TEPHROCACTUS

Incl. Maihueniopsis, Cumulopuntia and all related genera

Tunilla soehrensii (B & R) D. Hunt & J. Iliff.
BLMT503.03b. About 50km south of Puno, Peru.
Photograph by Martin Lowry.

STUDY GROUP

Vol. 9 No. 1 March 2003

SECRETARY'S PAGE.

It gives me great pleasure to welcome another new member to our fold since the last issue! He is: Alan Archer from Derby and I do hope he will soon take part in all our activities.

☐All articles and comment should be sent to the Co-Editors:

☐Subscriptions and any other correspondence should be sent to the Secretary

May I remind you please to let me know any changes to address, telephone number and E-mail address?

If you write to one of our Officers and expect an answer, please to include a S.A.E.

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THE MEETING ON SUNDAY APRIL 27TH.

For reasons stated in Vol. 8 No 3 September 2002 the usual month of the meeting has been changed. The meeting will, however, still be held at the Slimbridge Village Hall, commencing at 10 am. After a short business meeting there will be discussion on the drawing up of a Show Schedule for our plants. The intention is not to hold the discussion in an abstract form but to relate the discussion to actual plants. Will members, therefore, please bring as wide a range of plants as possible to aid the discussion? The plants do not have to be show plants but will be used to help form classes. It is hoped that the plants will eventually form what looks like a mini show. Also please bring any other plants you think will be of interest or you would like identified. You are also welcome to bring plants for sale. We ask for 10% of sales to be donated to group funds. There is no charge for the meeting. All members of the TSG are welcome and you can bring guests who are not members. Light refreshments will be available at the meeting. We shall be going to a nearby pub, which supplies good food, for lunch. Three of our members, John Arnold, Ivor Crook and Martin Lowry, visited Peru in October last year. I have been told that they found four Austrocylindropuntias, five Cumulopuntias, one tunilla and three other opuntias. After lunch we are to have a talk on the visit. Please will you inform Rene if you intend to come to the meeting?

ARMILLATOX.

Two members have commented on the use of Armillatox. Bill Jackson says he has used a weak dispersion to kill moss on lawns but he would approach its use on cacti with considerable caution. Bill says that Mortegg is a tar oil winter wash that relies on phenols, which are related to those in Armillatox. Bill reports that Mortegg takes all the leaves off evergreens like privet and cowberry.

Martyn Collinson also advises caution with the use of Armillatox. Four or five years ago, on the advice of a long standing Portsmouth BCSS member, Ken Etheridge, he used it as a soil drench. He cannot remember the exact strength but it was weak, probably 1:200. For the next two years he had spiral growth deformity on about half his Mammillarias and spineless growth on one or two other plants from other genera. He hastens to add that it only recently occurred to him that it may have caused the growth problems, as he had assumed that the deformity was due to a reaction to long use of Malathion/systemic insecticide which he had also used as a drench. It might have been a coincidence that the deformity appeared after the one use of Armillatox. He did not use the drenches simultaneously.

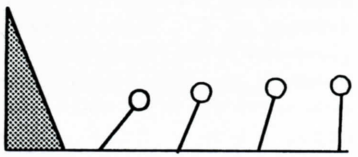
As I stated in the article on P. 525, Vol. 8. No. 3 September 2002, the spokesman for the company did recommend a weak solution of 400:1 as a drench or to pour over the plant. Alan James reported in the last Journal, P 529, that he had used this strength as a drench on all his plants. He recently reported that the plants have come through the winter as normal and look healthy. Obviously it is a little too early in the year to be sure of all the results. So far I have only used the product to sterilise pots.

In the gardening section of my local newspaper there was a comment that Armillatox is to be taken off the market in summer. I assume that this is because of the new regulations that are making it commercially non-viable to produce certain products. The representative of the firm made reference, in our conversation, to this problem. I have therefore bought another large bottle of Armillatox to use, at least, for disinfection purposes in future.

A. Hill. Sheffield.

SUN OR SKY?

This note is concerned with the amount of light reaching our plants. They need light. They come from sunny places. It is natural to assume that they need sunlight. But I don't think they use it directly. I grew some lilies in pots. This rather eccentric drawing shows the salient features of the result. The shaded triangle represents the shadow of the house. South, and the sun, are on the left. The row of lollipops shows how the lilies leaned away from the sun at varying angles. There's no exaggeration here. The one on the left was nearly 45^0 from the vertical. The one on the right was vertical. They were all in the sun but they were leaning away from it. I prowled round this for quite a time. Lilies don't normally grow away from the sun so what was going on? Then I realised. They were all aiming for the middle of the bit of sky that they could see.

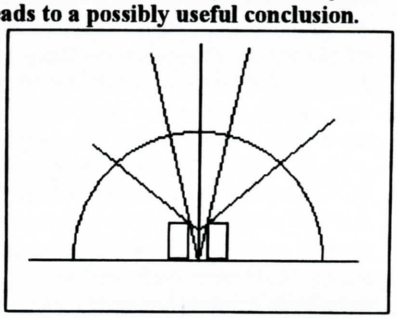


My garden is desperately over crowded. All the plants are growing in the shade of something else. Walking round I could see that they were all aiming for their own bit of sky. That doesn't prove anything. If they're in shade they will obviously aim for the sky. But the lilies were different. They were in the sun.

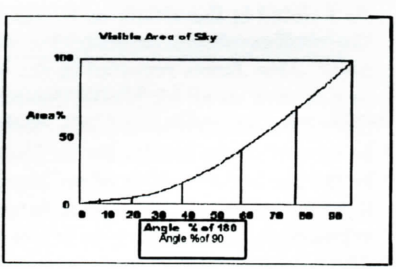
The only other relevant observation I can think of concerns plants growing out in the open. They grow vertically. They don't lean South. They also seem to aim for the middle of the sky. So let's assume that, while heliotropism means aiming for the sun, we are dealing with phototropism and that implies that they aim for the visible bit of the sky. This isn't so daft. The sun is very much brighter than the sky, but the sky is a lot bigger. It is true, as well, that the sky is there every day while the sun...

I now think that this is true but it does raise an awkward question. Why don't they lean South? I don't know the answer to that, but it also leads to a possibly useful conclusion.

In this second, equally eccentric picture the semicircle represents a cross section through the sky. A plant rests on the ground inside a thick walled cylinder. It can see the little, circular patch of sky enclosed between the two innermost lines. Move the plant just a short distance upwards and the angle between the lines increases and it can see a much bigger area. It is worth emphasing this. A very small movement produces a big change in angle and that produces a very big change in the area of sky available to the plant.



It's not too difficult to calculate the effect of angle on area. The results are shown as a graph. Along the bottom the 'half angle to the vertical' is shown as a percentage of 90^0 and the area is plotted vertically as a percentage of the area of the hemi-sphere. Up to 40% (36^0) the area increases slowly with angle. Beyond that the increase is more significant. So, if a plant is to receive light from a significant area of the sky it must be able to see more than 40^0 worth. It is the light coming in over the shoulders of the plant that is important and not the little bit coming down from directly overhead.



Now get down to the greenhouse and have a look at the horizon from the plant's point of view. This is quite revealing in my garden. I thought that I had put my greenhouse well out into the open but it is surprising just how much of the sky is blotted out by my sycamore, the hedge, next door but one's trees, runner beans, the fruit cage and a lot of other items of stuff. It is possible to do something about some of these; plant the runners further away, cut the hedges etc. and don't put little plants between big ones. Sometimes it's difficult. My last quotation for sycamore removal was £750 so I guess that's staying for a bit. There is, however, one thing that reduces the effect of all these obstructions. Raise the plant. I've heard people recommend moving choice plants nearer the glass. I've asked why. The answer usually is something along the lines "Well, it's nearer the light." That is 3ft. in 90,000,000 miles nearer. I always thought that any improvement was probably due to higher temperatures at higher levels. Now I think it is because a high plant can see more sky and therefore receives more light.

I've acted on this. We now have a raised bed with a polythene cover. By raised I mean up on legs with it's surface about 0.8m above the ground. It's too recent to provide any useful evidence but one plant, put in about three months ago, thinks it's great. This is *O. azurea*. It is growing like a weed, the roots have spread round about 30cm and it has developed much stronger colouring. (For those who think that it is a weed I can say that it is now a very attractive plant.)

So, there it is. To explain the behaviour of lilies we assumed that skylight was more important than sunlight and from that it followed that the plant's horizon should be as low as possible and the plant as high as possible. Time will tell. I have some really dull plants in the raised bed, Maihueniopsis with no spines and no flowers. If moving them injects a bit of life this theme will come up again.

W.L. Jackson. Sutton Coldfield

MORE ON ROOTING MALYANA.

Having read in the pages of the previous TSG Journals that the "*Floccosa*" started their growth cycle in our Autumn and need a Summer rest, I decided last August to take a *malyana* cutting to see if it would root up easily in the Autumn. After all Mr G. Rowley gave the plant in 1973 the name *"Opuntia floccosa v. cardenasii"* so it is related.

I took an offset near the stock, from my grafted plant, to leave no large cut area to heal and planted the cutting later the same day in my normal compost mix (Detailed on Page 468, Vol.7, No. 4, Dec. 2001 issue). I kept the compost moist, then began weekly watering in mid-September with a greenhouse over-winter temperature kept at 4° to 5°C.

It is now mid-January, the cutting has rooted well and put on height. The parent plant, on the graft, has also grown well. In fact all the *floccosa* group plants have put on good winter growth and much white hair. I will reduce the watering now until the end of March ready for a summer rest.

Having rooted the cutting so easily perhaps the best time to root cuttings of *malyana* is in the autumn, not the spring or summer period.

Fig. 3 shows my plant No. 266, ex M. Kiessling of Germany, on *subulata* stock, with the rooted plant alongside.

D. Parker. Birmingham.

TEPHROCACTUS ALEXANDERI

The photograph, Fig. 4, shows all my attempts at growing *alexanderi*. It isn't a bad photo but it fails to show all the features discussed in this note. The plants do show them. Take my word for it.

1. Starting on the right at the back, this is the plant I have always thought of as *alexanderi*. It is DJF 469 and was a gift from Roger Moreton. The body is dark green with a grey tinge and most of the spines are pale coloured. It is not clear from the photo but the 'centrals' are dark coloured, especially when new. They stand out at right angles to the surface and are slightly curved.

2. In front of that is a gift from Cok Grootscholten. Again, it is not obvious from the photo but both body and spines have a definite bluish tinge. The centrals are dark and slightly recurved just like No. 1. I have always thought of this as *var. bruchii*.

3. At the left on the front row is a plant from Kakteen Haage in Germany. This is labelled *alexanderi* but it looks more like a weak spined version of *bruchii*. The spines are bluish.

4. The middle of the front row is occupied by a cutting from No. 3. There are brown spots disfiguring No. 3 and I hoped (in vain) that the cutting might be free of these. (I was trying a bit of rhubation.)

5. At the left on the back row is a plant from the TSG meeting in 2001. This is very similar to Nos. 3 and 4 having weak spines with a bluish tinge. It also has the brown spots.

6. Finally the middle of the back row holds *geometricus*. This came from Rene and is grafted. I don't know the rootstock. Originally there was just one segment but then another one grew and then, in the following year, another at the side of the second. It is worthwhile studying this, even with a magnifying glass if necessary. The nearer of the two segments has quite definite stout, dark coloured reflexed spines. The other segment, behind it, doesn't; just the weak, pale reflexed spines expected on geometricus. The dark spines were slightly recurved and started out at right angles to the surface just like *alexanderi*. They became reflexed only when they reached about 12mm long. So it does look as though one of these segments is pure *geometricus* while the other is part way to becoming *alexanderi*. Since both are growing on the same original segment they must have the same genetic make up. It follows, therefore, that the growth of central spines has a non-genetic origin. This must be wrong, but I can't see why. Can you?

This does mean that, if anyone suggests that *alexanderi* and *geometricus* are the same species, I would be tempted to agree. I think persistent collecting could lead to a whole range of plants all blending gradually into their neighbours. I looked this up in Anderson. I wished I hadn't. He describes them as two separate species, but his photograph of *alexanderi* is exactly like my *geometricus*. Again, I can't believe that I am right and he is wrong and beg the reader to come up with some alternative explanation.

Those were extra questions.

Originally I started this note intending to ask whether the names used for Nos. 1 and 2 were 'correct'. By 'correct' I mean do they correspond with common usage? If they are right then what about the Germans, 3, 4 and 5; green bodies and weak spines; a sort of half bruchii? E.g. *Tephrocactus alexanderi var. bru*?

W. L. Jackson. Sutton Coldfield

Notice to Members in France

Unfortunately, our representative in France has had to give up representing the Tephrocactus Study Group in France and members will have to pay their membership fee direct in £ "Sterling". If any member has difficulty please e-mail, or write to the Secretary to make arrangements to pay in € (Euros) to an account in Germany.

"A CACTUS ODYSSEY".

Although this book, by J. D. Mauseth, R. Kiesling and C. Ostolaza, deals with a range of cacti, not just Tephro's, it was one of Santa's better efforts this Christmas. Lucio Russo in the BCSS Journal reviews it, in detail. (BCSJ Vol. 20(2) p85). He summarises the content of each chapter and gives a very good idea of the way the book has been put together. It is clear, from the tone of his essay, that he is keen to convey just how much he enjoyed reading it. He does make one tiny criticism. While commenting that the photographs were good, and interesting, he wishes that they were bigger. Being a user of 75-year-old eyes I can relate to that, but he should also have mentioned that there were close to 200 of them and that they were always relevant. Apart from that the review is enthusiastically favourable throughout. There is no point in going over the same ground again but I have to add my recommendation to his.

There is something about the quiet, easy style of the book that draws you in. You do begin to share their experience and, without noticing, you get a feeling for the road, the geology which may, or may not, support the road, the weather, the climate, their objectives in choosing this route, elation on finding an interesting plant and frustration when things go wrong. This is all delightful but, for me, the best is the wide-ranging discussion of the plants and their environment. History, taxonomy, botany, morphology, biology, ecology and cultivation are all discussed, with a light, but sure, touch. It is, perhaps, as well that they are not too dogmatic about taxonomy. I did find references to *Austrocylindropuntia tephrocactoides* and *Tephrocactus floccosa;*- on the same line. But who cares about that? In many cases this then leads on to an account of things that are <u>not</u> known about a plant and even to suggestions for fruitful lines of research; occasionally backed by hints that a team of students might be found to get things under way. Here, it is worth emphasising that all of this is presented without jargon in the same easy style. All of this information is available and you don't need a dictionary to explore it.

By now you will realise that I think that this is an exceptionally good book. It is probably time for me to stop. Perhaps I can make one last comment. The title describes their journeys as an Odyssey. Like the original they did have an objective. Their 'Helen of Troy' was to learn more about the anatomy of cacti. In particular they wanted to search for any relationships between the woody parts of the plants and their evolution. Once mentioned it is easy to see what a good idea this is. Some cacti are erect, some pendant, some sprawling and some are globular plants that have no apparent use for wood. Do they have different types of wood? Or different amounts? Or none at all? And, if these differences are found, do they have any bearing on the evolutionary history of cacti? They worked like Trojans but didn't settle this. Clearly, they need more students.

W. L Jackson. Sutton Coldfield

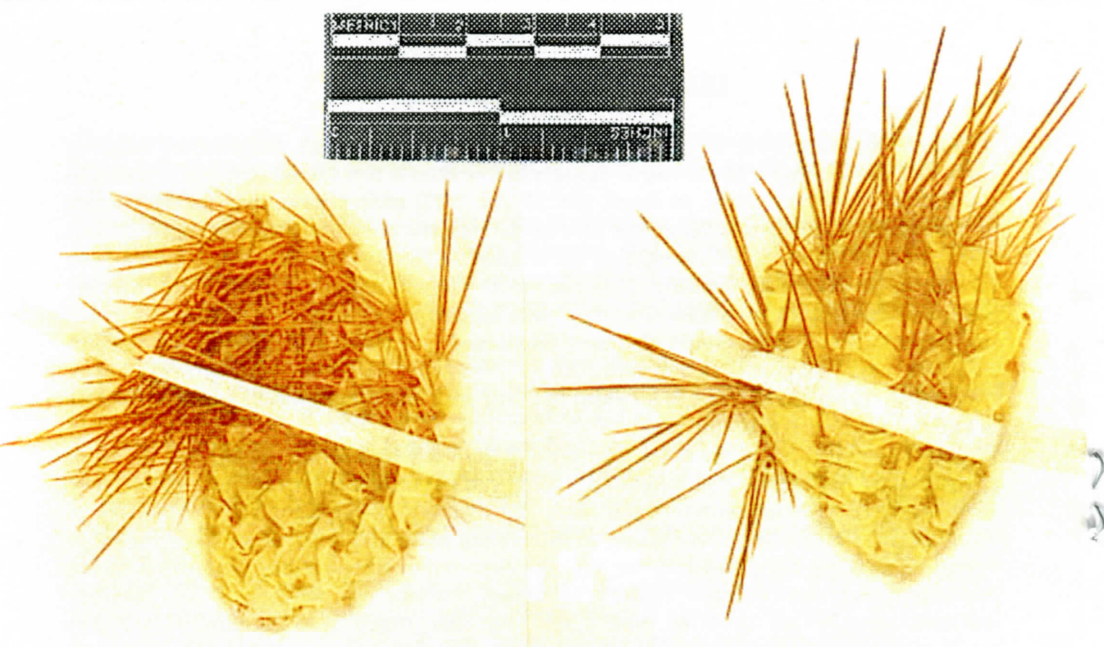


Fig. 1. Two pads of the isotype of *O. soehrensii* Britton & Rose. No. 18967. Almost full size. Published on website of New York Botanical Garden.
Fig. 2. *Tunilla soehrensii* (B. & R.) D. Hunt & J. Iliff. BLMT503.03c. About 50km south of Puno, Peru. Photo. by M. Lowry.

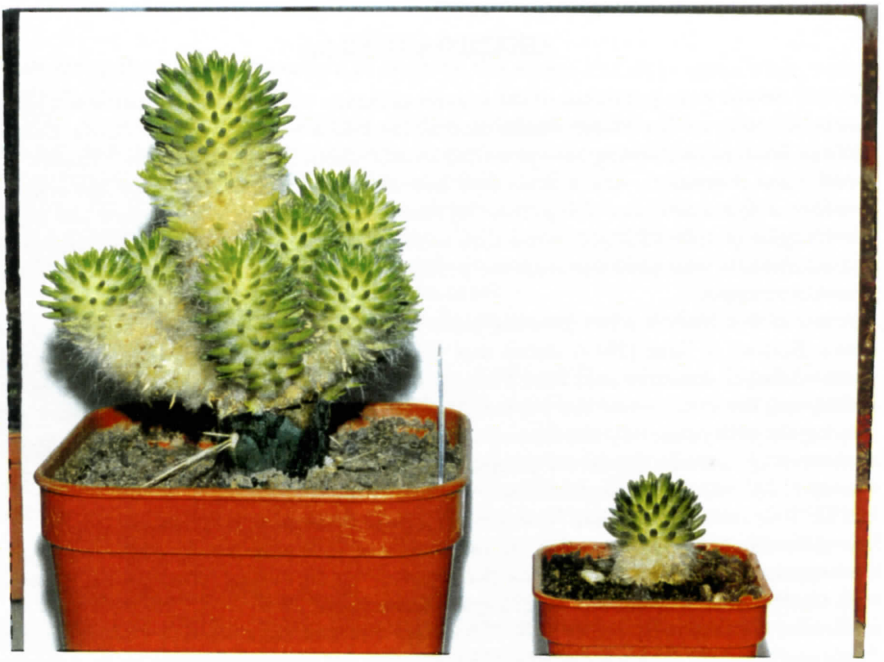


Fig. 3. Rooted cutting of *A. malyana* and parent plant. Photo by D. Parker.
Fig. 4. *Tephrocactus alexanderi* plants. Photo. by W.L. Jackson.

AIRAMPOA/TUNILLA

In 1809 details were published of the travels of Azara who journeyed westward across South America as far as the Andes and as far north as what is now South Eastern Bolivia. He reported seeing low sprawling plants which he referred to as "Tunilla" i.e. small Tuna (Opuntia). Azara described how the native population used the fruits to produce a dye and called the plants "ayrampo". Azara therefore named the plants *Cactus ayrampo*. Dr Philippi found that some plants in Peru were called airampo by the inhabitants who used the fruit for producing a dye. In 1894 he named the plants *Opuntia airampo*.

Opuntia stricta Haw. is a low growing plant found in the southern USA and down into Cuba. Britton & Rose (1919) stated that the species was often cultivated on the west coast of South America and that Philippi's plant, *Opuntia airampo*, was in fact *O. stricta*, not the airampo of the Peruvians. They did identify a plant which they said was known everywhere by the natives as ayrampo and erected for it the name *Opuntia soehrensii* sp. nov. In my Dover publication of their book this name is followed, as a synonym, by *"Cactus ayrampo Azara"*.

In 1933 Fric validly published *Airampoa* as a genus. James Iliff recognises this but states that "the typification of this name is problematic" (p.135). Backeberg, however, used the name for his "Southern group" of Opuntias: "Low-growing species with small stems, forming denser groups ("Airampoae")".

In Bradleya Opuntia Index, 1995 R. Crook and R. Mottram state that *Cactus ayrampo Azara* and *Opuntia airampo Philippi* are synonyms for the same plant and that Britton & Rose were incorrect in believing that *O. airampo Philippi* was a synonym of *O. stricta*. However, J. Iliff (p171. Studies in the Opuntioideae.) states that to equate Azara's and Philippi's plants shows confusion, as they were different plants. Iliff writes that *O. airampo Philippi* "cannot have belonged to the *O. corrugata* (Tunilla) group as distinguished" by J. Iliff. He also states that whilst *Cactus ayrampo Azara* was "probably some plant of the *O. corrugata* group...there is no indication of which"(p178).

J. Iliff notes that Cardenas, under *O. cochabambensis*, reported the use of the plant as a source of dye, locally called "ayrampu" (p187). Iliff advances the thought that this could suggest that the usage of the vernacular name, airampo, applies "to apparently dissimilar plants in different localities" referring to "popular usage for the dye-producing fruit rather than any one plant that may furnish this"(p171).

In Cactaceae Systematics Initiatives 9. p 8 – 12, June 2000 D. Hunt and J. Iliff wrote an article entitled "Tunilla: a new generic name for the "Airampo group"". This article brought to fruition the result of various discussions outlined in the article and also earlier mentions in the previous Cactaceae Systematics Initiatives Bulletins. The intention was "to propose a new name for the taxon at generic rank so it could be based on a specific name that is already typified (*Opuntia soehrensii Britton & Rose*)" This would put the genus "on a clearer nomenclatural and taxonomic footing". The English description is as follows.

Tunilla D. Hunt & J. Iliff. Plants fruticose or ±prostrate, often creeping and rooting, densely branched; segments of determinate growth, subterate to ±flattened, to 8 cm but often smaller, sometimes only c. 1 cm (and then ±spineless), usually acicular-spiny all over; areoles close-set; flowers sometimes yellow, often reddish, the pericarpel usually bristly-spiny; fruit, where known, dehiscing by a lateral split; seeds small, c. 3mm, reniform, hardly flattened, not hard, deforming under pressure. Type *Opuntia soehrensii Britton & Rose*. Distribution: Peru, Bolivia, Argentina, and Chile.

A list of included species is then given.

When going through the literature to draw up the above summary there were certain questions that came to mind.

a). Why does my book show Britton & Rose listing *O. soehrensii* as "sp. nov." and then list, as a synonym, *"Cactus ayrampo Azara"* which is an older name than the one they propose? On what grounds could they validly do this?

b) What did Roy Mottram think of the statement that he and Richard Crook had made a mistake in equating *Cactus ayrampo Azara* and *Opuntia airampo Philippi*?

c) I had heard that Roy did not consider there was any need to erect the sub-genus *Tunilla,* as *Airampoa* was valid. Was this the case?

I put these questions to Roy. He very kindly answered them and said that I could publish his replies. I do this below.

J. Iliff co-operated with G. Leighton-Boyce in writing "The subgenus Tephrocactus" and the book was published in 1973. They split the plants into different groups for discussion and included "The *O. corrugata* group". They make clear that they were not suggesting that the group should be included under *"Tephrocactus"* but merited some discussion, as there was the possibility of confusion between the two types of plants. It is noteworthy that D. Hunt and J. Iliff made *O. soehrensii Britton & Rose* the type plant of their new genus *Tunilla.* This is because they wanted to base *Tunilla* on a specific name that was already typified. *O. corrugata Salm-Dyck* is an older name but no type was indicated. When writing on "The Andean Opuntias" in "Studies in the Opuntioideae" J. Iliff lists all the plants under *Opuntia* and gives synonyms including *"Tunilla"* where relevant. However, he still maintains the concept of an informal *O. corrugata* group and includes *Tunilla* in the group.

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Backeberg C. The Cactus Lexicon. 1976 P 352,

Britton & Rose. The Cactaceae 1963 Vol. 1 Dover Edition. P134-5 & 161.

Crook R. & Mottram R. Opuntia Index in Bradleya 1995 Vol, 13 . P95 & 107.

Hunt D. & Iliff J. Cactaceae Systemics Initiatives. 2000 Vol. 9 P8 - 12

Iliff J. in Studies in the Opuntioideae (Cactaceae). Ed Hunt D. & Taylor N. 2002 P133 – 244. Please see the advertisement in Vol. 8 No. 2 June 2002 P502, for the sale of this book. It is an invaluable aid to the understanding of the plants in which we are interested.

Leighton-Boyce G. & Iliff J. The Subgenus Tephrocactus 1973 P82 – 84.

A. Hill. Sheffield.

When Britton & Rose published *Opuntia soehrensii* in the first volume of The Cactaceae in 1919, they were not aware of the Azara description of *Cactus ayrampo* (1809). In the Appendix to Vol.4 (1923) they published an addendum to this entry, giving the Azara description and listing *Cactus ayrampo* and *Opuntia haenkeana* (also published in 1919) as synonyms of *Opuntia soehrensii.*

In the second edition of The Cactaceae, by Scott Haselton (1937), he edited all the Appendix notes into the body of the text, without any indication which bits were which, and it is this version that was reprinted by Haselton and by Dover. Hence, these versions look as though Britton & Rose had made an error in listing an earlier name in the synonymy. However, the reality is that Britton & Rose validly published *Opuntia soehrensii* in 1919. It does, however, become referable to *Opuntia ayrampo Azara,* if that name is accepted as validly published.

Hunt and Iliff have chosen to reject the name *Cactus ayrampo* as an unrecognisable description. I don't happen to agree with them, but that is a matter of personal choice.

Iliff correctly pointed out that Philippi's use of the name *Opuntia airampo*, was not the same as *Cactus ayrampo Azara*, as I had assumed in the Opuntia Index. Philippi's plant referred to cultivated examples of Opuntia stricta.

Airampoas probably originate from Argentina, where they occur in abundance in Salts, Tucuman and elsewhere. The Bolivian forms are recognisably a bit different - larger jointed plants with fewer spines, but the Peruvian plants around Arequipa were probably introduced by man from Argentina following the Spanish occupation, cultivated for the purple dye yielded by the fruits. I cannot tell any difference between them, and consider them to be one variable species. Even *Opuntia corrugata* differs only in having predominantly whiter spines, but it too varies considerably in the field.

The problem with the priority name, *Cactus ayrampo*, is that it does not have a legitimate combination in Opuntia. *Opuntia airampo Philippi* (1894), a homonym, now predates any attempt to recombine it, and it would therefore require a substitute name, which effectively Britton & Rose did in 1922, when they called it *Opuntia soehrensii*. However, *Opuntia soehrensii Br. & R.* was validly published with a Peruvian type, while *Cactus ayrampo Azara* should have a Bolivian type, so they are not the same taxon. The priority name in Opuntia is actually *Opuntia corrugata Salm-Dyck* (1834). If you wish to keep that as a separate species from the rest, then the priority name for the rest of the airampoas becomes *Opuntia microdisca Weber (1898)*.

In 1933, Fric validly published the name *Airampoa*, whose type was *Opuntia aurata Fric*, a nom. nud. for one of the 32 spine and flower colour variants, which Fric collected in Salta, Quebrada del Toro, near Tastil, in 1928. He made good herbarium specimens of at least two of these variants, which he called *Airampoa albispinosa* and *Airampoa rubriflora*, also not validly published, but easily recognisable from the specimens and from the photo in Kreuzinger (1935) as the same thing as *Opuntia microdisca Weber*.

When Hunt and Iliff published their new genus *Tunilla* in 2000, they did not seem to be aware of the material left by Fric for *Airampoa*, and regarded *Airampoa* as of uncertain application. The reality is however, that there is no such confusion, and if the genus is to be recognised at all (I wouldn't bother), then *Airampoa Fric* has priority.

Roy Mottram. Thirsk

Congratulations to Ray Weeks who has recently had his collection of Tunilla/Airampoa recognised as a National Collection under the N.C.C.P.G. scheme. Please will members help to build up the collection by providing Ray with cuttings, from any plant in the groups, which have documented habitat history?

Ray's address is 63, Mill Hill Lane, Winshill, Burton-on-Trent, Staffs, DE 15 0AB.
Tel. Mobile. 07813265069.

OPUNTIA SOEHRENSII Britton & Rose.

Description in The Cactaceae 1: 134-135. (21 Jun) 1919.

Prostrate, in masses usually 1 meter in diameter or less; joints at first erect or ascending, finally prostrate and rooting and forming new colonies, flattened, rather thin, somewhat tuberculate, very spiny, orbicular, 4 to 6 cm. in diameter, often purplish; spines slender, rather variable in colour, usually yellow or brown, several from each areole, sometimes as many as eight, the longest ones 5 cm. long, erect; flowers light yellow, 3 cm. long; sepals brown; filaments yellow; style white; stigma-lobes green; fruit naked, 3 cm long; seeds 3 to 3.5 mm. broad, ovate, thickish, with narrow margin and roughened sides.
Highlands of southern Peru, Bolivia and northern Argentina. Type collected by Dr. and Mrs. J. N. Rose below Pampa de Arrieros, Peru, August 23 1914 (No. 18967).

Roy Mottram, in the section of the Opuntia Index that will be published in Bradleya next year, adds the following information:
HT: US 761558. Comprises 3 cladodes (pads of Opuntia. Ed.) and an envelope. A photo of this sheet was published by Meckler (1984; mf.584 of 1082) and by Iliff (2002;231). IT;NY

The above mentioned photo of the holotype in "Studies in the Opuntioideae" shows the three mentioned pads. The Carnegie Institution of Washington, New York Botanical Garden has put on its web page another sheet also with the Number 18967. This presumably is the isotype (collected at the same time as the holotype). The two full illustrated pads from this sheet are shown in Fig. 1. The website is http://www.nybg.org/bsci/hcol/vasc/cactaceae.html and it also contains illustrations of the details of other plants.
Martin Lowry has kindly provided me with photographs of plants of O. soehrensii he has encountered in habitat. Plants under his collection number BLMT 503 from about 50 Km south of Puno, Peru, are the closest ones he has to the site of the Type locality. Please see the front page and Fig. 2. Ed.

PLEASE NAME THAT PLANT.

In the last issue, Vol. 8 No. 4 December 2002 P532, the article by Royston Hughes mentioned one of the parent plants of the seed being a spiny plant labelled *T. ovata* and the other a *T. ovata* form labelled *T. russellii.* The former plant was illustrated on p533 as Fig. 2 *Maihueniopsis ovata.* The second plant was not illustrated but appears in this edition as Fig 5. Martyn Collinson has sent a photograph of a plant that he thinks is similar to that shown on p533 Fig 2. It is illustrated in this issue as Fig. 6. However, Martyn's plant came as a cutting labelled "*neuquensis*". We therefore have three plants with different names on the labels. Please will members comment upon this? Are we looking at one, two or three species?
Only one member has made comments about the above article in the December Journal. I hope that there will be more comments before the printing of the June Journal. Please do try to contribute. Ed.

PHOTOGRAPHS NEEDED.

Please will you help me by providing any photograph, either habitat or cultivation, of the following plants? O. *corrugata* Salm-Dyck, *microdisca* Web, *orurensis* Card, *albisaetacens* Bkbg, *erctoclada* Bkbg, *minuscula* Bkbg, *silvestris* Bkbg, *tilcarensis* Bkbg. *picardoi* Marn.-Lap. *chilensis* Rit., *ianthinantha* Rit., Ed.

PLANTS FROM CUTTINGS.

Apparently the most common questions on the cultivation of *Opuntias* are difficulties with seed germination, obtaining flowers and growing regular looking plants from cuttings. Very often, if not usually, new specimens, which grow from single or double segments develop weak joints with untypical spines. The phenomenon resembles the pathological symptoms resulting from light shortage. However, the problem can be observe even on plants, grown from cuttings, that are grown under good conditions.

Some of my friends, Cyrill Hunkeler from Switzerland and Martyn Collinson from England, who certainly posses very good collections of small *Opuntia*, told me some time ago, that they had had this kind of problem with quite a lot plants. Also, in our Journal, from time to time, someone raises the subject and in the literature or on the Internet, pictures of such juvenile looking specimens are common.

In my small collection, where plants are given quite good conditions, they grow in sunny garden under plastic sheeting (about eight hours of sun exposure), I have frequently met with the above problem. It appears in all genera. I have already tried to cultivate *Pterocactus, Cumulopuntia, Puna, Austrocylindropuntia, Maihueniopsis*, *Tephrocactus* and *Tunilla*. It is impossible to say that one of these or some certain species (forms) is more susceptible to the above-mentioned phenomenon. I use this word, instead of disease, as I think that it may be a natural mechanism of vegetative propagation.

Taking into consideration the literature about *Opuntia*, which is very limited, and the judgement of some growers generally there exists two ways of proceeding. One advice is to cut off immediately every new joint that is weak. The other one recommended approach is to simply have patience since a plant has to develop at first enough of a large root system to produce mature segments. However, it also appears to be very important to start by using only well developed segments as cuttings, because undeveloped ones will probably always grow out of character. I would like to present a few of my own observations, which have led me to the best method of cultivation I have been able to apply to vegetative propagation.

The single or double mature segments taken as cuttings, even if they are growing under good conditions (eight hours of sun exposure, deep pots, light soil rich in nutritive substances, regular watering...) very often produce immature segments. The new specimens are usually similar to young plants obtained from seeds. This can testify, in my opinion, that it is a natural and regular development of a rising generation, regardless of reproduction type. In habitat, small seedlings or cuttings are usually not subject to damage by the actual strong sun as much as they incur a danger of death due to lack of water. The young plants have to develop an adequate root system as soon as possible and any formation of mature segments roots is less important. However, there must exist a precise relationship between the growing speed of underground and above ground parts of a plant. So while weak shoots with undeveloped spines grow faster and increase the demand for water the root system is better stimulated to sprout. If someone systematically removes all the immature segments in the hope that a plant will develop a good root system and thus start to produce proper segments it will turned out that this method is senseless. The next generations of produced segments will be still very weak.

As I mentioned above, there exist a precise relationship between the growing speed of underground and above ground parts of a plant and if someone restricts the growth of the stem the root system will also reduce its speed of development. This interdependence can be observed even in the case of common grass. Short cutting will stimulate denser growth of the turf but too short a cut will cause the growth to slow down.

Sometimes, even a little larger plant, which has already started to produce good looking segments may lose its maturity when someone removes too many segments. For example taking large clumps off in order to use them as large cuttings. A plant, which is destitute of the majority of green shoots starts to speed-up production of replacements at the expense of producing, for example, spines.

Cuttings, grafted even on very large stocks, which provide them with an already good root system, sometimes produce, at the beginning, immature segments. This is indicative of the hypothesis that initial juvenile development of Opuntia plants, propagated in a vegetative way, is a natural process. It seems to be logical, that the undesirable type of growth is independent of the root system and it is connected with alteration of hormone activity during vegetative propagation.

I have planted Opuntia cuttings in different seasons of the year, in spring, in summer and even in early autumn, but as yet it seems to be impossible to say that one season is better than another one. The problem of juvenile growth appears in all cases. Perhaps, larger cuttings (with several segments) that were planted at the end of May and started to grow a few weeks later, gave better results. This continued in the following years and formed good looking plants a little faster.

To recapitulate my experiences with propagation Opuntia from cuttings. The only one safe conclusion is patience. The shortest way to obtain properly developed, mature specimens is cultivation under good conditions and expectation for the appearance of mature segments. Usually, they appear after two or three years of cultivation as the third or the fourth generation of joints. Usage of horticultural manipulations like removing juvenile shoots or lopping before this stage will simply extend the process of maturation.

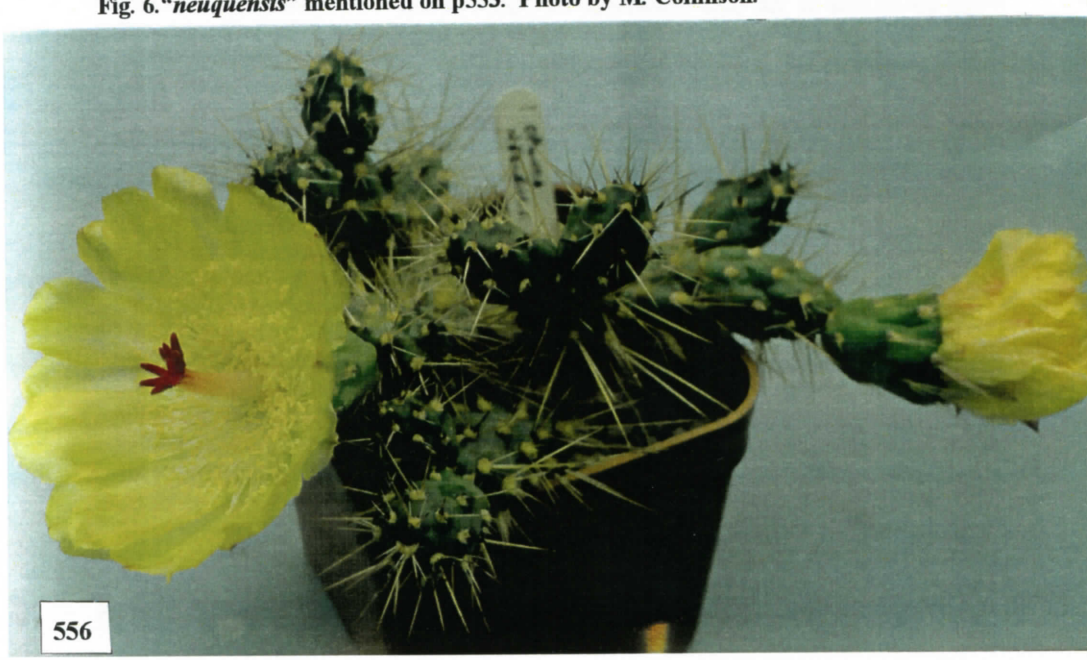
However, when a young plant has formed at least a generation of mature segments, immature ones should be gradually starting to clear away while the plant will grow up in the next seasons. Of course, in case of many species of Tephrocactus and related genera it is very difficult method, because new segments grow from last year's ones. Only a few Opuntias, like *Pterocactus australis*, form many new segments from the original tuber. There are a few solutions. If a juvenile part of plant is quite short, it can be buried in soil and transform into part of the root system. Sometime the elongated segments can disappear naturally as they are hidden under new generations of segments. This is what happens, for example, with *Maihueniopsis* or some *Cumulopuntia*. One can also try to remove all juvenile segments, even with mature ones growing on them, thus saving only the main stem. However, according to my experiences such step will very often cause a reversal of the whole process. It is possible only with much older specimens, although when the plant suddenly loses all the green shoots it tries to reconstruct organs indispensable for photosynthesis and equalise the potential difference between the large root system and the lack of above ground material. So it starts to produce fast growing segments, which means immature ones.

Grafting can be helpful because it gives the possibility of obtaining mature specimens in shorter period of time. Larger plants, cut off from stocks, usually later grow much better than single cuttings.

Please note that in the wild only some species of *Pterocactus, Tephrocactus* and *Cumulopuntia* are often subject to vegetative propagation but I have no information how the development looks like of such plants. In the case of seedlings, I suppose, that juvenile shoots are usually buried in soil, retracted by roots or covered up by drift sands so that they transform into a lignified stem that is sometimes visible on pictures from habitat.

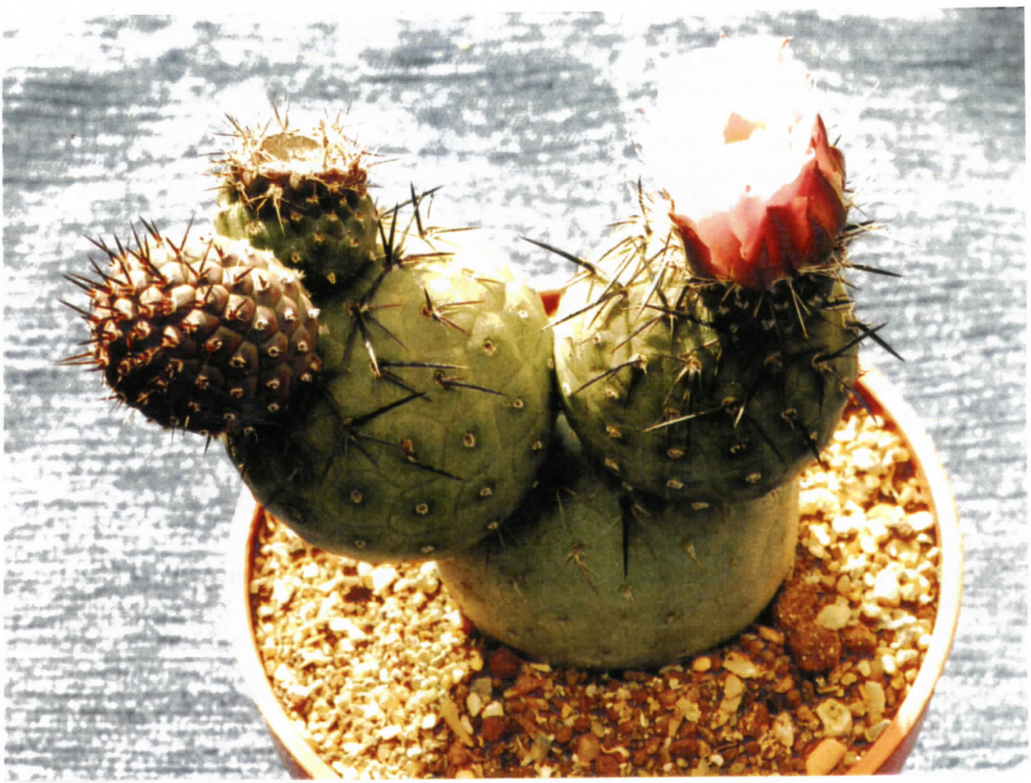
Piotr Swiatoniowski. Krakow, Poland

Fig. 5. "*T. ovata* form labelled *T. russellii*" mentioned on P532 in previous Journal. Photo. by R. Hughes.
Fig. 6."*neuquensis*" mentioned on p553. Photo by M. Collinson.



TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera



Tephrocactus geometricus. (Castellanos) Backeberg.
Photograph by J. Betteley.

STUDY GROUP

Vol. 9 No. 2 June 2003

SECRETARY'S PAGE.

We have two more members this term who are Richard Prentice and Dr Colin Walker who has rejoined this year 2003. I hope they both will enjoy taking part in our activities in the future.

- **All articles and comment should be sent to the Co-Editors.**
- **Subscriptions and any other correspondence should be sent to the Secretary.**

May I remind you please to let me know of any changes to your address, telephone number or email address!

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THE CHARM OF TEPHROCACTI.

Of all the South American Opuntias we grow my personal favourites will always be most of the true Tephrocacti. Current taxonomic thinking leans towards five species, and it is here that the symmetry of shape, the body colour and the spination demonstrate the sheer attractiveness of many clones of Tephrocacti. In this short article I have selected single clones of two species to illustrate my point; both species have been covered in previous TSG articles and will thus be familiar to most members.

TEPHROCACTUS AORACANTHUS (Lemaire) Lemaire.

The species has its origins in the Mendoza region of Argentina and according to Backeberg is "a bizarre and striking plant". This Tephrocactus has the largest body forms of any Tephrocacti and, with the longest and most contrasting and colourful spination, is well worth seeking out and cultivating. The illustrated clone (Fig. 4) is the most desirable of several that I grow. Our Secretary, Rene Geissler grew the plant from seed, and I acquired it on a recent visit to him I therefore take no credit for it's early years.
The glaucous-grey body has imprinted on it a pattern of almost rhomboid tubercles. The deeply sunken brownish glochids are barely conspicuous, whereas the spination is the longest, strongest and most colourful of the entire genus. In fact the earliest alternative name was *Opuntia formidabilis* (Borg), which aptly describes the sword-like and formidable nature of the spines. The terminal flowers, which arise from the larger areoles, are over ten centimetres in diameter and are pure white in colour. According to Michael Kiessling growth starts a little later in the year – probably around mid to late May in the UK, and in that respect it resembles most forms of *T. alexanderi*. The species is sometimes labelled *T. paediophila*.

TEPHROCACTUS GEOMETRICUS (Castellanos) Backeberg.

This is closely related to *T. alexanderi* and is considered by many to be a sub-species of that plant. Despite its slowly increasing availability I shall probably never cease to be enamoured of its colour and form. It can be as variable as *T. aoracanthus* to the point that there are some plants masquerading as *T. geometricus* that clearly belong elsewhere.
Eventually forming modest dense clumps of segments, this plant will produce one or two new offsets each year. Mature segments are again glaucous-grey with variable tuberculate patterns, while newly produced offsets are typically purple. Spination, which is brown or black, can be erect on new segments but more reflexed on those that are more mature. The outer petals of the flowers are pink while the inner petals are whitish to pink with a variable pink midstripe. The flowers are produced on plants with only two or three segments, which adds to the delight of the species. I remain indebted to Graham Hole for providing me with this clone (Front cover photograph) several years ago.
Although articles have been written on these plants on several occasions in the past I make no excuses for re-introducing TSG members to these true Tephrocacti. To me they remain more fascinating and collectable than any other group of Opuntias I have grown in the last thirty-five years. **John Betteley. Newark.**

TSG SHOW 2004

Birmingham Branch has kindly agreed to combine the TSG show with Birmingham Branch Show next year. The date is to be arranged later.

THE TSG ANNUAL MEETING. April 2003

Alan Hill could not attend. The medical profession had forbidden all movement until next Wednesday; best wishes for a speedy recovery from all at the meeting. Fortunately his problem lay with the knee and did not prevent him from sending a load of information to the Temporary, Acting, Deputy, Assistant, Honorary Chairman. Although this only arrived on the Saturday it was enough to allow me to stumble through the business.

I made one or two mistakes. By far the worst of these was failing to get a vote of thanks for Rene. He had made all the arrangements and prepared the sandwiches and cakes to welcome the travellers. As always these were good but it is the psychological effect I like. It makes you feel welcome. So, belatedly: Thank you Rene.

Dorothy Minors also sent an apology but did provide up to date accounts. Due to the change in the date of the meeting the accounts ran from August last year to April this year instead of the previous August to August meetings. The group remains in a strong position with a bank balance substantially higher than two years ago. We have no need to get rich but need this reasonable cushion in the bank. Membership is 87 and includes people from many parts of the world. We regret the loss of Dawn Nelson who acted as our agent in France but it seems that we are still able to collect their fees etc. There was discussion of means to spread the word. Advertisements don't seem to work. The item in the American Journal may prove useful. This was a news item. That is a better sort of publicity. The Editors' reports were brief. Along with thanks to all who have contributed there was the usual appeal for more. This time Alan made two extra points. He has to start the formatting process about a month ahead, usually with insufficient material. Then, when more does arrive, or he has to write it, he has to undo some of his efforts and try again. We need more contributions so that there is always enough in reserve. (The second point concerned the future, discussed below.) Two very good ideas were put forward.

1. Iliff has not completely dealt with the Tunillas. Everyone grows a few. Everyone could get a photo, or photos, of a plant, or plants, in their collection. They could send these to me or to Alan together with their label name, or names. While pictures of flowers are good they are not essential for this exercise. Members could, if they wanted, add any opinions about the plant or its name or any other relevant material. This is very simple but it could be very useful. It would help to establish a buffer of material for Alan's benefit. It might help Ray Weekes, who is struggling to establish a proper National Collection. It might help to give us all more to say at next years meeting where we plan to discuss Tunilla. It's easy. Have a go. Have a go <u>now</u>.

2. The other idea came from David Parker, I think. Why don't we publish profiles of members and their collections? I didn't understand this at first. We have asked people to write about their collections and had some good articles but most members don't write. David's idea was different. He thought a reporter should visit the member and write up details of the member, together with the collection. This is very different and could work. All we need is a reporter, or even many reporters. Moreover, you don't need my permission to become such a reporter. Ring somebody up, arrange to meet, frame a list of simple basic questions, and tell the member what you are doing. (Important, that), let them read it and then send the result in. Then you could allow the member to visit you, to get their own back. Photographs of the visit would be very useful but not essential.

We had planned to discuss the show schedule and expected a fair amount of argument. In the event no one seemed to have much to say. J. Betteley had judged the show and said that the schedule had worked fine from his point of view. It seemed that everyone liked it. I rode one of my hobbyhorses. You shouldn't really judge *nigrispina* against the British Standard

glomerata. (*andicola* in fact). It was agreed that the latter plants, which should be judged when they had reached mature size and typical shape, should be moved to the unrestricted class, No. 63 in last year's schedule. It was agreed that it would be a good idea to award a BCSS Society Silver Medal for most points in our section.

We talked about our organisation. David Neville has already commented that the BCSS Journal is not 'Future Proof'. Neither are we. Our group depends very heavily on three old men. Although we are beautifully preserved we are not getting any younger. We need volunteers. Someone asked "What for?" The answer is "Never mind. You indicate the slightest willingness and a job can be found."

We did find some volunteers and jobs.

Ray Weekes will co-ordinate efforts (supply of plants etc.) to mount a display stand at the National Show 2004. David Hutchinson will find a venue for our own show next year. We are too late for this year. NB. They are now in charge of these subjects.

A few other interesting points emerged during the various discussions. We did agree to sponsor the small Opuntia Class at the National. Roger Moreton agreed to start publishing lists of Field Numbers, some in each Journal. He will also attempt to get a Cuttings Exchange Scheme underway. He wondered whether there was any way to get small, seed grown plants into our general activities. Six of us were from Birmingham. We'll start a Local Group.

Then we finished early and everybody milled about talking about the plants and sneaking Rene's sandwiches. We then had a good lunch, served promptly at 12:05, in the pub.

One of my other mistakes wasn't too clever. Alan had asked everyone to bring plants. He had, at the back of his mind, the thought that we could use them to illustrate the discussion of the show schedule. I forgot all about this, mainly because there wasn't much discussion. So the people who had gone to the trouble of bringing plants were entitled to feel a bit miffed. I am sorry. It is worth registering that there was a lot of informal chat around these plants so that bringing them was not a waste of time. If I can make one comment. Ray's plants looked a lot better than last time I saw them. Making Tunillas look good requires a certain amount of skill and, er, ruthlessness pruning. I hope Ray forgives me for that remark.

Finally the talk, given by Ivor Crook supported by Martin Lowry, describing Opuntias seen in Peru. It was not just a simple travelogue. The slides had been reorganised into chapters, each dealing with one species. Each chapter started with the same map but with marks showing the location of the next set of plants. Then there was a list of associated plants, and then the slides. This way you see the changes develop as the intrepid explorers move along the latitudes. (and up and down a bit). Like all of us they have their hobbyhorse. I better mention it. Especially since they've got it in Bradleya. You are going to have to rename your *lagopus* as *floccosa.* The reason is that *malyana* is wrongly named. It should be called *lagopus.* Just think of the confusion that is going to cause. Why didn't they get it right to start with? They're in league with label manufacturers. Now I can pick out the best bit. Lots of slides of enormous, dense clumps of, er, lagopus, up to nearly 4m (12ft) across and one which will stay with me, a clump, just about the size and shape of a sheep, leaning over the bank of a stream, as though to drink. (Yes it was growing in what looked like a wet place) (Yes it was growing well). I'm not competent to comment on the lecture beyond saying that I enjoyed it as much as anything I've heard. All told we had a cracking meeting. I was glad I was there. Thanks to all who came.

W.L. Jackson. Sutton Coldfield

Next Meeting:- 10:00am, Sun.18th. April 2004. @ Slimbridge.

MAIHUENIOPSIS RUSSELLII.

The label on the plant in the photograph Fig. 3 says *M. russellii*. It has a nice flower and you get more than one open at once, i.e. a display. The photograph is not brilliant but you should be able to see that it doesn't look quite right. After all, *M. russellii* is supposed to be closely related, if not identical, to *M. glomerata*. I have four other plants labelled *M. russellii*. They have the expected pointed segments and darkish colouration so their labels could well be correct. The plant in the photograph doesn't so its label could be wrong. It could be something else.

I also have two other plants labelled *M. ovata*. (HPT 246 and MNW 4645) The plant in the photograph does look like them; small areoles, short, erect, white spines and egg shaped, pale green segments with virtually no tubercles. So, applying the principles of Democratic Taxonomy*, it rather looks as though this plant should be labelled *M. ovata*.

Should I change the label? Well, there are these two others also labelled *M. ovata*. (MK140 and JVB???). These have brownish spines, and more of them. They look a bit like the *ovatas;* but not much. Does this minority vote invalidate the earlier hypothesis? Well, I have decided. I shall think of the plant as *M. ovata*, but I won't change the label just yet. Anyway, it does have a nice flower.

Democratic Taxonomy. *Place all similar looking plants close together. Examine the labels. Whichever label appears most frequently has the majority vote.

W. L. Jackson . Sutton Coldfield.

I have discussed the above article with Bill and he has suggested it should be printed with a comment on it from me. (We do get on very well). Bill dashed off the above article relying on his memory of what Leighton-Boyce and Iliff said in their book "The Subgenus Tephrocactus" in 1973. On page 58 the two authors discussed the plant material then available labelled *russellii* and discussed a possible link between *russellii* and *glomerata/andicola*. They did mention that there was another view that *russellii* might be nearer *ovata* than *glomerata/ andicola*. In CITES Cactaceae Check List Second edition 1999 P107 it is stated that *russellii* is now a synonym for *ovata*.

It would appear that instead of five plants of *russellii* Bill does not have even one *russellii* and cannot have one.

A. Hill. Sheffield

CONTINUING THE TEPHROCACTUS OVATA/RUSSELLII STORY.

Following on with the *T. ovatus* story (TSG Vol. 8 No.4 December 2002 Pages 531/2) the two plants performed in the same way in 2000 as they did in 1999 but a little earlier in the season. The dried up fruit off the *russellii* plant was removed on the 11th September with ninety-four seeds inside. The *T. ovata* plant's fruit were left on the plant with the hope that they might ripen in a similar manner. The principal fruit did become streaked with yellow and was yellowish green all over when I removed them from the plant, allowing me to sow on the 19th July 2001. There were about thirty seed; my note of the exact number was lost. At least seven germinated and are now growing on. Neither plant flowered in 2001 nor 2002 and both were pruned of a fair number of segments as they were trying to expand beyond their four and a half inch pots. This year the *ovata* has three well-developed buds and one that could abort or come late. The *russellii* has two well-developed buds while a third bud did abort. Also for the first time my *T. perrita* (the Chilean *ovata sterilis*) has one well-developed bud.

These, to me, are clearly *ovata* plants as are two others I have. One received as *dimorpha* and the other as *darwinii*. I also have three versions of another plant that grows in a similar way but is smaller bodied and less robust spined. The three all came with different names; *atroglobosa, ovata* and *russellii*. It would be convenient if the name *russellii* could be applied to this plant. However, the discussion of the features in the description of *russellii* in Leighton-Boyce and Iliff's book, page 58, "The Subgenus Tephrocactus"

seems to me to be two different people describing two forms of the same thing. I now see that Crook and Mottram also believe this. (Bradleya. 20/2002 Opuntia Index p. 64). They also add a note that the name *russellii* is often misapplied to a *T. glomeratus* form in European cultivation. That would explain why my WG1900 (MK 174) came with that name. I had noticed that the spines, when present from the upper areoles, were one per areole at first and later two per areole as in some *glomeratas* but everything else shows it to be different to *glomerata*. I see it as a species halfway between *T. minutus* and *T. ovatus* with some similarities to each but quite different from either. Klaus Gilmer's version KG 1738 came with the name "*ovata*" and it has two well-developed buds. The "*T. atroglobosa*" is the oldest and the largest plant and it appears to prefer growing segments rather than flowers. Incidentally also note that my *T. minutus* KG 1712 (ex R. Kiesling) with the usual soft, tiny spider-like spines has produced some real spines upto an inch long, three on each segment, one per areole and one on another segment.

Royston Hughes. Liverpool

RUSSELLII AND GLOMERATA.

Description of *Opuntia russellii* sp. nov. in "The Cactaceae", Britton and Rose Page 94, Dover edition.

"Forming small, compact clumps 1 to 2 dm. in diameter; joints small, globular to obovoid, dull green to more or less purplish, 2 to 4 cm. long, very spiny near the top; leaves minute, acute, soon falling; prominent spines 3 to six, yellow, 2 to 3 cm long, slightly flattened; accessory spines 1 to several, 1 cm long or less; glochids at first inconspicuous, but in time very abundant, sometimes 2 cm long, somewhat persistent; flowers not known; fruit globular, 2 to 2.5 cm in diameter, spineless; seeds pale, 4mm broad."

Comment; "Collected by J.N. Rose and P.G. Russell. on the dry hills at Potrerillos, Mendoza, Argentina on 2nd September 1915. This is a common species in the foothills of the Andes, in the Province of Mendoza, where it forms low mounds along with other cacti."

Fig. 1 is a reproduction of *Opuntia russellii Britton and Rose* (Isotype) from the province of Mendoza, Argentina. The illustration is taken from the website of the New York Botanical Garden. Britton and Rose placed their *O. russellii* in their Pentlandianae group. They used the name *Opuntia glomerata Haw.* to cover *articulatus* and *platyacanthus* forms of Opuntia. *O. glomerata* as we today understand it was not recognised by Britton and Rose. However, at some point a form of *glomerata* became known as *russellii* in Britain. Opinion appears to have now moved to accepting that *"russellii"* is a synonym for the earlier named *O. ovata (Pfeiff.)* although everyone is entitled to their own opinion.

The two previous articles refer to the confusion there has been between these plants. Fig. 2 is a photograph of a plant at the 1996 BCSS National Show. The plant was labelled *russellii* but is an example of the form of *glomerata (v. andicola)* that is often given the wrong name of *russellii.* Incidentally this is the form of *glomerata* that Bill Jackson mentions in his report of the discussion at the TSG meeting on showing. The consensus was that this species should be moved to the unrestricted size class because of its speed and habit of growth.

Comments on the topic of *russellii, glomerata* and *ovata* would be very welcome. What is your opinion on seeing the isotype illustrations? Can anyone make the case for mistaking an *O. glomerata v. andicola* for "*russellii*"? Can anyone explain why Britton and Rose saw the need to erect the new species of "*russellii*" when they recognised the existence of O. *ovata Pfeiffer*? Does any one wish to make the case for retaining the concept of *russellii* as a separate species? Any comments will be very useful for the next edition of the TSG Journal. Please do contribute.

A. Hill. Sheffield

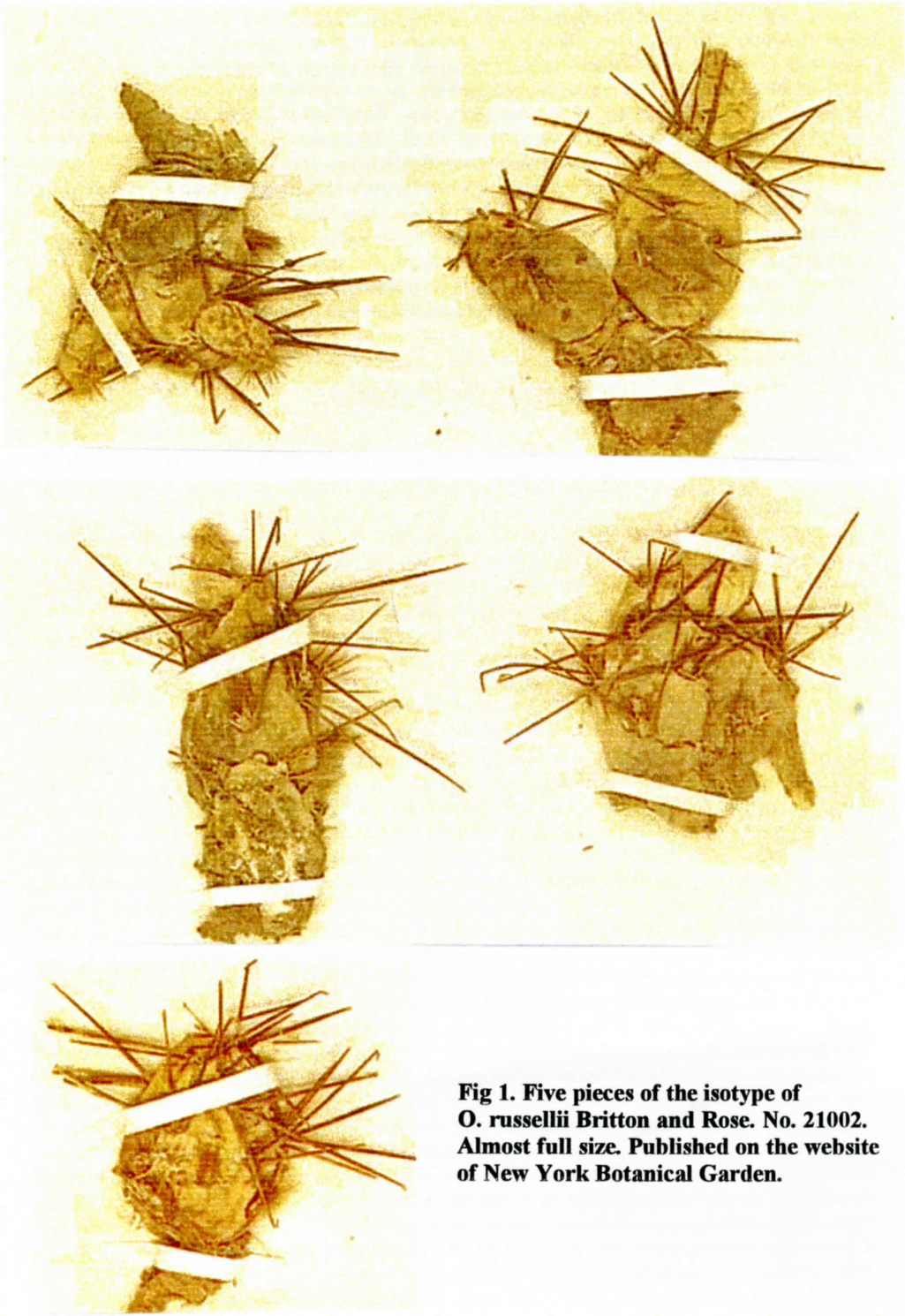


Fig 1. Five pieces of the isotype of O. russellii Britton and Rose. No. 21002. Almost full size. Published on the website of New York Botanical Garden.

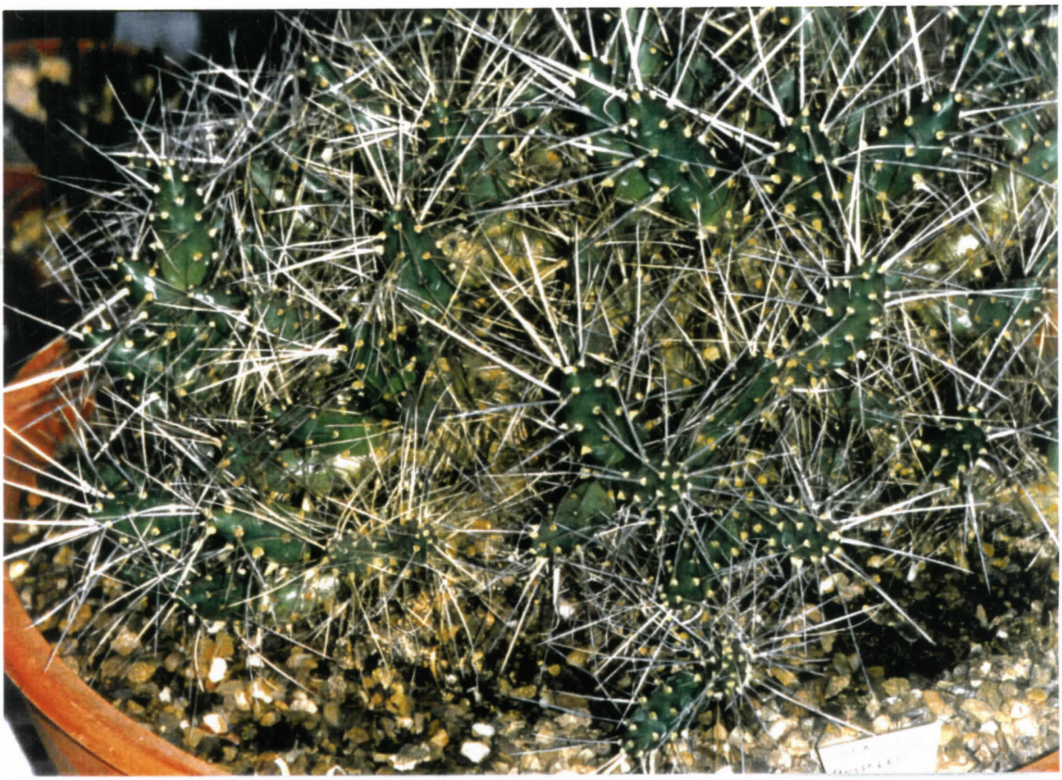


Fig 2. Maihueniopsis glomerata v. andicola as M. russellii. Photograph by A. Hill.

Fig 3. Maihueniopsis ovata as M. russellii. Photograph by W.G. Jackson.

FROM AIRAMPOAE TO TUNILLA

In the last TSG publication (Vol. 9 No. 1 March 2003 P550/552) discussion was outlined on Airampoae and Tunilla. The table below is an attempt to show how some of the names of Backeberg's Airampoae have been placed in the new generic name "Tunilla". The methodology was to list all the species in Cactus Lexicon by C. Backeberg, English Edition 1977, that were classified as Opuntias in "B: Southern Group: 1: low growing species with small stems, forming denser groups (Airampoae)." Comparison was then made with the information in J. Iliff's contribution in "Studies in the Opuntiodeae. (Cactaceae)" Edited by D. Hunt and N. Taylor. Use was made of the "CITES Cactaceae Checklist" Second Edition Ed. D. Hunt and "The Opuntia Index" in Bradleya. It is hoped that the following will be used by interested members to proceed with further study if the plants, especially to fit the names to actual plants. Copies of the two books edited by D. Hunt can be obtained from him. Please see the advertisement in Vol. 8 No. 2 June 2002 P502. The two books are invaluable aids to the study of our plants, as is the Opuntia Index. There is obviously a great deal of more information on the species mentioned below.

√*TUNILLA albisaetacens*. *Backbg*. S. Bolivia (near Tupiza).

OA *v. robustior. Backbg*

? *armata Backbg* N. Argentia (?)

OA *aulacothele (Web.)* Insufficiently clarrified species says Backeberg.

? *boliviensis Backbg*. Bolivia (E. of Oruro)

→ ? *calantha Griffiths*

OA *canina Speg*. Argentina (Jujuy, Pampablanca).

[OA *canterai Arech*. Uruguay coast. Classified in Lexicon as (B1) but obviously a mistake and is not an Airampoae]

? *cedergreniana Backbg*. N. Argentina (Los Andes)

→*TUNILLA chilensis Ritter* . Chile. (Dept. Arica, Alcerreca). Non *O. chilensis (Backbg.) Rowley*

→*TUNILLA corrugata (Salm-Dyck)* Argentina (Collected in Mendoza before 1824) Listed by Backeberg as a variety of *longispina*

OA *discolor Br & R.* Argentina (Tucuman, Santiago del Estero.)

→? *eburnea Lemaire*

√*TUNILLA erectoclada Backbg*. N. Argentina (Salta, Cachpampa).

→*TUNILLA ianthinantha Ritter*. Argentina (Jujuy, Tres Cruces)

OA *kiska-loro Speg*. Northern areas of Argentina to East Bolivia.

? *laetevirens Backbg*. Origin? (S. Bolivia or N. Argentina?).

OA. *longispina Haw*. Mislabelled in Backeberg Lexicon as (A1 – a) which is a North American Opuntia category. Name treated by Iliff as of uncertain application.

→*TUNILLA microdisca. Weber*. Argentina (Prov. Catamarca)

→*TUNILLA minuscula. Backbg*. N. Bolivia on Puna 4000m. NB. Backbg classified this as Tephrocactus.

? *multiareolata Backbg*. N.W. Argentina.

? *obliqua Backbg*. N. Argentina

√*TUNILLA orurensis Card*. Bolivia. (Dept Oruro).

? *panellana (Backbg) Backbg*. Origin?

√*TUNILLA picardoi Marn.-Lap*. N. Argentina. (Salta: Catamarca, acc. Fechser.)

? *poecilacantha Backbg*. Bolivia

OA *retrospina Lem*. N. Argentina?

→*TUNILLA silvestris Backbg.* **Bolivia (La Paz) NB Backbg classified this as a Tephrocactus.**

√*TUNILLA soehrensii Br. & R.* S. Peru to Bolivia.

√*TUNILLA tilcarensis Backbg.* Argentina (Tilcara)

OA *v. rubellispina Backbg.*

OA *utkilio Speg.* Argentina (Tucuman; Santiago del Estero).

KEY.

√TUNILLA. Species listed by Backeberg as "Airampoae" and Iliff as "Tunilla".

→TUNILLA. Species not listed by Backeberg as "Airampoae" species but listed by Iliff as TUNILLA. See comments under individual plants.

? In J. Iliff's opinion these cannot be differentiated with enough confidence from the accounts in the literatureto allow inclusion in his key. (Page 163 Studies in the Opuntiodeae (Cactaceae) Ed. D. Hunt & N. Taylor.)

OA Classified by Backeberg as an Opuntia of the Airampoae group but not mentioned by J. Iliff.

Notes on synonyms.

aulacothele (Web)* is a synonym of *weberi

canina Speg. kiska-loro Speg. & utkilio Speg* are synonymns of *anacantha Speg.

***O. bispinosa Backeberg* (which is a name outlawed by the International Code of Botanical Nomenclature) is a synonym of *O. anacantha Speg.* Backeberg did not catagorise his *O. bispinosa* as an Airampoae but placed it in his next category of larger Opuntias.plants.**

Alan Hill. Sheffield.

"TEPHROCACTUS CATACANTHUS Backbg."

In Vol. 8. No. 3 September 2002 of the TSG Journal, Page 523, our Secretary, Rene, asked for information on the above plant which is illustrated in Cactus Lexicon Page772, 1977 English edition. Although the name does not appear in the CITES Cactaceae Checklist one of our Italian members, Cesare Serra, kindly emailed Rene, as requested, to inform him that there is an entry for this plant in J. Iliff's section of Studies in the Opuntioideae (Cactaceae) edited by D. Hunt And N. Taylor. Page 185. The plant should not be confused with *O. catacantha Pfeiffer* which is a plant from the Virgin (US) Islands as listed in The Opuntia Index by R. Crook and R. Mottram but not by Backeberg in his Lexicon. As a consequence of this earlier use of the name, Backeberg's name for the Tephrocactus is nom. invalid. However, the plant did exist and Crook and Mottram give the above-mentioned photograph as the holotype of the species. Frau Muhr discovered the plant in Argentina in the mountainous region of Jujuy Province. The photograph shows a very impressively deflexing spined plant with a single segment. J. Iliff attributes the plant to the glomeratus group and states that "the plant has the appearance of being distinct and a fresh search for it with a view to typification would be desirable." R. Crook and R. Mottram state that the plant was imported by Uhlig and distributed under the number U 2061. I agree with J. Iliff's view that a search in Jujuy would be desirable for new material if any one is going out there. However, is it possible that some of Frau Muhr's original collection is still living in some one's greenhouse? Please will you inform me if you know of any such plant? It is in matters such as this that our group can add to knowledge.

Alan Hill. Sheffield

ALSTON HALL 2003

We go every year to this 'Northern Weekend'. We always enjoy it. The setting is good, way out in the country. The accomodation is excellent. The food is good, and –er- plentiful, and you do get to know the people. After a year or two it begins to feel like coming home. All that is needed is a few good talks. The organisers do seem to manage that as well. This year we had three sessions with Rene Zahra, two with Martin Lowry, two with Ray Stephenson and one with John Miller.

Rene's first was titled 'Growing Rare Cacti from Seed'. That wasn't quite right. It was more about grafting them while very small. The use of jewellers' eyeglasses was noted. One small point registered. He uses some sort of cereus, ***Hylocereus undatus*** I think, as a stock. He roots lots of cuttings of this but then waits until they produce new shoots. These are detached to become the actual rootstocks. It certainly worked. Serried ranks were displayed. Growth rates were compared. His second talk was a travelogue in S.W. Africa. His third showed us how they grow succulents in Malta.

Martin Lowry did "South American Highlights". This was an edited travelogue. There are some staggeringly beautiful places in South America. My problem is that I can't see a good landscape without wanting to live there. I suppose it's a sort of frustrated "Good Life" syndrome. I have to tell myself that it wouldn't grow food. Not so with the cacti. They flourished. There were very memorable bits; a view overlooking a forested hillside where the Cerei were competing successfully with more ordinary trees, ***Maihueniopsis rossiana***, (Well, not many speakers even mention Tephrocacti) and an image which will stay forever, a small, but growing plant, (***Lobivia***?) which was splitting a vertical rock into two neat halves. (Samson in that temple?) I would tell you the name but I can't write fast enough notes.

His "Lobivia Revisited" dealt with taxonomy. I am not qualified to say much about this except, perhaps, as a user. After all, collectors do have to use the products of this arcane discipline. For what it is worth I thought it was brilliant. He examined the history of the Lobivias with a series of tables of names showing how particular names in one list had been moved, or introduced, to the next. He also named the authors of each list. (The guilty parties?) The whole thing was summarised by a bar chart showing how the number of names had varied over the years, reaching a peak after Britton and Rose and then declining. It was interesting that the two most recent bars were very similar suggesting that the subject may be moving towards a stable consensus. Alas, although the epithets are fewer and more stable, it does seem that these plants are likely to become Echinopses, and stay that way as Lobivia fades from our labels. This presentation was computerised. It was very good. For example: adding a few pictures of plants to show the variation side by side supported a statement about variation. This is the way to present a talk. The only disadvantage being the projector's price(>£3000 (+VAT?)). We may have to wait a bit. It would be very interesting to see the South American Opuntias treated in a similar manner.

Ray Stephenson had a go at "Crassulaceae Updated" and his travelogue was titled "Succulents of Greece".

Finally John Miller talked about Ariocarpus. This was a sort of hidden taxonomy. He had pictures of every shade of difference from ***fissuratus*** at one end to ***retusus*** at the other. (From memory that is.) Is there really a set of species? Or is it just one cline? It looked like the cline, particularly as the geography was added. There were some cracking photo's too, habitat and cultivation. I would like to see the same thing done with some of our plants. I can imagine a series with one of the articularti at one end and perhaps alexanderi or darwinii at the other. The multiploidys could branch out as

side chains. I am doing this in a sort of half hearted, fumbling way myself. I keep moving the plants around in the greenhouse in the hope of getting similar plants close together. Although I'm a long way from any sort of taxonomic miracle I can already tell you that many of the labels are rubbish. But it's not enough. I guess I am going to have to grit my teeth, block my ears and start a serious attempt to wade through "Studies in the Opuntioideae".

Anyway "The Northern Weekend" at Alston Hall was a success. Everyone should go. But don't try to book your place before Mary and I have got ours.

W.L. Jackson. Sutton Coldfield.

A NEW LOCALITY FOR AUSTROCYLINDROPUNTIA FLOCCOSA.

On 21st October 2002 whilst traveling from Quillacolla to Morochata, I took a wrong turn, which is not infrequent in a Bolivia which has a dearth of road signs. Whilst driving along this road, I kept thinking "I can smell *Austrocylindropuntia floccosa*", which I had seen in about a dozen localities in Peru as well as a few more in Department La Paz, both near Lake Titicaca and along the Rio La Paz valley. Everything was there, the altitude was well over 4000m and there was green, rocky grassland, all that was missing were the plants of *A. floccosa*. I came to another road junction where there were two little urchins outside the door of a house. I gave them part of my bag of strawberries, which would rot since I couldn't possibly eat them all, and then a woman came walking down the road. I exchanged pleasantries and then asked the way to Morochata. She indicated that I should return the way I had come and then turn right at the junction where I had made my error. I took a very leisurely drive back the way I had come, still thinking "*Austrocylindropuntia floccosa*, where are you?" Then there they were, in seams in a rocky outcrop, all facing in more or less the same direction, and thus invisible from the other direction from whence I had come.

There were quite a few plants that had flowers as well ripe fruits. Plus they were reproducing vegetatively by offsets becoming detached and rolling down the slope where they might root and produce another plant. The majority of the plants had heads that were approximately 3 - 3.5 cm in diameter but a number of the plants were significantly more robust, being 5 - 6 cm diameter.

The plants were growing with *Lobivia maximiliana*, which was also in flower and fruit. I heard, but did not see, a humming bird, which I assumed, would pollinate the lobivias. I believe the pollinator of the Austrocylindropuntias, and in fact most Opuntias, to be bees.

I just wished that every time I took a wrong turn, I should be lucky enough to find something equally exciting.

Seed from this collection is available from the TSG.

Brian Bates. Sucre. Bolivia.

DAMP TUNNELS

For a couple of years I have harvested a few figs, Brown Turkey they call them. The plant did no good until I built a sort of shanty over it. Although I pretended not to notice its scruffy appearance, it has been nagging me for a bit. At Malvern Spring Show last year I stumbled on a stall selling polytunnels. They had one about 3 x 2m for only £130. It turned out that the firm were local and that they could "drop it in", as they passed, without charge. I already had a couple of fig cuttings. So I did it. You can't see it in the picture, Fig.5. It's behind the greenhouse. The figs are doing fine but...

Mistake No. 1.
It looked empty with just two fig cuttings so I put tomatoes in a couple of grow bags. I am not adapted to watering every day. I prefer cacti. I got tomato moth too. I'd never heard of this before. These zonking great caterpillars hide under the fruit and gnaw the bottom off it so you get a big crop of half tomatoes.

Mistake No.2.
I covered the soil inside the tunnel with that black woven plastic with red stripes in it. Good stuff, keeps the weeds down, but porous. Water rises in the soil by capillary attraction and evaporates through the plastic when the tunnel gets hot. When it cools it condenses, in spite of attempts to provide ventilation. I learned something about curved roofs. Condensation on the inside of the nearly flat bit at the top doesn't run down. It drips. Drip doesn't do justice to torrent of water raining down. When it rains outside the drops hitting the tunnel make it rain inside. Every outside drop triggers one inside. I learnt all this after I had made...

Mistake No. 3.
Well before all this I had built an outdoor bed for some of the less exciting 'Tephros'. The idea was to make space in the greenhouse but I also hoped that the great outdoors might produce better spines, flowers and colour. After counting the pennies I opted for a domed roof made of polythene sheet to keep the rain off. This is the sort of covered wagon with legs that you can see in the picture, Fig 5. Although the bed is raised above the ground, has a wire netting and fabric base and appears to drain quite freely it stayed wet for months after I had covered it for the Autumn. I know this is true because grass seedlings came up in it. There may be too much humus in the compost? The ventilation is a 25mm gap between the cover and the bed sides all the way round. It works, I've found blown leaves inside. But it's not enough. It is still wet inside.

All of this has consequences.
In the tunnel the ageing tomatoes got botrytis. It spread to the figs. They may survive but what a mess. In the outside bed the Opuntias got sooty mould, not by the spot but by the acre. As soon as it gets a bit warmer, and, if possible, drier, I have a few hours surgery waiting for me. It's all down to high humidity, damp tunnels.

Actions?
I might try to cover the polytunnel floor with something waterproof. I might replace the domed roof over the bed with something shaped more like a greenhouse roof. But it does all sound very tiring. We shall see.

W.L.Jackson. Sutton Coldfield.

COLD WINTER GROWING.

One of the strengths of the TSG is the willingness of individuals to provide personal experiences that may assist others. My experiences of growing plants in a cold greenhouse may at least give those who have not yet tried it the impetuous to at least embark upon a trial.

For approximately fourteen years now I have had no heating of any kind in a fifteen-foot long section of my Alton greenhouse that is ten feet wide. In addition I have ventilated it by opening doors and windows whenever possible. The greenhouse runs East to West and it has to be said that it is sheltered on the North by the close proximity of a stone wall. The whole garden has some protection from the walls surrounding it. It has nearly unobstructed light from the South even when the sun is low in winter. The greenhouse has polythene insulation.

Lincolnshire is of course noted for its cold winds in winter from the east and wind chill can often be severe. However, temperatures of below –10C have not been known in this time and indeed temperatures down to –5C have been unusual. Also during the fourteen years there has only been one period as long as three weeks with constant sub-zero night temperatures.

A variety of cacti are grown in the greenhouse in closely packed pots and I have only occasionally known the compost freeze even when, for instance, *Pediocacti* are watered, as they are every year, in January and February. I doubt if such pots have frozen the whole pot of compost and the surface has thawed during the day. Many plants are known to be extremely hardy such as *Austrocactus* and *Pterocactus* and the afore mentioned *Pediocactus*. Many are not necessarily thought of as hardy, like *Eriosyce (Neoporteria) Islaya* etc. and *Parodia* but for sure they have all proved to be resilient and have had few problems providing they are dry. In fact that even the *Echinocereus* of Baja, California are hardy in my conditions has led me to try most genera (except of course those like *Arrajadoa, Melocactus* and *Discocactus*) and I have been successful.

My own experiences has been mirrored by that of Wendy and Richard Edgington who grow, with little trouble, in a cold environment an even greater variety of plants than I do. The really interesting thing is that the plants generally do not flower later than those kept warmer.

The only real danger some plants, in my view, is a leaking greenhouse and this is a real problem with many greenhouses, including my Alton. Many plants will survive sitting in wet compost but many will not and fairly quickly they will succumb to rot of the roots even if it does not kill the whole plant.

It should be obvious from the above that I have no trouble, by cold winter growing conditions, in growing the *Opuntias* in which we are especially interested. It has been reported that some of the plants e.g. the *Tephrocacti* sensu Kiesling require warmer conditions than *Maihueniopsis* but I have found no need to differentiate between them. Someone has told me that he has problems with his *T. geometricans* that have developed black spots. He wondered whether this was due to cold in winter. My plant has over wintered without heat and shows no ill effect.

All in all my experience of the majority of the cacti we grow is that they can not only survive but prosper in cold conditions if given as dry an environment as possible and also air movement.

John Arnold. Lincoln.

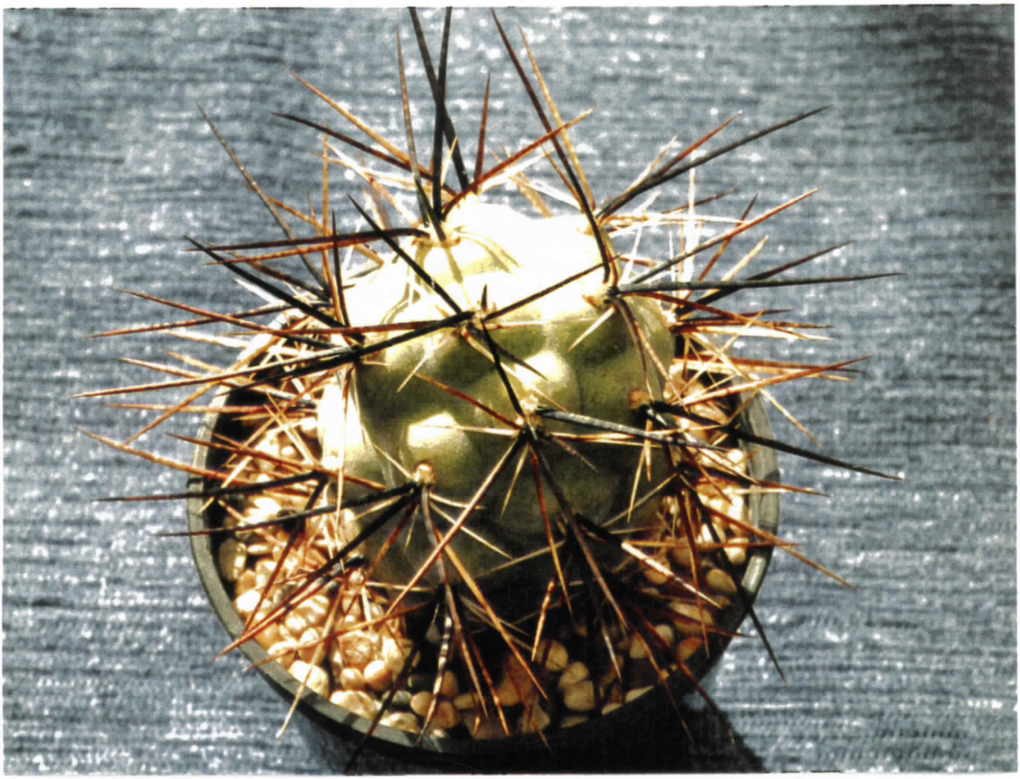
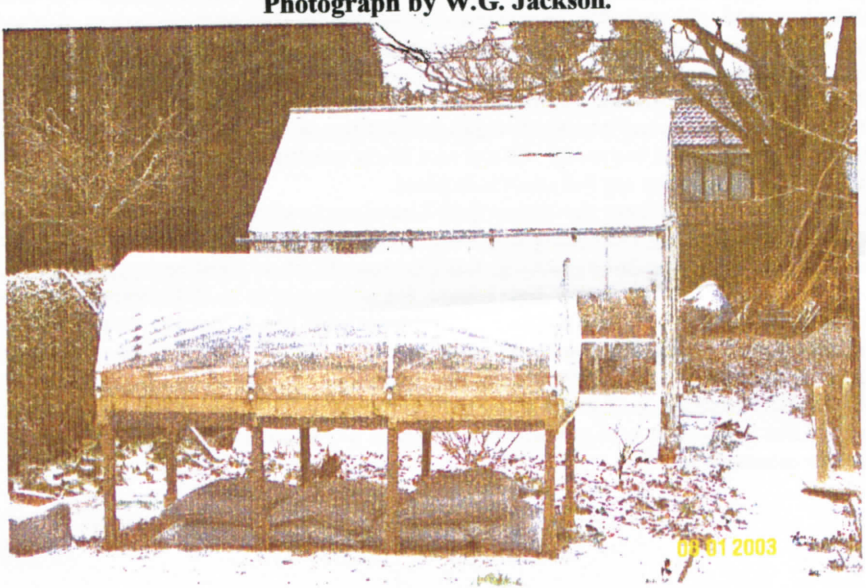


Fig 4. Tephrocactus aoracanthus (Lemaire) Lemaire.
Photograph by J. Betteley.

Fig 5. A damp polytunnel in winter.
Photograph by W.G. Jackson.



TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera

Austocylindropuntia exaltata (Berger) Backeberg at 3,386m altitude, near Estique Pampa, north of Tacna, Peru. Photograph by I. Crook.

STUDY GROUP

Vol. 9 No. 3 September 2003

SECRETARY'S PAGE.

We have some more members who have joined us. They are N. & S Kleinmichel from Germany and Mr F. Lampo from Belgium who joined via David Parker. I hope they will enjoy taking part in our activities in the future.

•All articles and comment should be sent to the Co-Editors.

•Subscriptions and any other correspondence should be sent to the Secretary (Please see the address below).

May I remind you to please to let me know of any changes to your address, telephone number or e-Mail address!

If you write to any Officer and expect an answer please include a S.A.E.

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SOUTH PERU OPUNTIA LOG. Part 1.

During October and November 2002 I was very fortunate to realise an ambition to see cacti in habitat. In the knowledgeable company of Martin Lowry and John Arnold we flew in to Lima, hired a car and spent five hectic weeks driving around the southern half of Peru. After a night recovering from the outward flight and a day collecting maps we set off in earnest to discover Peru's spiny treasures.

Southern Peru consists of a coastal plain adjacent to the Pacific Ocean varying from some 10 to 100km wide and then rises rapidly to an altitude of around 4,000 to 5,000 metres to the top of the Andes mountains. From Tarma to Cuzco and beyond, the mountains descend equally rapidly as you travel north east into tropical rain forest. Towards the very south of the country, is the northern edge of the Altiplano. This is a high plain up to 250km wide and around 3,800m altitude extending southeast into northern Bolivia with Lake Titicaca at its heart.

Our journey took us inland from Lima to Tarma passing over the top of the Andes. The first 150 km included a climb of 4,181 metres to Ticlio pass at an average gradient of around 1 in 37. From Tarma we drove to the southern edge of Peru on the high Atlantic facing slopes of the Andes. From there, we descended to the Pacific Ocean and returned to Lima along the coast with a couple of excursions up the southwest facing slopes of the Andes along the way. During the five weeks of the trip we examined cacti at over 100 sites. Opuntiod cacti were present at 70 of these sites. This short series of articles is a distillation of my personal thoughts and observations of these plants as they were seen growing in their natural habitats.

In general terms a lot of species of cacti seem to be limited as much by altitude as any other factor. Driving through the range of a plant we would often see a few, poor quality plants at first. Then, as we continued onward the plants got larger, more abundant and healthier before they again became smaller and less healthy in appearance as we drove out of their distribution.

Low altitude members of The Genus Austrocylindropuntia.

1. *Austrocylindropuntia pachypus* (Schumann) Backeberg.

This plant grows on the lower, Pacific facing slopes of central Peru. On this trip, plants in good condition were seen a short way up the Santa Eulalia valley, a dry, steep-sided valley near Chosica at 1,490 metres altitude. They grow as a simple solitary or sparsely branched plant up to 1 metre high and 8cm in diameter. The species flowers on short, side branches often only 4 to 5 cm long which seem to fall easily from the plant after flowering and roll easily down the steep slopes. This is likely to be an important vegetative means for its propagation, as the detached segments seem to root quite easily. Looking back down the valley in mid-afternoon, the grey coastal fog or Garua can be seen only a few kilometres away. It seems likely this extends far enough inland to moisten these plants for nine months of the year. At this site we also found six other species of cacti, all growing within 50 metres of each other. As well as *Armatocereus matucanensis, Espostoa melanostele, Haageocereus acanthurus and chosicensis, Loxanthocereus eulaliensis* and *Melocactus peruvianus* we found a Jotropha and a small amarylidaceae bulb.

2. *Austrocylindropuntia exaltata* (Berger) Backeberg.

A variable, common and widely distributed plant on the mid altitude slopes of both faces of the Andes. Plants were observed at fifteen different sites from 2,400 to 3,765

metres altitude. This compares with Ritter's comments in 'Kakteen in Sudamerica' of a distribution from 2,500 to 3,500 metres. Anderson, in his book 'The Cactus Family' comments that the species is probably only native to the Peruvian Andes but has been dispersed by man throughout much of Andean South America. The plant often serves the combined purpose of a privet hedge and razor wire. Many of the indigenous people grow the plant as a decorative hedge on the low walls marking the boundary of their property or as a hedge on a high ledge to discourage access to a courtyard.

Plants on the Atlantic facing slopes tended to be smaller in both height and width and less bushy than plants on the Pacific facing slopes of the Andes but this may represent simply a sampling error due to where we chose to stop. In thornscrub, at the lower altitude of 2,900 metres on the banks of the Rio Mantaro on the Atlantic facing slopes of the Andes, the plants barely reached half a metre high. They were low, green, turgid, stems with few side branches under the shadow of the lush two metre tall ground cover. At the higher altitude of 3,765 metres on the other face of the Andes, just above Puqio, on quite level, grazed grasslands plants grew on the rocky outcrops to much larger specimens, often over four metres across and some reaching tree-like proportions over five metres tall. At this location, and for a good twenty minutes, I chased several large, dark purple to black bumble bee-like insects from flower to flower but I was not quick enough to obtain a reasonable photograph. Once they had landed on the flowers, which were often not fully open in the mid-day sun, the insects crawl deep into the flower and momentarily vanish from view only to emerge soon after and quickly fly off onto the next flower.

Other cacti commonly grew with this species and we never observed it as the only cactus plant at any one site. It commonly grew alongside Echinopsis (both Trichocereus and Lobivia), Corryocactus, Oreocereus and Cleistocactus. Plants were also observed growing alongside other opuntioids. On the Atlantic slopes and in the far south of Peru it could be found alongside both ***Cumulopuntia sphaerica*** and ***boliviana*** and ***Tunilla soehrensii***. Closer to Lima, above Puquio, it shared a habitat with ***Austrocylindropuntia floccosa***, a typically high altitude species. On the Pacific facing slopes it grew alongside ***Opuntia quitensis ssp mcbridei*** and ***Opuntia inaequateralis***, both being flat-padded forms of Opuntia.

Illustrations

1. Fig 2. Map of southern Peru showing sites where plants were seen
   green dot - *A pachypus* red dot – *A exaltata*
2. Front and back pages: details of a five metre tall plant of *Austrocylindropuntia exaltata* at 3,580m altitude, above Puquio.

To be continued..... Ivor Crook

MEMBERS DETAILS.

Enclosed with this issue of the Journal members will find a list of the names of the members of the group and their addresses. When asked as to whether they were willing to have their details published only two members indicated they did not want this. The information is published with the hope that it will encourage some interaction between members. For example members could visit each other's collections. At the April TSG meeting it was realised by some members that there were a number of members in the Birmingham area. It was therefore mooted that they might not only visit each other but also sometime have their own small meeting. Please will members write to one another to make contact? Details of telephone numbers and email addresses have not been included, as some members prefer not to have such information published. Ed.

HOW LARGE DO AUSTROCYLINDROPUNTIA FLOCCOSA GROW?

After growing large clumps of Echinocereus plants for many years I decided in the year 2000 to start collecting small Opuntia and Tephrocacti as I thought that they would be easy to handle in retirement. Ha Ha.
I received a good start thanks to TSG members and other collection owners around Europe. One helper was Mr Michael Kiessling of Germany who in January 2002 sold me, amongst other material, a twenty centimetre rooted cutting of *Austrocylindropuntia floccosa* with the reference number RH 109.
I planted it in a deep pot and it grew well during the spring of 2002. It grew so well that it bent over onto the bench so it was repotted further into a larger pot and given a cane for support. This behaviour was strange as all my other *floccosa* and *rauhii* plants remained small clumps.
The plant went on growing through the summer of 2002 and grew and grew so that its stem was again back on the bench top even after being given support canes. I therefore decided that it was best to grow it laying down in a small trough (small window box) but my smiles of joy became frowns when it soon outgrew the trough.
I now have it in a one metre (three foot) long seed tray (see Fig.1). The stem is over two feet long and still growing. It has put out two new offsets half way down its length. Is it a *floccosa*? I am sure that the plant believes that it is a *Machaerocereus eruca*, the creeping devil plant!
If you read in your newspapers about a Birmingham man caught dismantling a plastic bus shelter its me, to repot this RH 109 cutting. Seriously, how big does it grow and please does anyone know the information for RH 109?

David Parker. Birmingham.

My experience of *flocossa* compared to *Machaerocereus eruca* is that whilst they both appear to want to lay down in my greenhouse the *eruca* does what is normal for it in habitat and puts down roots from the trailing stem. This enables it to travel across the ground/soil. Most of my *floccosa* elongate and either try to lay across other plants or hang down from the edge of the bench. However, I have never found any sign that the stems want to root down. There are no roots hanging in the air from the stem or trying to root down into compost. I have asked David Parker and Royston Hughes about their plants and they confirm that their *floccosa* do not send out roots from the growing stem. Has anyone noticed roots from the stems whilst the stems are attached to the plants?
David mentions above that his plant has sent out two offsets from halfway up the stem. Royston, in conversation with me, has mentioned that some of his plants send out offsets above the older growth on the stem. In habitat Royston reports that the plants send out their offsets from the base and then presumably root down. What is the secret in cultivation to ensure floccosa send out offsets from the base, thus forming nice clumps, rather than from higher up the stem or nearly from the apex?
RH 109 is obviously a shortened form of RKH 109 so I asked Royston Hughes if he had any comments to make on the above article. Royston very kindly provided the following information.

Ed.

It is interesting to hear that David Parker is having the same difficulties that I encountered in trying to grow one of the *floccosa* that I collected. Not only RKH 109 but all the clones I have collected have had this tendency to long thin sparsely haired growth, more markedly in the Cusco clones. It confirmed the stories that I had heard that *floccosa* in the greenhouse grew more like *Austrocylindropuntia exaltata*. I did grow my *floccosa*

outdoors from spring to autumn and this did cut back this undesired form of growth but did not stop it. In the past I have managed to get some nice hairy clumping plants but never for long or with the stout stems of habitat. Whenever the stems became too long or began to lean I cut them off hoping that the new stems would produce a nice tight clump. However, this did not usually happen.

I have three clones of RKH 67 from above Huancayo. They vary in height being short, medium and tall. My notes record that in habitat they were two to four inches tall, five to six inches tall and eight to nine inches tall by two to three inches in diameter across the dense hair and spines. At their best I had a clump of each clone in a ten-inch diameter bowl although the stems only attained one inch in diameter. I knew that keeping all my *floccosa* under the bench during winter was not very good but there was no where else to put them. Then I became aware of Klaus Gilmer's method of growing *floccosa* by watering in winter and keeping them dry in summer, mainly to get them to flower. In March 1999, in reply to some information Haken Sonnermo had requested from me, Haken wrote "The RKH 67 is a very big one here. I have grown it with free root run and a lot of water in winter (as all of my *floccosa*) and a dry spell from March to August. The RKH 67 is now 7 cm diameter and 30 cm high with a lot of side shoots. It is a very beautiful plant." Obviously he has mastered the art of growing them. I have no other information as to how he keeps the inside of his greenhouse through the snow covered Swedish winter. Where he lived is on the same latitude as Aberdeen and could be seen on the edge of the BBC weather forecast map.

We know these plants grow mainly between 3,700 and 4,000m in the tropics so have hot days and cold nights with a summer day length of fourteen hours and in winter ten hours. The main flowering time seems to be in August (winter) whereas other cacti prefer November (spring). The rainy season is January to March (summer) at the warmest time of the year. Therefore it is often raining or cloudy while the day length is shortening after the longest day. I have been in Huancayo when the days were hot and sunny while the clouds built up gradually in the mountains on each side of the valley. Then around five or six p.m. the clouds, having covered the city, released a torrential downpour of rain for one and a half to two hours.

To reach the habitat of RKH 109 to RKH 112 I climbed to the Inca fortress of Sacawayman that looks down on the city of Cusco 3,400m. I then continued on upward to look down on the fortress. The *floccosa* grew on all the hilltops or rocky outcrops that stood out like islands in a sea of cultivated fields. My notes record that on the first hilltop, although most plants grew well, there were some stunted to almost hairless plants amongst them. The five main clumps were fifteen to eighteen inches across and upto nine inches in height. The main stems were one and three quarters to two inches in diameter and the hair was yellowish at first but turned white as it became matted at one and half inches long. The spines were one inch to one and one-eighth inches long, yellow and protruded through the mat of hair. The following hilltops revealed plants of similar size and shape, the nine inch tall stems by two inches diameter seemed consistent whether in tightly packed or more openly distributed clumps. Some larger clumps grew on one hilltop to two metres across, however, the stems were quite open and there were already dead stems within the clump. My visit in 1986 was at the end of a longer than normal rainy season so all these plants seemed to be in good condition. The tops of the stems were turgid and green, the new hair being in tight tufts directed straight outward from the areoles above shiny green leaves, quite different to what I saw in a November trip before the rains.

On one hillside, whilst agreeing with the above descriptions, one clump stood out from the others. It measured twenty-two inches by seventeen inches by fourteen inches tall. The fat stems, though tightly packed, seemed more open towards their ends as they appeared to radiate out from a central point hidden in the clump. The stems looked stouter than their

measured two inches diameter. When it became dense and matted in age the hair retained a hint of the deep yellow of the new growth. Some spines became a darker brown than the usual yellow to yellowish–brown. The small leaves, normally unseen amongst the hair, stood out green and shiny to over three eighth inches long and one eighth in diameter. This plant became RKH 109 and from another hilltop came RKH 110, similar but from a smaller clump. I then found a plant with very sparse hair that remained yellow, RKH 111. Then another clump, like it but with a little more hair, became RKH 112. On an earlier trip I also collected at lower altitude near Sacsawayman two clones of RKH 73, one with little hair and the other with yellow hair. As I collected RKH 112 the clouds became dark and it seemed wise to leave before the storm broke. Descending from Sacsawayman into the city I was in sunshine again and had a drink at a cafe opposite my hotel. When I saw half a crown size spots of rain falling on the sunny pavement I quickly returned to my room, reached by a veranda round a central courtyard. The heavy thundery rain then beat down on the tin roof of my room almost continuously from 4.00 p.m. to 6.00 p.m.
RKH 104 from above Cochas, near Huancayo, and RKH 273 from near Achacachi, Bolivia, are both very hairy clones that also grow long and thin. In a recent American Journal (Vol. 74 2002. No 2 p.60/1 Ed.) James Mauseth on Peru reported a *floccosa* he called *tephrocactoides*, stating that its stems grew over two feet long with only the end tip of the segment being erect, the rest being horizontal. However, his photograph, to me, only showed normal looking plants in length.

Royston Hughes. Liverpool

The following articles in the TSG Journal will aid study on the cultivation of *floccosa*
Vol. 5 No 2 June 1999 P. 325 K. Gilmer .
P. 329 J. De Vries.
Vol. 5 No 3 Sept 1999 P. 336 K. Gilmer.
Vol. 7 No 4 Dec 2001 P. 471 H. Sonnermo. Ed

NEW CACTUS AND SUCCULENT CD-ROM

Recently I have come across a very useful CD-Rom, produced by Cactus Adventures International, the Spanish Society, edited by Joël Lodé. I have had other CD-Roms before but this one is not like any others that are usually just picture galleries. It contains 8120 fine colour photographs of the Cactaceae and other Succulent genera. The illustrations are thumbnails, each of which can be enlarged. There is "growing" advice and a 2003 Seed Catalogue. Text is in English, Spanish and French and you can select from the comprehensive index, move forward, backward or back to the index. The genera covered are quite extensive and there are photographs of each genus, variety and forms, although in some cases Backeberg's system for Cacti has still been used, but at the same time giving a number of other synonyms. Cacti & Succulents are listed with a good photograph of each plant with the description underneath. There is also an Etymology of the Cactaceae and Succulent genera and there are even sections of cristates and variegated forms.
The CD is a very good guide when ordering seeds or just looking up plants to recall their form, flower colour, or different varieties. I can thoroughly recommend this to our members as there is a good section of the 134 Opuntia, Puna, Pterocacti, Quiabentia etc. and at a cost of just €25 it seems a very reasonable outlay.
You can order it by credit card from Jöel Lodé, Desert Springs, Villaricos, Spain (AL).
Email: jlcactus@eresmas.net.

Rene Geissler. Slimbridge.

Fig. 1 A. floccosa (Salm-Dyck) Ritter. RKH 109. Photo by D. Parker.

Fig. 2 Southern Peru. 2002 expedition. Compiled by I. Crook.
Green dot *A. pachypus*. (K. Sch.) Backebg. Red dot *A. exaltata* (Berg.) Backbg.

Fig. 3. T. aoracanthus (Lemaire) Lemaire. (above)
Fig. 4. T. paediophilus (Castellanos) Ritter.
Photos by W. L. Jackson.

ARTICULATI.

I have a few of these now. Well you can't help getting more than one of most of them. There are theories about how to stop them falling to bits but I suspect that the plant wants to break up and spread and will outwit any measures, short of driving a knitting needle through a chain of segments. But it's not that which has provoked this effort. It is that useful item by John Betteley in the last issue. I agree with the tone of this. I like the real Tephro's too. They are spectacular and different. I fancied ***aoracanthus*** before I knew what it was, because the name means 'Sword Spined'; irresistible. And, when you get it, it does have sword spines; Black Sword Spines in many cases. (There's a name for a comic book hero in there somewhere.) Mine isn't very big yet but it has developed the characteristic features that John describes. It does seem to grow quite slowly. (Figure 3)
John says that ***aoracanthus*** is sometimes labelled ***paediophilus***. This seems to imply that they are the same species; ***paediophilus*** is simply a different looking ***aoracanthus***.
My ***paediophilus*** (Figure 4) is fairly big, both the bottom half and the rerooted top. I'm going to prune one of these to see if I can get a bushier plant with less tendency to fall over and shatter; probably won't work but I'll try. It has the same inverted pear shape segments as ***aoracanthus***, and the same geometrical boundaries between tubercles, but it doesn't look like ***aoracanthus***. Nor is it a slow grower. It needs guy ropes after two years.
So, are they just variations of the same species? Well, John is more likely to be right than I am, and spines are not a good diagnostic feature, but it does look different.
Now, if it looks different then we collectors need a name for it. You can't talk to somebody along these lines, "No, I mean the one with great big, daft, wangling, brown spines that grows fast, not the other one with sharp, black, straight, spines that grows slowly." I know ***paediophilus*** and ***aoracanthus*** are not exactly snappy names but they are better than that sort of rigmarole. So what do we do? Nothing at the moment. I suspect that there is a much wider range of variation than I have seen. Even if you called some of them ***aoracanthus*** var. ***paediophilus*** there would still be problems drawing boundaries. While I just have the two I shall treat them as separate species. Later, when I have time, I shall try and lay all the segments out in some sort of order and guess where boundaries might come. Before that, of course, I have to stop rooting all the bits that fall off and try and get more different clones, I think?

W.L.Jackson. Sutton Coldfield.

First of all I have a confession to make. I committed a cardinal error with John's article on ***T. aoracanthus (Lemaire) Lemaire***. When I was typing it I inserted a sentence and omitted to put it in brackets and add "Ed". The words were "The species is sometimes labelled ***T. paediophila***". It is this sentence that Bill has picked out. I have apologised to John about this. He very kindly says that he does not mind. I have learned my lesson and will never again add anything without making clear it is my comment.
Having cleared that up I can now answer Bill's points. My intention was to put in a neutral statement alluding (without going into detail) to the debate as to whether there is one or two species involved. The statement does not say the two names are synonymous. No judgement was intended. However, I accept that Bill is correct in that he can read the sentence as implying the two are the same species. If one follows the names listed in CITES Cactaceae Checklist, Ed D. Hunt 2nd edition 1999, page 106, then the two are regarded as synonymous and ***aoracantha*** has precedence. J. Iliff in "Studies in the Opuntioideae (Cactaceae)," Ed D. Hunt & N. Taylor, 2002, pages 217/8 corrects the name ***O. paediopila Castellanos*** to ***pediophila*** and states the plant is obviously very close to ***O. aoracantha***. However, he points out that Leighton-Boyce "believed that the exceptionally large pronounced tubercles and large areoles are consistent and reliable

characters and that the plant warrants infraspesific recognition". In "The subgenus Tephrocactus" by G. Leighton-Boyce and J. Iliff 1973 there is considerable discussion on *O. paediophila Cast.* with the conclusion (with reservations) that the two names should remain entities. Pages 32/3 of the book show three photographs of examples of the two taxa whilst pages 74/5 examines the two synonyms of *O. paediophila Castellanos* which are shown as *Tephrocactus hosseii Krainz et Gras* and *T. articulatus (Pfeiff. ex Otto) Backeb. var. polyacanthus (Speg) Backeb* . The latter is shown to have the synonym of *O. paediophila Cast.* in Backeberg's "Die Cactaceae" 1958 p. 258. In "Das Kakteen Lexicon" Backeberg 1966 *paediophila* is not mentioned. The inclusion of *T. paediophilus Ritt.* in "Cactus Lexicon" 1976 p.484 (the English translation of Backeberg's Lexicon) is done by Haage. In "Die Cactaceae" p.261 and in "Das Kakteen Lexicon" p.420 Backeberg lists *T. aoracanthus Lem.* as *T. articulatus v. ovatus (Pfeiff.) Backbg.* Thus whilst not accepting the names under discussion Backeberg did consider the plants as different and placed them in separate taxa. Ritter also regarded the two as different. In "Kakteen in Sudamerika" 1980, page 395, Ritter lists *T. aoracanthus (Lem) Lem.* as a synonym of T. *ovatus (Pfeiff.) Ritt.comb. nov.* whilst erecting *T. paediophilus (Cast.) Ritt. comb nov.* R. Kiesling, however, believes the two names are synonymous. In Darwiniana 25 (I-4), 1984, page 193, he places *Cereus ovatus Pfeiff., O. paediophila Cast.* and *T. hossei Krainz et Gras* as synonyms of *T. aoracanthus (Lem) Lem.*

Where does all this lead us? The answer is one makes up one's own mind as to what name system you wish to follow whilst being aware of the above attempts to settle the issue of the names and synonyms. Bill has put forward his reasons why he sees the two as separate species. Please will more members send in their opinion? It does not have to be a long letter although as Editor I welcome as much material as possible.

The following two original descriptions are translations taken, with the kind permission of J Iliff, from the book "The subgenus Tephrocactus" by G. Leighton-Boyce and J. Iliff

O. aoracantha Lemaire, Cactearum Aliquot Novarum: 34. 1838.

"Very robust, nearly erect, already ramose at the base, ashy-green.

"With rather close-packed, absolutely ovoid, tuberculate stem-segments, olive-green when young later tending to ash coloured, arising from fissures which bisect and tear asunder the narrow areoles, 5-7.5 cm long, and measuring about 5cm in diameter; with tubercles roughly 5 sided towards the base, almost 4mm high, in the form of slightly prominent mammulae, and similar in all respects when young; areoles very small, when young, furnished with sparse grey woolly felt, as also with a very small sharply pointed flattened little leaf towards the base; -" (glochids) "-set in a circle, very short, hair-like, reddish-grey; -" (spines) "- very sturdy, straight, divergent, unequal, somewhat spirally twisted, and a little flattened, sharply roughened on the surface (with very dense very minute hairs, stiff and subulate, imperceptible to the naked eye) extending in length from 6-16mm up to 5cm and even much more, grey, sometimes marked with brownish stripes."

O. paediophila Castellanos in Lilloa, 23:7 – (1950)

"A Tephrocactus of the Pentlandianae, large for the subgenus, higher than 30cm, articulate, single stemmed, sometimes 2-3 branched. Stem-segments greenish grey, jar-shaped (more or less 10cm long by 7cm broad), regularly tuberculate; the tubercles conical (more or less15mm at the base by 8mm high) equipped with an areole at the tip; the areoles large, circular, fully mature more or less 4mm diam., the young ones larger (5-10mm diam.) and furnished with strong woolly felt as on the husk of a nut and with hairs rising above the fleece of chestnut glochids (more or less 5mm long). Spines sword-

shaped, 4-7 (generally 5) arranged in irregular bundles, flexible, not at all sharp at the point (more or less 6-13cmlongby 2-3mm wide at the base), but muricate pruinose, on the upper side slightly canaliculate, on the lower side keeled and striped like a zebra when damp."

The author of the description observed "It has been seen by us in March of the year 1950 in San Juan between Marayes and Macasin. This species has the appearance of *O. aoracantha Lem.* so far as concerns the dimensions of the stem- segments and the distant similarity of the spines, but it is different because the spines are not solid and not black but more of the nature of a shaving or splinter. Its habitat is the brackish ground of the plains; the specific name alludes to this last point." Alan Hill Sheffield

GREENHOUSE FANS.

I have, over a number of years, tried to improve the air circulation in both greenhouses. I've left doors open and replaced glass with mesh panels to provide ventilation; while excluding cats and squirrels. There are still pockets of stale air and I have had problems with rain, which seems to be heavier now, being blown in by strong East, or West, winds channelled down the Tame valley. I decided to turn my attention to fans. Having tried, unsuccessfully, to purchase computer fans I finally found an electrical supplier in Birmingham who sold small, portable fans suitable for camping, caravans, garages etc. I bought four, two for each greenhouse. I put one above the top staging on one side and the other on the lower staging on the other. I run them for up to 24hrs. per day depending on the humidity and they have reduced the condensation in both houses. When the weather is dry I turn them off about 10:00am and on again at 4:00pm.

The fans are 120mm diameter and are manufactured by MICROMARK. They can be run on four 1.5v batteries continuously for up to300hrs. or on any 6v. DC supply. They are fully portable and safe to use in a greenhouse and have two settings, High or Low and the cost is £8.80 each. I hope this information will help others who have humidity and condensation problems. A.James. Birmingham.

My fans running continuously all year round do make a difference. Ed

COMMENT ON TSG JOURNAL. JUNE 2003 P. 568.

I would not like to question Brian Bates' comments in his article "A new locality for A. floccosa" about the pollinators for Austrocylindropuntia as I am sure they are based on many more field observations than my own. However, I would like to add my own observations from southern Peru. Whilst visiting *A. lagopus* (What was previously known as *A. malyana.* Ed.) around Macusani during the last few days in October, I noted small butterflies visiting the open flowers in the early morning. They were the only flying insects to be seen at the time and it raised the question in the minds of the members of our party were these the pollinator? It seems the butterflies may have timed their life cycle to the flowering of the plants, as we could see nothing else in the area as suitable food.

Also, a couple of weeks earlier, north-east of Cuzco, we had noted large, black caterpillars eating the flowers of *A. floccosa* but saw no flying insects at that time. When we returned to the coast near Camana we saw a small white day flying moth visiting the flowers of *Cumulopuntia sphaerica.*

Only when we visited the area around Puquio at 3,581 metres altitude did I see bees. I tried in vain for many minutes to photograph a number of large dark purple/black bees visiting open flowers of *A. exaltata* but not the much lower growing *A. floccosa.*

 Ivor Crook. Manchester

GERMINATION (AND GROWING FLOCCOSA).

Hakan Sonnermo has sent me an email about *A. floccosa* seeds he planted in 2000. They are beginning to germinate now. This, he says, is the norm although it can take as long as five years. He leaves the pots of seed outside just covered with a nylon fabric that lets in the rain. When we remember just how cold it can get in Sweden this is remarkable.
Steve Brack told me, a few years back, that the secret of seed germination was heat. He claimed that 50^{0}C was best. Following this advice I put some *floccosa* seed pans up at the top of the greenhouse. They have started germinating after just ten days.
I am not sure just what conclusions may be drawn from this.
In fact I have been using this high temperature method for a few years now. It has worked very well for most 'Tephro' seeds. One exception is Cumulopuntia. I haven't had much luck with these. Talking to W. Geissler about this he described a procedure which entailed sealing the seeds in a phial full of water and keeping this, for a year, high up in the greenhouse.

R. Moreton. August 2003. Birmingham

I also have had emails from Hakan Sonnermo. The first in July was in reply to one I sent him asking him when he intended to sow the *floccosa* seed from Brian Bates. I said that I wondered if autumn was a good time to sow, as the plants are winter growers here in Europe. The second, at the beginning of September, was to explain his change of watering.

Ed.

July
I have already sown the seeds and now it is only to have patience and wait. One little surprise came some weeks ago when a pot of some of my collected *floccosa* seed (2000, Peru) began to grow. Three years! Funny enough all of my seed in the pot started to grow at exactly the same time!
But not enough with that, some other pots, with *floccosa* seed from a different location in Peru, started to grow at the same time (in the middle of the heatwave this summer!)

September
I have changed my water regime. Instead of watering the *floccosa* and *malayana plants* in winter I stop watering at the end of October. So my plants are now dry the whole winter: green but not growing.
My change in the water regime is mainly because I have found that it is difficult to keep the plants wet in winter without getting winter growth. This resulted in elongation in the floccosa and lack of compactness in malyana. I have to keep them around +5° – 10° C and perhaps this relative high temperature was a cause. Perhaps if you can go further down to 0° it is better. (Perhaps someone has another experience with lower winter temperatures than mine whilst keeping them wet?). I have found it better to start watering in June. If you can water stress them earlier it encourages them to set buds in late spring i.e. May- June. (This year I had some buds and I gave a little water during June.) Then I keep all my plants outside in the garden and there I don't care much about them. They stand there and get as much sun and rain as comes down and it can be a lot. In fact they are wet almost the whole time but come to no harm. I have never had a *floccosa* plant go rotten.

I have seen two phases of growth for my plants. The first period is in June and then, the big one, is in August – November. In summertime I find no growing and no root formation but as soon as it becomes more chilly and shorter days everything starts. My malyana are now very beautiful with a lot of new lovely shoots. The night of September 2nd we had –2°C and everyone had to scrape away the ice from the car windows! My plants are growing fine together with all my Austrocacti and are still outside in the garden. They have + 15° in the day and near zero in the night.

I stop watering at the end of October and then they look great! During the winter I only give them some occasionally water-spraying.

Now (start of September. Ed.) I can see on my *malayana* that they are starting to grow again (the green foliage is coming out again)

I collected some Lobivias, growing near the *floccosa* and the first winter I gave them winter water too, but I had no buds at all the following spring. This year, after they have had instead a winter rest together with my *floccosa,* they have had twenty flowers each!

The Brian Bates floccosa seed has germinated very well. I have about twenty-five seedlings. I treated them in my ordinary way: outside the whole time in rain and sun with the normal good temperature fluctuations between night and day.

Hakan Sonnermo, Lidkoping, Sweden.

FIELD COLLECTION NUMBERS.

We are very grateful to Roger Moreton to have taken on the onerous task of going through collectors' lists of field numbers in order to extract reference to the plants in which we are interested. The first instalment of the result appears on the opposite page. The publication of this information in the TSG Journals is for a number of reasons. I hasten to start with the denial that it is simply a ploy to fill up space in the Journals. It will take up space but I hope that it will provide information that can be built upon. We have a wide range of members and some have asked for this information because it is not easily available to them. Other members will have their own sources. Now all members can look at the information. The information against the number is the original information and therefore not now necessarily up to date. For example RKH 73 was originally listed as is shown, *Tephrocactus ?lagopus.* Royston, when he collected it in 1981, obviously thought the plant looked different from a usual variation of *floccosa* and indicated this. If one reads Bradleya 21/2003 pages 87 – 92 the article by I. Crook, J. Arnold and M. Lowry makes persuasive reading as to why the plant we have been calling *A. malyana* is in fact the older named *lagopus/a.* (Details of this were given in the lecture to the TSG meeting in April and it is now planned to have an article in the TSG Journal on the topic.) RKH 73 is not a *malyana* so cannot be a *lagopa* so it is in fact a *floccosa.* It is hoped that TSG members will go through the lists and from their experience/knowledge draw attention to any changes that are required to the species names. It might be possible to identify some plants originally shown as unidentified. Members will also be able to find other uses for the information e.g. some might be willing to draw up distribution maps for the species or show relationships. Any information that can be derived from the lists will be very welcome. It would be interesting to have a record of the field numbered plants held by members to see how many of the plants listed we hold between us and which are missing. Ed.

FIELD COLLECTION NUMBERS OF THE OPUNTIOIDAE.

Ferryman

RMF 13	Tephrocactus	tortispinus	40Km S. San Pedro de Atacama
14	"	conoidea	Cuesta de Diablo
18	"	sp	Cuesta Camerones 2250M
19	"	echinaria	Cuesta Camerones 2250M
179	Opuntia	miquelii	W. Freirina
313	Tephrocactus	sp.	La Chimba Antofagasta 2000M

Gertel

G 1	Tephrocactus	sp	Cuzco 3600M
48.	"	sp	Lloques 3150M
84a	"	sp	Kayarani 3400M

Hughes

RKH 10	Tephrocactus	?bolivianus	Sillustani
11	"	?bolivianus	Sillustani
12	"	?bolivianus	Sillustani
15	Opuntia	sp	Sorata Valley
22	"	sp	Pachacamac
23	"	sp	Pachacamac
37-8	Tephrocactus	kuehnrichianus	Santa Eulalia
39	Opuntia	sp	Tarma
40	"	?exaltata	Tarma
44	"	sp	Ayacucho, Wari tombs
47	"	sp	Huanta
57	"	sp	Puno
58	Tephrocactus	?bolivianus	Puno
59	"	sphaerica	Arequipa
64	"	kuehnrichianus	Chosica
67	"	floccosus	Huancayo
73	"	?lagopus	Cuzco,Sacsahuaman
75	"	?bolivianus	Puno
78	"	?bolivianus	Sillustani
79	"	?bolivianus	Sillustani
85	"	sphaerica	Tarata, Moqueque
90	"	kuehnrichianus	Chosica
101	"	atroviridis	Pucara
102	"	floccosus	Pucara
103-4	"	floccosus	Cochas
108-13	"	floccosus	Cuzco, Sacsahuaman
121	"	?bolivianus	Sillustani
126-7	"	sphaerica	Puente Uchumayo
128	"	?ignescens	Chachani – Misti
129	"	sp	Above Chivay
130	Opuntia	sp	Above Chivay
138	Tephrocactus	sphaerica	Yura
144	"	?sphaerica	Chillon Valley
149	"	kuehnrichianus	Tinajas canyon

R. Moreton Birmingham

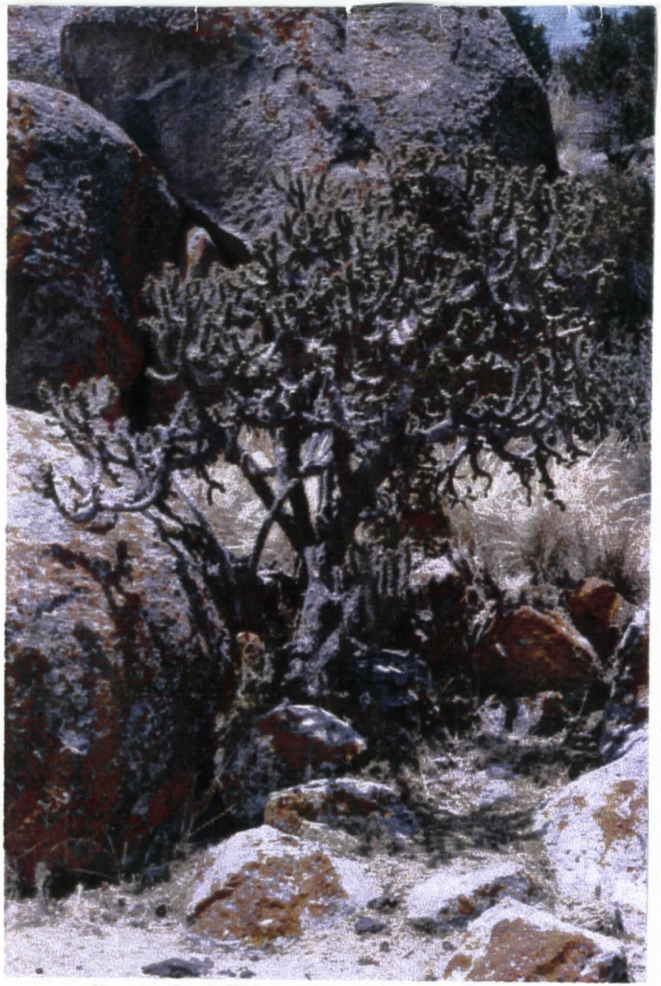

Fig. 5. 5m tall A. exaltata (Berger) Backeberg at 3,580m altitude, above Puquia, Peru. Photograph by I. Crook.

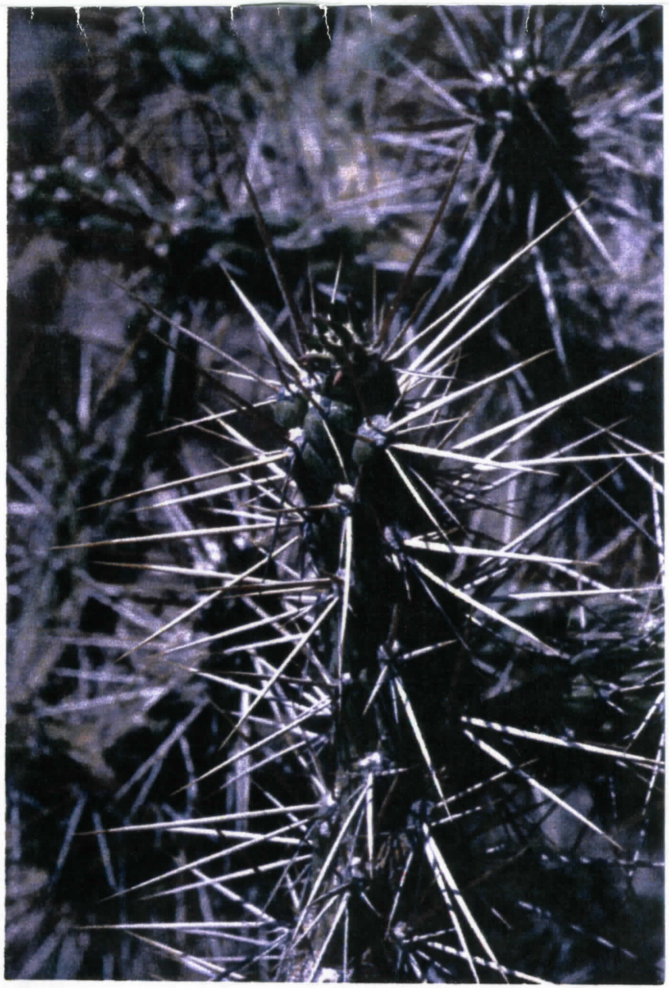

Fig. 6. Austocylindropuntia exaltata (Berger) Backeberg at 3,386m altitude, near Estique Pampa, north of Tacna, Peru. Photograph by I. Crook.

TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera

**Austrocylindropuntia lagopus (Schumann) I. Crook, J. Arnold & M. Lowry.
At the side of water. 33 Km S. E. of Macusani, Peru, at 4315m altitude.
Photo by I. Crook.**

STUDY GROUP

Vol. 9 No. 4 December 2003

Secretary's Page

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☐Subscriptions and any other correspondence should be sent to the Secretary

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THE MEETING ON SUNDAY APRIL 18th.

This notice is in this Journal because there will be only few weeks between the next Journal appearing and the meeting. The meeting will be held at the Slimbridge Village Hall, commencing at 10 am. After a short business meeting there will be discussion on Tunilla. Will members, therefore, please bring as wide a range of plants as possible to aid the discussion? Also please bring any other plants you think will be of interest or you would like identified. You are also welcome to bring plants for sale. We ask for 10% of sales to be donated to group funds. There is no charge for the meeting. All members of the TSG are welcome and you can bring guests who are not members. Light refreshments will be available at the meeting. We shall be going to a nearby pub, which supplies good food, for lunch. After lunch we are to have an illustrated talk by Brendan Burke who has visited Chile several times. Please will you inform Rene if you intend to come to the meeting?

REPORTER'S SERIES NO. 1. BILL AND MARY JACKSON.

What better place to start this series than the collections of our co-editor Bill Jackson and his wife Mary, of Sutton Coldfield. Bill worked as a tyre technologist for Dunlop Ltd. holding a variety of positions until he retired in 1985. Mary started work as a scientist in a textile laboratory but soon became a teacher, working in a variety of schools but enjoying the last few in a small private school in Sutton.

I attended their 'Open Day' last July and was amazed to find, not only a glsss veranda, filled with rare succulents of all kinds, but also, in the large garden, four greenhouses, a raised cold bed of Opuntias and a small cold frame. Bill has a good collection of 'Tephro's' and a few other Opuntias; all grown either outdoors or in a 10 x 8, unheated greenhouse. (All homemade. He likes building greenhouses.) See Fig. 10. It was not long before the many visitors were holding cuttings from his stock plants. It was nice to see so many well grown specimens and to find that, although he won't admit it, Bill is becoming quite knowledgeable about their names, habits and origins. We stopped for lunch of varied hot, or cold, drinks and tasty food before going on view Mary's collection. It was like being in Aladdin's cave, So many large, and rare, specimens housed in three greenhouses. Whatever the visitors' interests they had plants to see that would make their mouths water. Thanks Mary and Bill. For me it was a day to remember.

They had first started collecting back in the early 1950's but lost their plants during a house move. Then, around 1986, the Birmingham Branch of the BCSS recruited them. Mary started collecting a bit more seriously. At first Bill was happy as just a helper but, by 1998, he was drawn in and began to rescue the Opuntias, then added a few more, then built another greenhouse and so on.

What with growing vegetables and fruit, plus caring for all the greenhouses, as well as trying to rehouse his snooker club, they cannot get much spare time to do much else---wrong. They do various odd jobs for the Birmingham Branch, Bill helps Alan with the TSG Journal and enjoys raising questions for the members. For example, Why do we all grow in John Innes and grit? How much grit? Why do so many people grow their succulents hard? (Opuntias love water early in the season) What fertilizers should we use? How hardy are Opuntias in Britain? He seems to be a never ending source of ideas and questions. So, to summarise, he likes the plants, enjoys meeting other enthusiasts, wants to see more experimentation and loves helping Alan with the Journal.

D. Parker, Birmingham

SOUTH PERU OPUNTIA LOG . PART 2.

High altitude members of the genus Austrocylindropuntia.

1. *Austrocylindropuntia floccosa* (Salm-Dyck) Ritter

I have often thought of *Austrocylindropuntia floccosa* as a much-maligned plant. It is rarely seen in collections or on the show bench since, in cultivation, it is difficult to grow well and never seems to attain the characteristics of habitat plants. In habitat it is frequently overlooked because it is common and an Opuntia so valuable field time is spent in search of more choice species. It is however a plant worthy of closer inspection whereupon it will often reveal its spectacular nature.

***Austrocylindropuntia floccosa* is a clump forming Opuntia of the high Andes. Its habitat extends from southern Ecuador, through the whole length of Peru and as far south as La Paz in Bolivia. It grows at altitudes of around 3500 to 4600m above sea level.**

Whistle-stop habitat trips have the advantage of seeing common plants in a number of locations over a relatively short time span. During October and November 2002, I was fortunate to visit the southern half Peru for five weeks and observe the species at 34 different sites. From Tarma to the edge of lake Titicaca is a straight-line distance of about 600km. Most observations were in the eastern facing valleys of the Andes. On these slopes most clumps of plants we saw were in flower and all those in flower had yellow flowers. However, on reviewing my slides on my return home other factors became apparent. There is a definite cline of variation of stem size as we progressed south through the plants. Near Tarma, most plants have stems around 3cm wide and 5-6cm tall. Travelling south (See Fig. 3) the stems become fatter and taller eventually reaching much larger sizes, 5-6cm wide by 20cm in height. As well as increasing in size the clumps become looser and larger in the south. Around Tarma the plants grow as tightly packed clumps where the stems are in close contact with each other. Further south the clumps tend to be much more loosely packed, not touching each other with the stems often a few centimetres apart. There is a gradual change in form and size from one extreme to the other rather than several quantum leaps.

As well as stem size, the hair of the plant has, in the past, been used to suggest different forms or species exist in southern Peru. Observations made on this trip suggest this is not the case. Whilst at the northern and southern ends of our study area, most clumps at a given site all displayed similar degrees of hairiness, there were other sites where this was not the case. Where the plants at a site were all similar they tended to be all quite densely covered in white woolly hairs. However, we found the plant at sites where there was a range of plants within 10 metres of each other. Here some were very hairy, some scantily hairy and others completely bald. At other sites some plants had pure white wool and at others the wool had an obvious yellow tinge.

Our first sighting of the plants was near Tarma. The geology of this part of the Andes is unusual and is renowned for a significant area of limestone intrusion into the typically acidic nature of the Andes as a whole. On leaving the car my first impression of the site was of its striking similarity to the high moorland of England between Lancashire and Yorkshire. On either side of the road stood gently rolling hills with a dense covering of grass. Air conditions too were similar to those of a British summer's day, a steady, constant, reasonably forceful wind that was at first tolerable in a long sleeved shirt but soon bit through this single layer leaving me feeling cold and in need of another layer of clothing. Whilst superficially similar to moorland, closer inspection revealed a host of differences. The ichu grass was taller than British moorland grass, 20 - 40 cm high and not completely covering the ground. In the

gaps between the individual clumps of grass was bare soil, white rock and cacti. The soil was thin, barely one or two centimetres thick on the underlying rock. The white clumps of opuntia could be spotted from a distance but between the clumps of ichu grass lay Oroyas, turgid and capped with deep scarlet flowers. The clumps of *A. floccosa* at this site all contained several fruits that looked to be approaching maturity. I was keen to section one of the fruits but was surprised, on picking one, by its temperature. The fruits were warm. The degree of warmth was similar to the sensation of cupping a mug between your hands immediately after having drunk the hot coffee it contained on a cold winter's day in the greenhouse. The seedpod remained warm on the walk off the hill and whilst it was passed amongst my travelling companions. Why the seedpods were so warm was a mystery. Geothermal activity, direct solar radiation and heat capacity of the underlying rock all individually seemed to be insufficient to explain this phenomenon.

Pollinators at high altitude seem to be in short supply. On eastern slopes the only insect life I saw were butterfly caterpillars munching their way through fresh yellow *A. floccosa* flowers. These 3-4 cm long, hairy larvae probably timed their life cycle to utilise flowers as food. Whether they pollinate the plant, as payment for their food supply, is open to conjecture.

Having reached the southern end of Peru we descended to the coast to return to Lima along the Panam highway. With a few extra days built into the trip, we planned to make a couple of excursions back inland to high altitude up the western, Pacific facing valleys. We again met our old friend *A. floccosa* but with some major differences to the plants we had seen in the eastern valleys. Travelling inland from Nazca to Puquio we stopped near the kilometre 109 post. This was one of three sites on this road where we found *A. floccosa.* These plants were strikingly different to anything we had seen in the eastern valleys. All had red flowers. (See Fig. 6). Clumps were small, typically 3 to 7 heads per clump, low down to the ground and often less than 3-5cm in height. The variety in hairiness seen previously was still present with some plants being hairy and some very hairy indeed. The land above Puquio provided yet another interesting observation. Here we had the smallest *A. floccosa* we saw in the whole of southern Peru in terms of stem size and number of stems per plant but you will recall from Part One that this is the site of the largest *A. exaltata* plants that we discovered. No caterpillars were seen at these sites but deep purple bumblebees were seen visiting the *A. exaltata* flowers. Though never seen visiting other flowers, presumably the bumblebees would have had an interest in the very similar *A. floccosa* flowers even though they were at a much lower level.

2. *Austrocylindropuntia lauliacoana* Ritter.

For me the name *A. lauliacoana* remains an enigma. I am yet to be convinced that it is a separate entity. However, this is not a commonly held view. Whilst the current nomenclature (Anderson-The Cactus Family 2001) reduces this Ritter name to synonymy with *A. floccosa*, many who have seen the plant in the wild maintain it is a separate species. (Carlos Ostelaza. Personal communication 2003). I have compared the original description of the plant in Ritter with the original description for *A. floccosa* and cannot find any factors to distinguish the plants. We missed the plant on the outward leg of our journey near the type locality of Lauliaco in the Rimac valley, where it is rumoured to have been wiped out by development, but saw the plant in the Pisco valley on the homeward run. (See Fig. 9) We found other sites where we saw hairy and bald *A. floccosa* within a few metres of each other so I am not sure why we tend to give this particular bald, A. floccosa-like plant with a red flower a different name.

3. *Austrocylindropuntia lagopus* (Schumann) J. Arnold, I. Crook & M. Lowry.

I have never been a big fan of changing names on labels. In a lot of cases the name often holds clues as to the origins and location of a plant which become lost once it is sunk into the anonymous synonymy of a variable species. In this case however, I offer no apology as this name change clarifies some long time confusion. When Rausch travelled to Macusani and described *Tephrocactus malyanus* in 1971 it seems he was unaware the plants he was describing were the same as those named as *Opuntia lagopus* by Schumann in 1903. (See Bradleya 2003 pp 87-93 for more detail).

Travelling north from Ayaviri towards Macusani we first came across this plant south of Rosario and already at an altitude of 4112 metres. Here the ground was dry and dusty and plants were small, clumps being only 5-10 cm across. Climbing to the pass in the Nudo Aticoma mountains the terrain gets gradually wetter and the plants get bigger. Whilst no plants occur within 3 km or so of the summit of the pass, the plants at the highest extreme are the largest. Here clumps can attain 4 metres in diameter and a metre in height. They are strong enough to support the weight of a fully-grown man without visible distortion. Commonly thought to be the highest known cacti we noted them growing at a maximum altitude of 4686 metres. However, I report that they share the distinction of growing at this altitude with *A. floccosa* making them the joint holders of the altitude record for cacti.

Despite only having a relatively small area of distribution the plant has adapted remarkably well to growing in a wide range of habitats. It ability to withstand the drier areas around Rosario and north of Macusani is in sharp contrast to other habitats. Near the pass in the Nudo Aticoma mountains we saw plants covered in snow and at an area of peat bog north of Rosario the plants were growing in wet ground near to the edge of running water. (See front cover). In the boggy areas we found several mature plants upturned, presumably by llamas, which were being herded by locals in the general area. These showed the mature clumps seem to be a single plants arising from a central stem which divides and branches radiate along the surface of the ground, themselves branching further. Most of the mature plants, even in the wetter areas, had areas of die back within the clump. This suggests the climate must be much drier on a seasonal basis. There may be a further explanation however. Most of the clumps with die back were greater than one metre across. These clumps must be a minimum of many tens of years old. It may be that the time of drought is not seasonal but over a much longer cycle. I have heard another theory suggesting that clumps may not be one plant but that the seeds of a plant may germinate within the plant and thus fill in the areas of die back. Although we did not section any plants to examine this theory I would be surprised were it to be true. The surface of the plants is remarkably regular and even, suggesting to my mind one plant. If other plants were growing within the clump I would expect the surface to be much more irregular in outline.

The holes in the plants afford refuge for lizards. We found a lizard sunbathing in the morning rays on a plant above 4680 metres altitude. I am led to believe that most lizards are predatory. This suggests that there must be significant insect life to support the lizards. The only insect life visible to our eyes were small butterflies busily visiting the flowers on the plants. (See Fig. 5.) Could these be the same or similar species to the caterpillars we had seen on *A. floccosa* a couple of weeks previously? Interestingly the flowers just protrude clear of the plant surface and never seem to open fully. I believe people have visited *A. lagopus* during several other months of the

Fig. 1. Plant labelled "cordobense"
Fig. 2. Plant labelled "microsphaerica"
Photos by W. L. Jackson.

Fig 3. Austrocylindropuntia floccosa (Salm-Dyck) Ritter. 2 km S. of Pazos at 3908m. (122 km S. of Tarma Ed) Photo by I. Crook

Fig 4 Southern Peru. 2002 expedition. Compiled by I. Crook.
Black dots = towns/cities. Red=A. floccosa. Purple=A. lagopus. Grey=A. lauliacoana.
L=Lima. T=Tarma. Pi=Pisco. N=Nazca. Pu=Puquio. Ay=Ayaviri. R=Rosario. M=Macusani

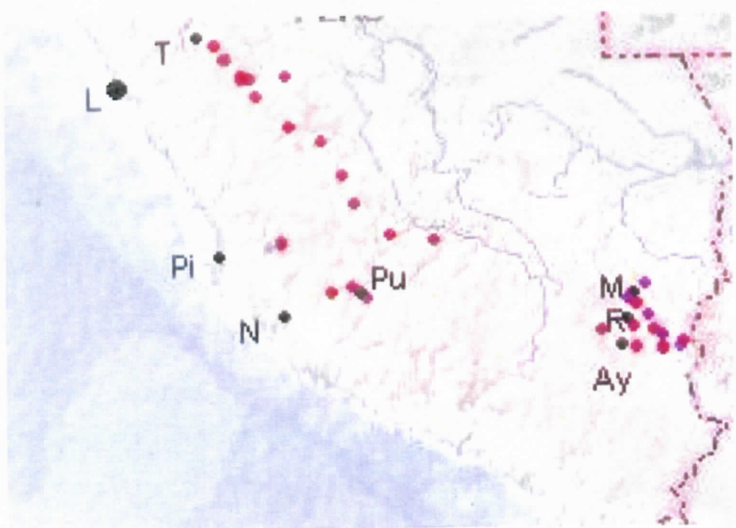

Fig. 5. A. lagopus flower. 23 Km S.E. of Macusani at 4686m. Photo by I. Crook.
Fig. 6. A. floccosa (Salm-Dyck)) Ritter. 25km W. of Lucanas at 3187m.
(15km E. of Puquio. Ed.) Photo by I. Crook.

Fig. 7. Plant labelled "leoncita"
Fig. 8. Plant labelled "laetivirens"
Photos by W. L. Jackson.

year and always found partially open flowers on mature plants. I would not be surprised by a long flowering period, as there seemed to be little else growing locally to support an insect population needed to feed the lizards.

The reproductive structures contain another intriguing observation. Whilst the flowers only partially open, the seedpods are also unlike most others in the genus Austrocylindropuntia. They are pink and have relatively thin walls for the genus. They are not fully distended by their contents and each pod contains but a few seed located mainly at the top of the pod. In this respect they show a great deal of similarity with the wind-dispersed pods of the coastal genus Islaya.

Travelling back through Rosario we took the road east towards the Bolivian border across the altiplano. What was shown on the map as a road soon petered out into a series of tracks and finally open, trackless, flat ground. Navigation was by map, compass and GPS readings, bicycle clips were compulsory! *A. lagopus* was visible for most, but not all, of the way on this 80 km journey eastwards along the altiplano close to the Rio Carbaya. At this slightly lower altitude than the mountain pass, *A. floccosa* and *Echinopsis (Lobivia) maximilliana* also grew in equal abundance. We passed through a couple of towns that had long since been abandoned and an area where stones had been arranged to form what looked like animal corrals but for 80 km there were no signs of current human habitation. Could this add weight to my earlier theory of a change in climate in recent times causing towns and llama herding to be at first possible then later abandoned?

To be continued...

Ivor Crook. Manchester.

COMMENTS ON THE "FLOCCOSA" ARTICLES IN THE LAST JOURNAL

In my opinion *A. floccosa* is one of the most difficult plants to grow in Europe if one is hoping to grow it as it does in habitat. This is because the climate we have in Europe does not correspond to that which the plants have in Peru. We might be able to adjust watering techniques. However, it is almost impossible to try to have the same light as in the Andes. In Europe the plants do need to be kept in the greenhouse for a short time in winter because of our climate but in my opinion the best thing we can do is to have the plants outside as much as possible. In this way we can give them as much natural light as we can but we will never give them the light they would experience in habitat.

On my visits to Peru I never saw a plant of *A. floccosa* with stems lying on the floor. I think that the specimen of RKH 109 shown in Fig. 1, p578, is growing in that manner because of the lack of the light it would have in habitat.

When speaking of flowers on species of Austrocylindropuntia and perhaps the whole genera of Opuntia (Tephrocactus etc.) my experience is that the plants have to reach a relatively large size before flowering. I have never seen small plants in habitat in flower.

Hakan Sonnermo, Lidkoping, Sweden.

ADDITION AND CORRECTION TO THE LIST OF MEMBERS.

Please add the following to the list;

Mr G. Hole, 31, Grovenor Rd, Kettering, Northampton, NN15 6TF

Mr D. Simonin, Via Dell' Industria 8, 1 – 33075 Morsano Al Tagliamento (PN), Pordenone, ITALY.

Please correct the addresses of the following:

Mr R Moreton 91, Umberslade Road, Selley Oak, Birmingham, B29 7SB

Mr C. Parker, "Wyldings", Barling Road, Barling, South-End-on-Sea, SS3 0ND

DAMP TUNNELS, TOUGH PLANTS

Referring to the last article on this subject, page 569 in Vol. 9 No. 2, June 2003, the botrytis did kill one of the fig trees. The other seems to be OK. More relevant, I thought it might be interesting to list the survivors, and casualties, in the damp, outdoor Cactus tunnel. (NB. Label names unless stated otherwise.)

C. = Corynopuntia T. = Tunilla M. = Maihueniopsis

Dead:

1. *C. parishii,* 2. *C. grahamii,* 3. *T. corrugata v. longispina,* 4. *O. ovallei,*
5. *O. articulatus v. calvus* 6. *O. subinermis* 7. *O. atroviridis*
8. *O. sulphurea,* 9. *O. ireiss* 10. *O. atroviridis*

Comment. The name *O. articulatus v. calvus* was quite wrong. The plant was a green Maihueniopsis with small, crowded, spineless segments; more like *M. subinermis* except that the segments did not have the red/purple colour of other subinermis plants. I had three of these labelled *articulatus*, *ovallei* and *subinermis*. I don't believe any of these names. Now that they're all dead I needn't worry but if I ever come across it again I shall keep it indoors and call it Henry.

Badly Damaged:

11. *O. laetivirens* 12. *C. stanleyi v. parishii* 13. *O. azurea*
14. *T. multiareolata* 15. *O. tunicata* 16. T. *subcompressa*

Comment. I am fairly confident about the names of Nos. 12, 13 and 15. No. 14 has very erect cladodes. I would like to call it *erectoclada*. *O. laetivirens* is a tunilla, quite attractive, has nice flowers. I wonder what it's really called? *O. azurea* is recovering well. I like this plant and must remember to keep a cutting indoors.

Not Happy:

17 & 18. *C. bulbispina* and *C. moelleri* are growing but are so dense that I can't see whether they are damaged or merely dark coloured. Is there any way to tell the difference between these two?

Thriving:

19. T. *leoncita* 20. *C. schottii v. grahamii* 21. *O. mucleniana*
22. *O. cordobense* 23. *O. laetivirens* 24. *T. longispina v. corrugata*
25. *O. fragilis v. brachyarthra* 26. Hardy, *(rutila?)* 27. *M. subinermis*
28. Identical to No. 27 29. *M. glomerata v. andicola* 30. *M. mistiensis*
31. *O. microsphaerica* 32. *O. picardoi* 33. *Ptero. decipiens/kuntzei/tuberosus*

Comment. No. 23 is the same as No. 11. One was badly damaged, the other OK. I've no idea why. I'm suspicious of the names *mucleniana* and *cordobense*. They might be Corynopuntias; perhaps members of that Schottii, Parishii, Stanleyi and Grahamii complex; interesting how they all named plants after each other? The trouble is that I can't find time to sort it all out.

Tunnels. Ray Weeks had terrible condensation problems with his new polytunnel. He tells me that the ground dried out during the first summer and everything was fine during the second winter. I hope this works for the fig tunnel. The Opuntia tunnel is off the ground so the problem is slightly different. The compost didn't dry out over the period from September to March. I shall keep trying. As soon as this heat wave is over I shall put the cover over the bed. Then we shall see.

W. L. Jackson. Sutton Coldffeld.

Bill and I have had some discussion on this article in that it illustrates some problems we, as a group (and especially the Editors), have on nomenclature. Bill has stressed that he has used the names as appeared on the labels. It is recognised that some are valid names and relate to plants of those species. Some of the names are incorrect in that they are not the names of the plants in the pot. Some of these incorrectly named plants, with the incorrect name, are common in collections. In fact one can, in some cases, envisage the plant when the name on the label is mentioned, even though one is aware that the label is incorrect. Rather than try, in isolation, to identify the plants and then publish a photograph we intend to proceed in the opposite manner. The TSG is a Study group so it would appear reasonable, therefore, to publish photographs of some of the plants mentioned in Bill's article and ask members to write in to Bill or me giving the name/s under which you have seen the plants and then inform us what you consider the correct names to be. It would be of help if you can give reasons for the latter. The important thing is for members to take part in this exercise. Figs. 1,2,7,8 illustrate some of the plants in Bill's collection, mentioned in the above article. The plants are very common in collections. What are the correct names? Even if you can only comment on one of the plants please do so. It will be very gratifying if we can have some response to this request.

Corynopuntias are obviously North American plants and therefore do not fall into the category of the groups of plants we, as a group, study. Opuntia fragilis also comes under the same heading. However, as Bill has the information about such plants as part of his experiment, it appears reasonable to pass on the information rather than just ignore it. It will be of interest to those members who do not just confine themselves to growing South American Opuntias. I am personally of the opinion that if one is really interested in the South American plants one needs to have some knowledge of the North American plants in order to be able to differentiate between the two. Alan Hill. Sheffield.

INTERACTIVITY AMONGST TSG MEMBERS.

Members are aware that often there is an attempt to encourage direct participation in the Journal contents by being asked to comment upon a direct question raised in an article. Also members are encouraged to send in written comments on something written in an article. What has not been encouraged is for members to send in queries. It might be something that is in the Journal but not understood because it is not clear, it might be contrary to something printed or said elsewhere etc. It might be that one has a question on cultivation, nomenclature etc. Please will members send in queries and comments? Ed.

CAN YOU ADVISE?

Martyn Collinson sent me a letter in July with some photographs he hoped could be used at some future time. He ended his letter with the statement that he did not talk much about Tephrocacti sensu Kiesling because he had reluctantly come to the conclusion that he could not grow them successfully. Even those he had grown from seed were fine until about five years old. Then offsets dropped off, went black or scaly or the ends of the joints dried up. Rene had told him that it was possibly due to lack of ventilation but they were mostly grown under an open window. Martyn has wondered whether it is due to the hard water in his area (he lives at Chichester in West Sussex). He commented that it is very frustrating as he still thinks the species are the most attractive of all the Opuntias.

Can anyone help by making a suggestion why this particular group of plants should act in this way for Martyn? If the cause of the problem can be identified then perhaps suggestions can be made on how it can be cured. Ed.

FLOWERS.

It has been a good year for flowers and the *ovata* (C. Hall) has three fruits, the *russellii* (G. Hole) has two fruits and the *perrita* has one. The *minuta* managed to flower together and the ex-Dogdyke nursery plant has two fruits whilst the K.Gilmer 1712 has one. The three *mandragora* also flowered but not quite together. However, I have one good fruit on two of the plants. My *platyacantha* (H.Middleditch. upward spined clone) had three flowers despite removing a large piece of it last year. A *C. boliviana* (C. Hall) had four flowers for the first time, a deep rich yellow almost orange in the centre. One of my halfway between *minuta* and *ovata* plants also had two flowers for the first time. A *conoidea* collected by Graham Hole between Chaschuil and Fiambala also surprised me with a flower.

Two of my collected *rossiana*, RKH 167 from BDH 6* and RKH 211 from BDH 26* also flowered for the first time. The first had two flowers with a big gap between them and the second a single flower. Neither quite coincided with two flowers on K.Gilmer 1591 or with one flower on *rossiana* (P. Leigh). I shall have to wait to see if they have seeds inside but I have hopes. My first *rossiana* clone from Tony Johnston in 1986 has never shown any sign of flowering. My *T. geometricus* produced two flowers, one on each of last year's new segments. As it has become available I think it has become a favourite plant of a lot more people than John Betteley. A 1991 seed raised *A. shaferi* has also had its first flower. The Abra Pampa plant** produced just one flower early on. The *hypogaea* (C. Hall) had three flowers, one at a time, but all were finished before *hypogeae* (P. Leigh) produced its two flowers.

I have also photographed a fruit that had set seed last year on an *A. vestita* RKH 242 from BDH 45. It was a little more maroon than magenta red and seemed quite firm, about two centimetres in diameter. When I removed it and split it into two halves I found in the sticky red pulp sixteen seeds which, when washed and cleaned, were about six mm long, typical of Austrocylindropuntia.

Usually when a plant has a flower open without a mate I resort to foreign pollen to try to get it to self which so far has not produced any results with the Opuntias. Plants of *A. vestita, A. teres* and *A. shaferi* seem to present an added difficulty even for the photographing of the flower. They appear to open only for one morning, wide in full sun, but only halfway if it is dull. Its maddening when a flower opens fully due to the sun breaking through at lunchtime but by the time you get out the camera and set it up the flower has closed, never to re-open. Flowers are usually magenta but sometimes red and I wonder if this is due to growing conditions rather than genetics. The *A. weingar*tiana we found in Bolivia do look like the holotype of *A. shaferi* in Iliff's work. It is a pity that there is not a scale to indicate size. The Bolivian *A. vestita*, however, are quite different from the one he depicts from Argentina on page 145. I knew that plant, with long leaves and long thick wool, in cultivation. The plants in Bolivia are almost bald except for any new growth, which had a covering of short sparse hair and quite short leaves.

29 July 2003. R.K. Hughes. Liverpool

*RKH is Royston's collection initials. In the 1980s he went to Peru and his collection numbers for those expeditions appeared in our last Journal. He later went to Bolivia with two companions and the field collection initials for the group are BDH (Bates, Down and Hughes).

**The Abra Pampa plant has the typical downward spines of *glomerata.*

If one hears that "Tephrocacti" do not flower then this article can be quoted as proof that they can do so in cultivation. Royston is to be congratulated in flowering some species that are not usually reported to have flowered.

Ed.

FIELD COLLECTION NUMBERS OF THE OPUNTIOIDEAE.

Jaques Lambert

JL 57	Teph. articulatus v. oligacanthus	Los Molinos 1300m
74	Tephrocactus aoracanthus	San Juan 700m
78	Opuntia microdisca	Pampa de Hualilan 1800m
81	Pterocactus kuntzii	Llanos de Chita 2300m
82	" gonjianii	" " "
83	" reticulatus	" " "
85	Tephrocactus glomeratus	Pampa Yalguarez 2150m
91	Maihuenia philippii	El Sosneado 1800m
95	Tephrocactus ovatus	Rio Malargue 1400m
97	Pterocactus fischeri	" " "
98	Tephro darwinii v. hickenii	Puntilla de los Huincanes 1550m
99	Pterocactus fischeri	Vaca Muerta 750m
100	Maihuenia sp	" " "
101	Pterocactus araucanus	Bajada del Agrio 700m
102	Maihuenia patagonica	Zapala to Neuquen 750m
103	Pterocactus valentinii	Sierra de Portezuelo 900m
119	Opuntia retrorsa	Pozo del Tigre 100m
124	" kisco-loro	Los Lomitos
126	Quiabentia pflanzii	Los Blancos
130	Opuntia corrugata	Volcan 2000m
135-6	Tephrocactus bolivianus	Road to Saladillo 3220m
139	" "	" " 3750m
142	A.cyl.opuntia schaferi	Quebrada de humahuaca
153	Opuntia microdisca	Ingr.Maury
163	Pterocactus kuntzei	Hualfin 1850m
165	Tephrocactus geometricus	Rio Guanchin 2100m
185	" mollinensis	Palo Pintado 1850m
186	" weberi	San Martin 1875m
187	" mollinensis	Angostura 2000m
189	" "	Molinos 2150m
193	Opuntia sp.	Chorrillos Qu.de Toro 1950
202	Opuntia kiska-loro	Rio Corrientes
220	A.cyl.opuntia verschaffeltii	Las Carreras 2250m
221	" "	Abra de Infernillo 3000m
243	Tephrocactus nigrispinus	Qbda. de Sapagua 3400m
245	" minutus	Cuesta de Azul Pampa
247	Opuntia spegazzinii	Rd. to Valle Grande
262	" sulphurea	Pinto 85m
264	" utkilio	Sierra de Sumampa
283	" soehrensii	Garganta del Diabalo
290	Tephrocactus subterraneus	E.of Yavi 3500m
292	" pentlandii	E. of Yavi.
293	" nigrispinus	Abra Pampa, Arroyo Ugchara 3550m
303	Opuntia microdisca v.	El Antigual 2450m
306	A.cyl.opuntia verschaffeltii	El Sunchal 3050m
315	Opuntia brunnescens	Martinez del Tineo 500m
317	" cedergreniana	Rio Urunae 400m
320	" discolor	Escaba 600m
325	Tephrocactus alexanderi	Quebrada de Cebila 850m

With thanks to H.Middleditch for permission to use the Chilean's Compendium.
R. Moreton. Birmingham.

Fig 9. Austrocylindropuntia lauliacoana Ritter. 26 km E. of Huaytara, Pisco valley, at 3923m. (120km from Pisco. Ed.) Photo by I. Crook.

Fig. 10. Part of Bill Jackson's collection. Photo by D. Parker.