg's *Die Cactaceae* Volume III; I should be glad to hear if anyone has a copy for disposal'.

We have trial round robins in circulation at the moment on *Parodia*, on *Copiapoa*, and on *Photographing cacti*; anyone wishing to try their hand at participating is welcome.

We have articles on the following in preparation for future issues:-

Cephalocereus brevicylindricus
Frailea
Winteria
Disocactus

Blossfeldia
Acanthocalycium
Copiapoa
Islaya.

Subscribers prepared to offer comments for publication should write for a pre-publication view of the article concerned.

CACTUS COLLECTORS IN SOUTH AMERICA - 1

Mexican archeology and Aztec folklore suggest that the Phoenicians were the first to make contact with the Americas. In Venezuela, Roman coins have been unearthed. The first recorded voyage to South America, however, was that made by Christopher Columbus in 1498. He is reputed to have brought examples of both *Opuntia* and *Melocactus* back to Europe.

In 1513 the Spaniard Cortes landed his army of 300 men on the shores of Mexico, subduing the Aztecs in a few short years. One of his generals, Pizarro, took 180 men southwards and founded Quito, now capital of Ecuador, in 1534, subduing the Inca Empire the following year. In 1536, Almagro (another Spanish general) led a small army into Chile, followed by Valdivia with a larger Army in 1540.

In one generation, the colony of New Spain was formed, stretching about 5,500 miles from California to Chile. The difficult terrain and cover of the eastern parts of South America - much of which is now Brazil - was unsuitable for horses, upon which the Spaniards relied so much, and so remained almost undisturbed by Europeans.

The colony of New Spain was ruled by a rigid system directly under the Spanish monarch. No trade was allowed with foreign ships or merchants - any Spaniard trading with a foreigner was deprived of his property, if not of his life. Spanish merchants obtained all their goods locally or from Spain - they were not allowed to trade directly with other parts of New Spain. The Spaniards ran a transatlantic convoy twice a year, harried by English pirates. Foreigners were not allowed to visit the country - even to land at ports - but on rare occasions a visit for scientific purposes was permitted by royal condescension.

Over the course of years, the Spanish authorities at home sent out occasional scientific expeditions to explore and chart their colony and record its natural history. Much material was returned to Spain but seldom, if ever, were reports and information published. Often, indeed, cases of botanical samples and other material were never even unpacked.

Not until 1735 was a foreigner - La Condamine, a Frenchman - permitted to undertake exploration in New Spain. A member of his party was Joseph Jussieu, a botanist. They sailed first to Cartagena, on the north east coast of what is now Venezuela, then on to Panama and then sailed southwards down the west coast of South America as far as what is now Ecuador. There they landed, finding the coast to be a semi-desert, although the sky was often overcast and there was a frequent mist (the *garua*) which condensed into drops. Behind the shell-studded beach they found a calcareous desert, studded with palmetto shrubs and patches of mesquite. Hidden by scrub were occasional lagoons where flamingo and heron nested.

There were many cacti in the locality and the party found it easiest to travel along the beach between the limits of high and low tide, to avoid the tangle of cacti. Travelling northwards, the semi-desert gave way to thick jungle with heavy and steady downpours of rain. La Condamine then followed the Rio Esmeraldas up into the Andes. The jungle rose with them into the hills but as they ascended further the trees became less lush, then more stunted and rather less dense and hung with moss, then shrubby plants predominated, with gentians and geraniums. Higher still, alpine flora was much in evidence and there were often banks of fog. By 12,000 ft. altitude the vegetation was mainly thick tufts of ichu grass, woolly leaves of frailejon and some cacti.

Once arrived at Quito, La Condamine and his party devoted most of their time to mapping and astronomical sighting on the high plateau. He paid a short visit to Lima, following the coast route from Quito and finally travelled down the full length of the Amazon before returning to Paris in 1745.

Jussieu had collected many crates of botanical specimens, including cacti, but all were unfortunately lost just before the party left Ecuador; some seeds were brought home, however. The reports and writings of La Condamine form one of the earliest sources of information on the botany of South America and particularly its cacti.

H. MIDDLEDITCH.

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To cover the cost of the expanding size of our bulletin, it will be necessary to raise our subscription to 15/6 for next year (commencing April). A renewal form will accompany our No.9 issue. As from April 1st 1968, back numbers (now being sold at less than cost price) will be available for 15/6 for a full year's issues.

STUDY GROUPS

Epiphytes	A. J. S. McMillan, 5 Oakfield Road, Bristol 8.
Lobivia	R. E. Hollingsbee, 46 Markland Road, Dover, Kent.
Neopterianae	H. Middleditch, 5 Lyons Avenue, Hetton-le-Hole, Co. Durham.
Notocactinae	K. H. Halstead, Little Firtrees, Wellington Close, Dibden Purlieu, Southampton.

THE CHILEANS

Organiser:-	H. Middleditch.
Editor:-	A. J. S. McMillan.
Treasurer:-	R. L. Purves, 19 Brocks Drive, Fairlands, Guildford, Surrey.
Membership Secretary & Back Numbers:-	Mrs. A. Lavender, 62 Finchale Avenue, Billingham, Co. Durham.
Plant Exchange:-	E. W. Barnes, 22 Coniston Grove, Ashton-under-Lyne, Lancs.
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