TEPHROCACTUS

Incl. Maihuniopsis, Puna And related genera

STUDY GROUP

Vol. 3 No.1 March 1997

W.G. Geissler

Admin. Matters

We have four new members:
They are: Jules Bouquette, Rue Auguste Dupont 38, Ensival, B-4800 Verviers, Belgium

William Jackson, 60,Hardwick Road, Sutton Coldfield, West Midlands B74 3DL

Ed Fletcher, 17 Winton Road, Hatherly, Cheltenham, Glos. GL51 5AX

Francis Nuis, Eidroldsgate 26A, N-2000 Lulestrom Norway

No doubt you all wish them a "Hearty Welcome"! I know they must be very keen and we hope to hear from them in the near future as regular contributors to our Journal.
The next complete Membership List will appear in the next Issue.

The Subs. remain at £10.- for 1997 and should have been sent to the Treasurer:

Alan Welsh, 31 The Quarry, Cam, Glos. GL11 6JA

For those of you who's name appears below have not yet paid their Subs. I know it is only to easy to overlook such small matters when they intervene with Christmas, but please sent it to the Treasurer now, as this is your last chance

Geoff Gillham	Keith Grantham	Alan Weeden
Howard Walpole	Dave Eduards	Malcolm Holloway

If you have sent it in the meantime please ignore this reminder.

There are a few important matters:

1. **We need Photographs** of your plants for the next issue, but please try and send in Negatives of photographs as they are much cheaper to reproduce. (Slides if you only take those they should be unmounted). Negatives must be in strip-form, single negatives can not be reproduced. All negatives will be returned if requested, but please enclose an S.A.E.

2. Several members have requested that we include a "Sale / wants / Swap" list and I will be pleased to include these in the next issue, but please can we keep them to 30 words on a **separate piece of paper,** stating which category
e.g. Sale / Wants, etc..

Please remember, we need your comments, experience and views as well as good suggestions. These must reach Tony by **15th May ' 97** to finalise the next issue.
Wishing all a good growing year!

Rene Geissler

PS: Remember the **ONE-DAY- MEETING THIS YEAR** will be here at Kingston Road, Slimbridge, Glos.

On Sunday 3rd August 1997

Please let me know if you are coming !!!

Princetown, Devon PL20 6SS

Wheal Lucky, Rundlestone.

A short history of the Seward family as horticulturalists. George, my Grandfather, born 1846 worked at some time at Kew Gardens, moved around in the Windsor area lived in one of the lodges of Windsor Castle, so presumably he worked at the Castle. I have one of his references where he managed five glasshouses and twenty one men. The family moved to Worthing in the early 1900's where my father took over a glasshouse nursery, finally owning it.

That nursery was sold in 1958 when I built my own nursery at Lyminster, growing tomatoes lettuce and chrysanthemums etc. At this time I had a small glasshouse of cacti but as time went on pressure of work and a growing family it got neglected, and finally went on the compost heap. The glasshouse was used to root chrysamthemum cuttings.

We retired in 1986, and said we did not want to see another glasshouse, but of course eventually we did put up an eight by six, 48 sq.ft. so small after our 22000 sq.ft. at Lyininster, we now have two more small glasshouses twelve by eight's.

I am concentrating on the Opuntioideae, but as space is limited it is going to be restricted to the small Opuntias. Over the past fourteen months when I started collecting opuntias I have acquired 200 plants, as some appear to be the same but with different names they will have to be sorted out.

Wheal Lucky. is situated on the west side of Dartmoor at slightly under 1500 ft. acccording to my rainfall recording the average for the past nine years 74.67 inches, which means it is a wet area. We get a lot of mist and low cloud, which causes problems with Botrytis and other damping off diseases. It is always windy except when there is a high pressure system directly overhead. The temperature is usually 10°F lower than at sea level, which is nice in summer but not in winter. It has the advantage of having a higher sun light radiation factor, due to the elevation, time will tell weather this will help the Opuntias, I think it will.

I have constructed my benches of angle iron and weldmesh with a sheet of one inch thick polystyrene on top. This appears warmer and has the advantage of reflecting the light around the plants. Drainage has been achieved by making holes in the polystyrene with an electrical soldering iron.

I advocate clay pots as I think air and moisture can pass through the pot and is therefore more natural than the restriction of a plastic pot granted they need more watering but more control can be achieved. with less risk of over watering.

by Rob Seward.

Tel.. +44(0)1642 899216
email John Gamesby@AZTEKIUM.octagon.co.uk

Dear Rene,

Re our phone call last week Marina has been back to me about advertising the Tephrocactus study group in the Amateurs Digest. She has advertised the group on her WWW (World Wide Web) site on the internet and also in the digest for letting her print my article on the flowering of T. platyacantha. As she normally makes a small charge for this, all she is asking is can we put an advertisement in the Tephrocacti journal this year for the Digest.

John Gamesby

Tephrocactus weberi

(Spegazzini) Backeberg

When a friend of mine, gave me a photograph of his Tephrocactus weberi, which he obtained from me as a small plant in a 2 1/2" pot only a couple of years ago, I thought this opportunity was too good to miss. He grows plants well and takes better photographs than me.

T. weberi is one of the easier to obtain and grow plants. There is an immense range of forms with spine colours from pure white to very dark, foxy brown. Spine length varies from 0.5 mm to almost lOmm. The spines grow haphazardly, usually in a sideways and downward direction, but can also be curved or even point down. Glochids usually white and felty, but sometimes almost absent. The plants can reach about 20 to 30 cm in height about the same diameter, growing in an open manner, branching loosely, occasionally forming low cushions. The branches grow upright or sideways, branching occasionally. Leaves are minutely small and sometimes totally absent and fall quickly. Flowers appear terminal and usually singly, 3cm long and when wide open reach 3-5cm in diameter and range from almost white, light lemon yellow, but less frequently orange-yellow to red. The developing fruit looks like a newly growing offset, about 1.5cm in diameter, covered in white or brown glochids. The fruit then turns brown on ripening. Seeds are corky, somewhat flat with deep wrinkles and are 3-5mm long and 2-3mm thick. The roots are fleshy and long, sometimes turnip like.

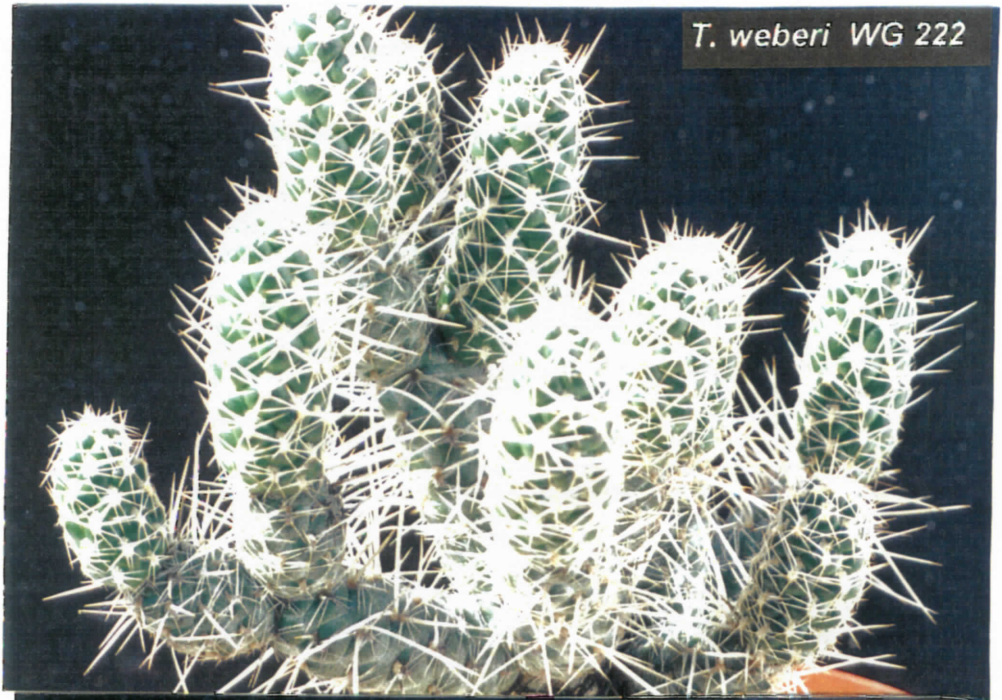
The habitat is around San Juan Province, then to the north in Province Salta at about 800-1200m altitude.

T. weberi is one of the easier to cultivate and although the branches detach easily at a touch, they are not as fragile as those of the "articulatus types". A very porous compost is advocated and although watering should be quite frequent and generous during the active growing period from May till August when flowers will appear, watering should be considerably reduced to light and just occasional until the beginning of September when it must cease completely. The plants are than kept totally dry during the Winter months. Plants are quite tolerant of low temperatures for a few days (mine have survived - l0°C). It is essential however to keep rain or drips off and good air-flow around the plants, as well as maximum light, are crucial.
The foxy brown forms grow usually much smaller and compact, with denser spination, but flower rather seldom.

Although T. weberi var. dispar was listed by Backeberg (Castellano & Lelong) as such, along with T. weberi var. setiger (Backeberg) Backeberg, they can hardly be ascribed varietal status. T. heteromorphus (Phillipi) Backeberg is also just another form among many.

T weberi were some of the earliest Tephrocacti I acquired and each year, after all the Maihueniopsis have long faded their flowers, I almost get the impression that the season is over when my T, weberi surprise me as the buds show late and bring forth their flowers in early Autumn. Only the "Sphearicus group" can flower even later.

Text: R. Geissler
Photo: Bill Seymour


T. weberi WG 222


M. russellii WG 190

Kingston Road Slimbridge, Glos. GL2 7BW

A few comments on Vol. 2 No. 4

Firstly could I suggest to Tony that he adds the words in small Subscript as I suggested in the previous issue to the title of the Journal if possible, unless there have been any objections from other members. I hope other members will agree to this as just "Tephrocactus" seems somewhat narrow.

Martyn Collinson pages 35-39 has given us a treat with his article on "Seed Raising" and hope it has stimulated a few to try their hand to do so. This will I am sure introduce quite a few new forms into circulation. Most existing clones have been propagated from cuttings. It is also hoped that other members will add with their experiences. I must say my efforts so far have been abysmal.

Anna Henderson Page 144 Yes Anna, it's T. articulatus var. oligacanthus alright! There is no doubt to my mind, but I found your comments rather interesting. T. Oligacanthus is one of the easiest, if not the easiest, to flower and with it's club shaped joints can hardly be mistaken. My plants are now some what larger and every new joint produces at least one, two or even sometimes three flowers. It is quite normal for it to produce a few blackish spines on most joints, but if it is grown without giving it full light they may be absent. Is yours growing in the greenhouse in full sun? You are quite right of course, plants hybridise quite freely in habitat, that is why it is so difficult to give plants specific varietal names and great variations in spines occur. This was already mentioned by Alan Hill, when he described them as "Clines".

Howard Walpole Page 132 I am not quite sure if Howard is trying to wind me up when he suggests that growing our plants at low temperatures may be just an exorcise in saving heating bills.

I can assure him in my case it certainly was not ! Consider for a moment where the plants come from and here I mean Tephrocacti and Maihueniopsis, but particularly Maihueniopsis! Also consider the conditions they grow under. It is certainly the case with Maihueniopsis that they require a long cool resting period and a hot Summer with full exposure to the sun to make them flower well. But if he talks or includes Opuntias growing further north in South America or even in North America, then I would agree with him that they prefer higher temperatures. That is why I personally prefer the subdivisions of the Opuntiae e.g. Tephrocactus, Maihueniopsis, Austrocylindropuntia etc., because it tells me something as to where they come from and the conditions they are likely to need. I suggest Howard reads John Gamesby's article. Experience is often better than theory.
As to the matter of watering the "floccosa" group, that's another matter. Much experimenting has been carried out by a specialist in this group in Germany, and what I have reported is born out by the facts. They need a rest from watering from the time after flowering (about mid-end June until September), when watering may begin slowly and continue until flowering time later in the Spring. This then means that they would only be without water from End June till end August (just over two month). Many other plants in the Cereus group coming from South America prefer this rest also I believe. Temperatures in Winter just one to five degr.C are considered adequate. If the temperature falls below Zero and rises again next day absolutely no harm is done. Naturally you would not flood your plants in Winter like you can in Summer as little transpiration takes place. Also water is needed less often.

Rene

111 Parklands road, Chichester, W. Sussex

For this issue I am just sending four photographs that flowered for me in 1995. They were originally to be published in the TSG magazine Vol. 1 No. 3 but I only had slides at that time.

1. **M. rossianus v. fauxianus** - this was taken late in 1994 and it flowered again in June 1995.

2. **M. glomeratus** - one of the easiest to flower.

3. **A. subcompressa WG. 054** - Four flowers at that stage on quite a small plant. Unfortunately this plant tends to become a bit untidy.

4. **O. erectoclada** - This plant came from Hollygate and had eight flowers over a period of several weeks.

91,Umberslade Road Selly Oak, Birmingham, B29 7SB

4th.Jan.

Dear Tony,

I am enclosing the photos of Tephro seeds we talked about. As you will see there is a fair selection, but as I said, short of growing each species on, which with the normal problems of germinating Tephro seeds is not easy, there is no way of being sure that the seeds are what they say they are.

To comment on what has been said on the above subject in the Journal recently, I would like to add that I have subscribed to the idea that they need cold to germinate and so I have had a batch of seeds which I left outside for the past three winters. Each spring I brought them back into the greenhouse, but I noticed that any germination generally took place around June-July, which seems to indicate it is the heat which does the trick. However, since going to Peru and Chile I realise that some species never see a frost. For example, T. kuehnrichianus in Peru grows right next to Melocactus peruvianus, which anyone who has grown it will know will not stand any cold. Likewise,T.berteri in Chile grows in the Northern half of the country where I would suspect that frost is unknown. Also we found Maihueniopsis domeykoensis at Domeyko which is near Cituncho, again near sea level in a very hot, dry area.

This year, I have not got any Tephro seed so far, but assuming Steve Brack lists some I am going to try the extreme heat treatment without bothering about the frost. I have also acquired some Gibberelic acid, which according to Professor Deno is vital to some cactus seed germination, so I shall be experimenting with that.

By the way, I believe you said that you were on the Internet. What is your address? In theory I am on now, but I am having problems. Anyway, my address is moreton @selly-oak. demon. co.uk..

Best wishes

Roger Moreton

Thank you for the photographs of the seed I have scanned a few in to the computer but there are more than I can handle quickly (we have builders in the house at the moment) but as soon as I finished I shall return them.

Last year I had access to the Internet but my employers would not let me attend this year due the expected work load. Perhaps in the future I will get connected at home.

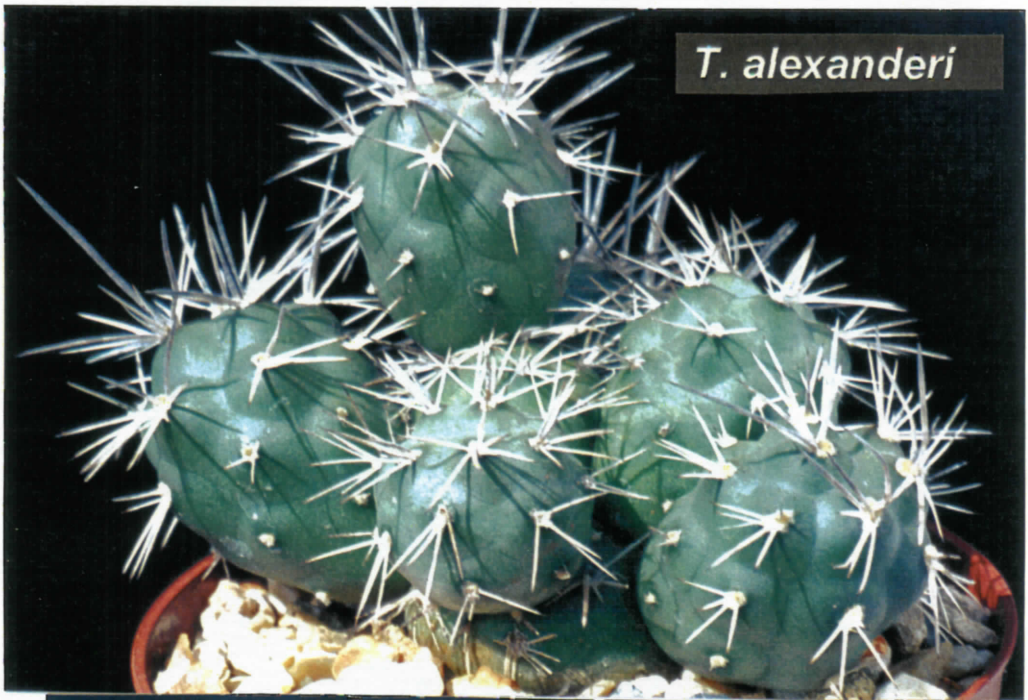
Vol.2 no. 4 *Unfortunately there were quite a few errors in the last issue some due to machine and some down to human error. But any reprints of vol.2 No.4 will be corrected I would like to thank every one for being patients. While I get use to the system I think it has worked well this time and thanks to Joost for sending his article on 3 ½ inch Disc it does save time.*
Also by the time this journal has been sent out issues Vol.1 no.1 and no.2 will have been converted to the new format and printed.

One error which does need to be rectified is that Roy Mottram on the photograph is incorrect and it should read - ***Roger Morton***

Tony


Puna subterranea WG 124


Maihueniopsis (PCW 4045)
WG 251



top = WG 293 Bottom = WG 262


Pterocactus valentnii
form WG266

Annual meeting (p 134)

In Germany we keep our meeting at the end of May or at the beginning of June. Mostly we saw buds, but no flowers. This time, we are having the meeting at the end of June, may be we'll see flowers on Hans-Peters plants.
When we were still a round robin, we always had our annual meeting at Bad Hersfeld. After becoming a Study group (Arbeitsgruppe), we changed this and the idea was to hold the meeting each year at another place. But last year we decided to stay at Bad Hersfeld.
It doesn't matter that the meeting is held during the summer holidays, as we know this several months in advance.

The flowering of Tephrocactus platyacanthus (p 141)

I got my first "Tephro" flowers on this species in spring 1988. In that year I bought a greenhouse. During April 1988 I kept my plants outside (without protection), because the greenhouse wasn't ready and the plant flowered. The next years (in the greenhouse) a lot of new segments, but no buds at all. 1993 I kept them in spring again outside and guess what Flowers ! Since then I give them in spring direct sunlight, and with good results. May be they need some ultraviolet light? Has someone similar results?

Looking at the picture of the 1988 flowers, I noticed that the flower- colour was different. More orange.

Dear all (p 144)

Giving a good definition of genus, species or variety seems not so easy. At the moment I use, because I am not able to do better, the term groups of related plants at generic and species level : e.g. T. geometricus belongs to T. alexanderi, that belongs to the Articulatae. But I don't care anymore on the scientific rank of T. geometricus.

For two years I have had the some mystery. A good growing T. articulatus (var. oligacanthus) formed several normal segments and one without thorns. This naked segment remained smaller then the others, but flowered the same year. Why do such things happen ? I really don't know.

Maihuenia poeppigii (p 146)

Last week I recieved two seedlings of a Maihuenia of Los Angeles, southern Chile (37°30' S.L.). In the book ' Chile & Easter Island ', written by W. Bernhardson (Lonely Planet series) some notes on the climate were given:
The earthland enjoys a Mediterranean climate, with maximum temperatures averaging 28°C (82 F) in January (summer) and 10°C (50° F) in July (winter); the rainy season is from May to August (winter).'
May be we have to give our Maihuenias water in winter and keep them dry in summer (as we probably have to do with Austrocylindropuntias). I don't know the climate in the Argentine part of the distribution area, may be the rainy season is during summer.
Another similarity with the Floccosa group is that they don't flower in Europe, may be because we give them water at the wrong moment. I started to give them water in winter and i'll wait for the results.

Joost

THE AMATEUR'S DIGEST,

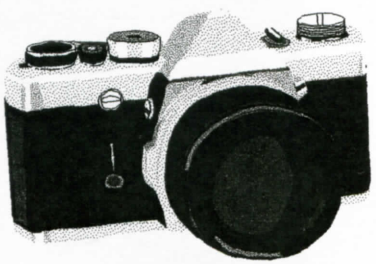
The How-To-Grow Publication for lovers of succulent plants. Subscription Rates (six issues Bi-Monthly) $22 US$) Currencies in equivalent of US $ accepted and personal Cheques on UK banks accepted.

Send to Marina Weiham, 8591 Lochside Drive, Sidney, BC, V8L 1M5, Canada.

Wanted

Any Tephrocactus with Cristate or Monstrose growth I am willing to buy or swap.

Tony Higuera
25 Heol Nant, Churchvillage,
Pontypridd, Mid Glam CF38 1RT



Wanted

I am searching for (to buy) seeds, young plants, Cuttings of :-

Tephro. floccosus
Tephro. geometricus
Tephro. rauhii
Tephro. lagopus

Pterocactus all species

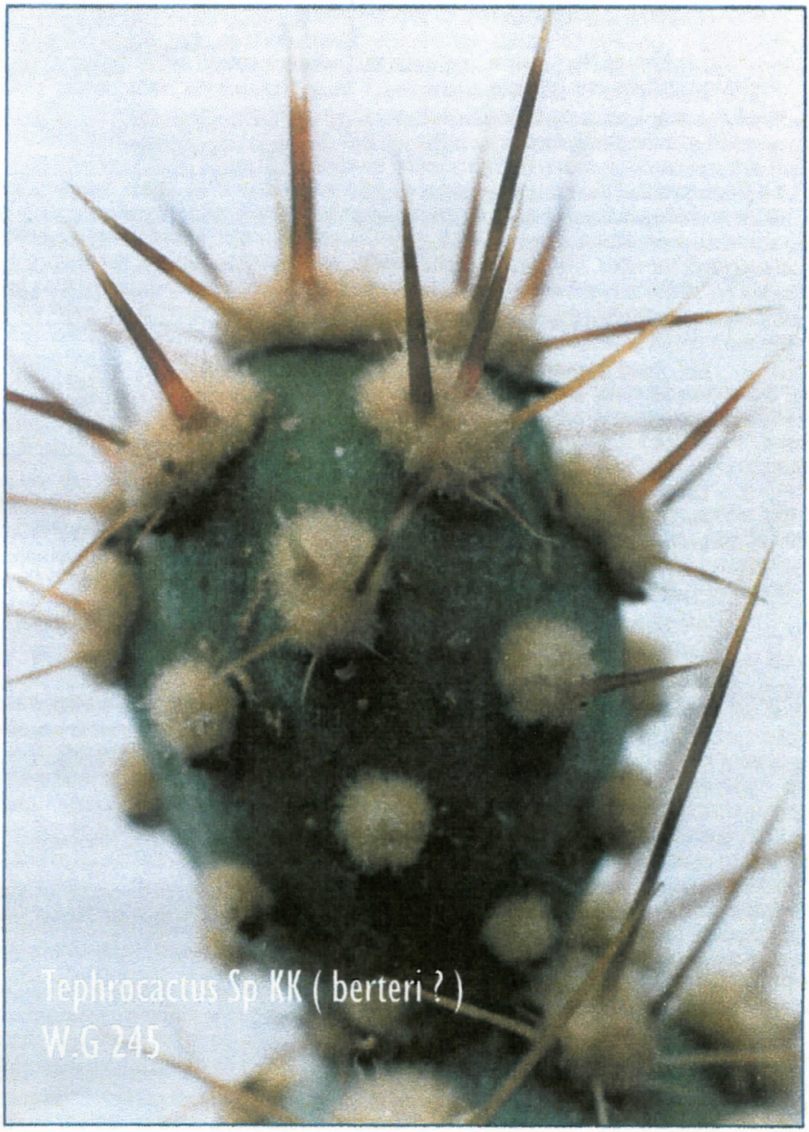
Alain Letroye
Rue Rouvroi 56A
B - 4460 Horion-Hozemont
Belgium.

Please Send in your Photographs for the Journal any topic to do with Tephrocactus


M. hickenii

TEPHROCACTUS

Incl. Maihuniopsis, Puna And related genera



STUDY GROUP

Vol. 3 No.2 June 1997

ADMIN. MATTERS

This time I am including an up to date membership list so that every one has the addresses of all the other members.

In particular, both Jules Bouguette in Belgium
and Francis Nuis of Norway are very keen to exchange cuttings any one can spare.

We have also three new members in the U.K.:
W. Greenaway - John L'Amie -
Anthony Walker

To all the above a hearty " welcome " and I hope you will enjoy growing the plants and contribute something to the Study Group by writing to tell us of your experiences.

It is important that the subs. are paid promptly at the end of each year to save me writing and reminding everyone and it costs time and money too.

The Subs. remain at £10.- for 1997
and should have been sent to the
Treasurer:
Alan Welsh. 31. The Quarry. Cam.
Glos. GL11 6JA

There are a few important matters:

1. We need photographs of your plants for the next issue, but please try and send in Negatives of photographs as they are much cheaper to reproduce. (Slides if you only take those they should be unmounted). Negatives must be in strip-form, single negatives can not be reproduced. All negatives will be returned if requested, but please enclose an S.A.E.

2. The " Sale / wants / Swap " list is still operating "free" and can be included in the next issue, but please can we keep them to 30 words on a separate piece of paper, stating which category e.g. Sale / Wants, etc..

3. Please remember, we need your comments, experience and views as well as good suggestions. These must reach Tony by **15th August 1997** to finalise the next issue. Your contribution is vital to make it all interesting!

One of the most important dates to make a note of in your diary is our one day meeting.

One Day Meeting on 3rd August 1997
here at Slimbridge
Starting at 10 am Closing approx. 4.30pm

At this meeting, I think we have agreed last year to look at group of plants which includes " kuehnricheanus / shaericus, berteri etc. groups and all their relatives. So do remember to bring your plants of this type for comparison.

But one of the highlights of the day will be an informal talk by Brian Bates! He has travelled in Tephrocactus country and can give a first-hand account of the condition they grow in.
So please make a note and come! Also please will you let me know if you are, so that I can make provision to have coffee and sandwiches ready for those who come a long way. - We will take lunch at the pub. Nearby

Rene

W.G.Geissler
Kingston Road
Slimbridge,
Glos. GL2 7BW

COMMENTS ON Vol 2 No. 4.

Pollination / hybridisation. P128. Last two paragraphs.

This subject arose because of a query by Joost about what was a species (P.100 Vol.2 No.2) and Anna's comments (P.116 Vol 2 No.3). (Please see the end of this note for two definitions of "species" for your consideration but which, as in all publications, you are not forced to accept). I am aware that there is too much "splitting" in the cactus literature and that many "species" will interbreed (hence the reason for isolating plants when producing " pure " seed in cultivation). Cactophiles tend to use characteristics for differentiation purposes which a trained Botanist would not accept. However it might be too broad a concept to simply say that all the Rebutias or Mammillarias that will interbreed successfully are one species (even if this is strictly true botanically). If one were to accept this then all seed one can collect from plants in a greenhouse must be assumed to be "pure", infertile or will produce hybrid " mules ". I prefer, for practical purposes, the idea of a species / form complex. For example, some plants form a cline of over a thousand miles. The plants look different in different areas of the cline but are obviously related. However the different forms at widely different locations do not actually interbreed due to distance (hence the difference in appearance at various points on the cline). In a greenhouse we have an artificial situation. To cross pollinate the plants might be possible but we are creating our own artificial " standard " form of the cline by cross pollinating forms from different populations of the species.
Rene is also correct in stating that " foreign " pollen can " trigger " a self sterile plant into producing pure seed. There are several barriers which prevents self fertilisation of the flowers of some species. The first obstacle a pollen grain faces after landing on the stigma lobe is to germinate and send a " tube " through the surface in order to grow down the stigma and style into the ovary. Even if it penetrates the stigma it might fail to penetrate the style or, if it reaches the ovary, fertilise an ovule. Presumably " triggering " is when the foreign pollen acts as a catalyst by breaking through the surface barrier and facilitating the growth and entry of the plant's own pollen which must also be applied to the stigma lobe. A series of factors must then happen in order to achieve all pure seeds: the foreign pollen must fail to achieve fertilisation whilst the plant's own pollen must do so. It is possible for a mixture of pure and hybrid seed to be produced as each ovule is fertilised by one pollen grain.

Whilst I advocate "triggering" as a last resort or for seed appearance study there are dangers for we enthusiasts if this practice is not carefully monitored. One cannot identify hybrid seed from it's outward appearance as the seed will have the outward characteristics of the usual seed produced by the mother plant. Secondly, when / if the seed germinates, how can one be sure that the seedling is " pure " and not carrying some " foreign " genes? We all know that different clones have similarities and differences. How can one be sure from it's outward appearance that there is no hybridisation in a seedling? Even if it looks sufficiently " typical " to be accepted as pure there is also the problem of non dominant genes that may only reveal their existence in later generations if the plant is not a " mule ". In any case who wants a plant which is, or might be, a mule or hybrid when we can carry out vegetative propagation from pure stock?
Although hybridisation does happen in the wild one of the advantages we have at the moment is that because of the difficulties experienced in germinating Tephrocactus seed, most of the material in cultivation is of vegetative origin from habitat plants and hence is most likely to be "pure". I am in favour of finding how to raise Tephrocacti (sensu Backeberg) from seed. This will be a great advantage using habitat seed. I have obvious misgivings about using seed from cultivated plants and even more so about using " triggered " seed. The latter is very useful for seed study purposes. One could make a case for using it when attempting germination experiments although as some of it might be infertile the statistics would be unreliable evidence. I think it might be wisest to stop at that point. I recall watching an archaeologist making flint arrow heads in his spare time and then destroying them. He said he did not want to run the risk of them going into circulation and contaminating the evidence. No matter what you put on the label once material from your seed raised plant goes out of your possession there is no control over what it is claimed to be and information on labels does tend to be shortened, altered or lost.

Definition of "species" from "Succulents. A Glossary of terms and descriptions." By R.B. Ivimey-Cook. Published by The National Cactus and Succulent Society. 1974.
A population of interbreeding or potentially interbreeding individuals, which breeds true within its own limits of variation; the basic unit of classification within which there is reasonable morphological homogeneity but which shows marked discontinuity from other groups in the same rank (i.e. from other species).

Definition of "species" from "Glossary of botanical terms with special reference to Succulent Plants" compiled by Urs Eggli. Published by B.C.S.S.1993.
The basic unit in biological classification, comprising a group of most closely related individuals which actually or potentially interbreed and produce offspring which in all its characters is within the variation expected within the circumscription of the species. There is no clear-cut definition for the species; the circumscription and application of the term is often more the result of common-sense instead of rigidly applied logic principles. In contrast to zoology, the principle that individuals which cannot interbreed have to be classified as different species cannot universally be followed; conversely, not all individuals able to interbreed and form fertile offspring can be classified as one species. The concept applied to define the species in the context of a botanical work can be narrow (i.e. allowing only little variation) or liberal (i.e. allowing pronounced variation).

A personal conclusion on the definition of a species.
It appears to me that the differentiation of cacti into species and even genera is a subjective act by a person based upon certain factors that person decides to employ. The published results are then accepted or rejected by other people. Later it is often acceptable for someone to revise the work and the revision then to be accepted. Recent scientific advances make it possible to study features such as seed, pollen and chromosome counts which help give further guidance to links or otherwise between plants and we can expect further revisions to be made.

Spines on T. articulatus P133 and P144.
The appearance of spination on what was formerly a spineless plant not only shows that it is carrying the genes to do so but adds weight to the argument that we should regard all the *articulatus* plants as a vast array of forms rather than varieties. Joost's comments on P130 in his excellent article support this. This also answers part of Howard's query on P133: all the plants form part of the *T. articulatus* (sensu Backeberg) complex. He classified *oligacanthus (Spegazzini)* as a variety of *T.articulatus*. I do not know the answer to the pad shedding. I have noticed no difference as to which forms shed pads more easily but I have not made any study of it.

T.weberi. P131.

Joost reports without comment the differences between the varieties "concern only the spines (colour and length) and the segments (length)." Am I correct in assuming that the use of the word
"only" means that Joost accepts that the difference in spination is not sufficient to merit varietal status? Also as *T. weberi* has a growing point segment length cannot be very significant. Do the various forms grow together or are there separate defined locations? I would be interested in reading more detail on the "compact structure".

I sometimes wonder whether weberi fits into Tephrocactus. Even Backeberg created two sections for his Tephrocactus concept and placed weberi in section one, which also included the plants in the flocossa group which is now usually accepted to be Austrocylindropuntia. The possession by weberi of segments with growing points suggests it is towards Austrocylindropuntia. However, morphologically I can see a possible relationship with *T. glomeratus v. andicola* (Backeberg) which has cylindrical segments and straight upward pointing spines. The two are Argentinian plants with weberi being the lower ground form. Any comments?

Maihueniopsis molfinoi P132.

I have seen plants mislabelled with this name but there is doubt as to whether the species actually exists and it is not known to be in cultivation. Spegazzini erected the genus and species in 1925. The unusual feature of the plant was that the segments were all united at the base. It is now thought that the plant could have been a deformed *T. glomeratus*. Ritter, however, accepted the name, amended the genus description and added more species to the genus. Keisling followed Ritter citing his amended description of *Maihueniopsis* but gives *molfinoi* as a synonym of the older name *glomeratus*. Ritter cites Spegazzini's *M. molfinio* as the type of his amended *Maihueniopsis*. I note that N. P. Taylor and J. Iliff in Bradleya P18 14/96 accept *Maihueniopsis* (Speg) but if the genus is based upon a doubtful plant is Spegazzini' 5 published name valid? Is Ritter's amended description valid? Keisling uses the term *Maihueniopsis* citing Ritter but makes the type plant a synonym of an older plant. Where does this leave the genus under nomenclature rules? Perhaps Roy Mottram will please inform us? Irrespective of whether the name is technically valid or not at some time we need to discuss whether we as a Study Group accept the name for practical purposes and which plants we consider should be in the genus.

CLONES , CLINES AND HYBRIDS.

Having misplaced my copy of Vol 3 No 1 I am not able to give a page reference but I recall Rene stating that I had called hybrids "clines". Either I have been misunderstood or I made an error. If two species interbreed I refer to the progeny as hybrids. I use the word "cline" in its botanical sense referring to a group of plants growing in habitat. We all know that vegatative propagation does not produce a different plant from its parent but is simply another bit of the same plant in a different pot i.e. a "clone". In habitat the same plant, by cloning itself, can cover large areas. The spread of such clones can give a false idea of the uniformity of a species in an area. A species might have differing forms in a local area and by pollination a species can extend its range via seed dispersal. As the range extends, for a variety of reasons, other various forms of the species may develop. Thus a species might have differing forms in a local population and have perhaps widely differing forms over a large area. The latter is what I mean by a "cline": a range of plants of the same species which might at various points on the cline be mistaken for being a different species.
However there is a continuous intergrading of the plants so that it is not possible to define a point where they split into a different species. All this variation has caused problems in the past with different forms in a local population sometime being given different specific names and plants from different points on a cline likewise. This partially explains some of the confusion in the literature and partially why, as understanding of the plants and their habitats become clearer, there is the modern tendency for " lumping "/ synonymy of names. It is the similarities and differences, as mentioned above, which have helped to cause the confusion/mistakes in the past which now so bedevil the literature and which I hope we as a study group can do our bit to unravel. The action of
(see page 175)

Glossary:

Cline. One of a series of forms of a species, or of biotypes, growing along an environmental gradient. *R. B. Ivimey - Cook.*

Cline. The continuous range of variation found in one or several characters along a more or less continuous range of habitats; ecoclines are clines along an ecological gradient (e.g. change in soil characteristics), topoclines are clines along a geographical gradient (e.g. latitude etc). *Urs Eggli.*

Hybrid. The progeny of a cross between two species in the same genus (interspecific hybrid) or in different genera (intergeneic hybrid) ; the existence of a hybrid must therefore depend on current ideas on the delimitation of species and genera. *R. B. Ivimey - Cook.*

Hybrid. Any individual which is the result of a cross between two different taxa; i.e. the product of a sexual fusion of genetically different cells. *Urs Eggli.*

Hybrid swarm. A population consisting of two different taxa (commonly species) and many intermediate forms which are the product of continued hybridisation between the two taxa and between the hybrids and one or both of the parents. *Urs Eggli.*

For reference to the books please see the previous citations. One will note from the last definition that hybrid swarms occurring in habitat will further confuse identification and that the definition accepts that hybrids can be fertile.

Content of the Journal.

I was very disappointed that my attempt to start a discussion on the identification/grouping of plants in the set of photographs produced no reaction. Perhaps the article was difficult to understand or some of my statements were considered not worthy of a comment. Perhaps a few members were reluctant to commit their thoughts to print in case they made an error. The latter would not matter. None of us, least of all me, are infallible. We are a study group and the Journal is a vehicle for sharing our ideas and experiences. If we don't have more contributions we are not going to make progress and without them we will founder. The Round Robin system, with which we started, was replaced by the Journal to overcome the problem of the time it took for the Robin to circulate and because it had to be passed on rather than retained for future reference.

Please treat the Journal as a method of communication between us and do not regard it as just another magazine Tony cannot produce the Journal unless he is sent contributions. As a Study Group we need your experiences and thoughts on anything connected with Tephrocacti. What can you say/ask about cultivation, heating, propagation etc? What is your perception of similarities and differences amongst the plants? How do you view them in groups? What can you find out about habitats and the distribution of the plants? What comments can you make about nomenclature in the past/present? Can you make some comment on an original description: interpretation/validity? Can you attempt to identify certain described plants and comment if you think they are valid? What are *pentlandii, russellii, hickenii* and *ovatus* for example? What comments can you make on the works of Backeberg, Ritter and Keisling? Will you try tracing the name changes/synonymy of a certain plant? What books do you suggest should be read? Some of the above topics will require some reading. You can build up your own library (no matter how small to start with), you can borrow books from the local library or through it order books from the national library base. You cannot borrow books from the national BCSS library but you can visit it or contact Brian Bates who will photocopy some pages for you. Incidentally, as I understand the law, one is entitled to make one photocopy out of a book for one's own personal use without infringing copyright. Some of what I have outlined will cost money and all of it will require time. However, this is our hobby and thus it must be worth the effort. Please try to make your contribution to our Study

Alan Hill

The Missing Link (?)

There has been much discussion in past issues regarding *T. strombiliformis* and its relation to *T. inermis* and other similar varieties (see volume 1 pages 7, 28, 53, 66). Alan Hill for one has requested that we return to this debate at some time so I thought the following might be of interest

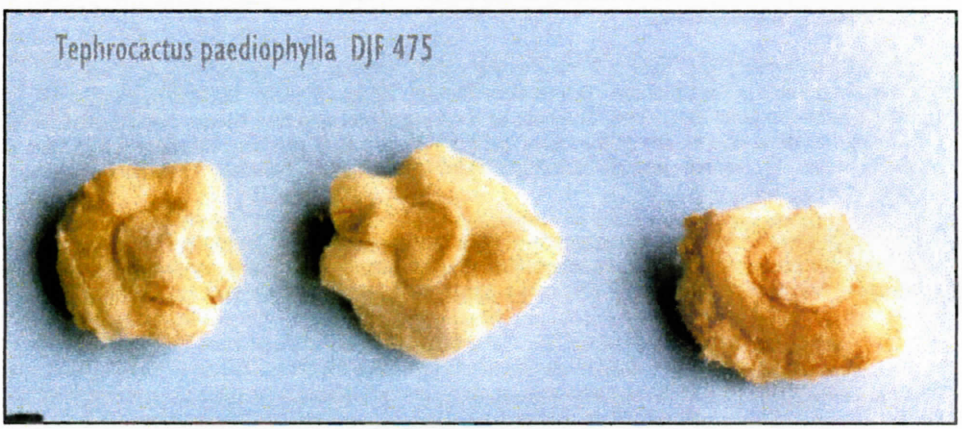
Back in Aug.1996 our branch organised an outing to visit three collections of neighbouring Portsmouth Branch members. A very enjoyable time was had (despite the heavy showers !) and we ended up at the house of Cliff Thompson who has a large collection, sells plants and gives talks on a variety of subjects. His collection is somewhat er..."disorganised" for want of a better word and we happily clambered between assorted greenhouses and plants scattered here and there. I homed in on what appeared to be a converted shed where all manner of neglected plants were half hidden between wooden shelves. There were several Opuntias and it wasn't until I got them home and repotted what I could salvage that I realised there were several plants which were unlike any I had seen before. One of these (shown in the accompanying photograph fourth from the left) was labelled as *T. strombiliformis.*

Although the emerging growth is similar to the *strombiliformis* that we know (see "Round 3" 1994 p.6 no.7 see also in the Leighton - Boyce booklet page 30 fig.45, their " *O.diademata v. calva*") the mature pads are quite distinctive. They are of a very uniform size and shape, have a glaucus tinge to them and grow one on top of the other not from the sides at random. I wonder if this plant is a link between *T. inermis* and *T. strombiliformis*. I have also included *T. turpinii (?calva)* for comparison.

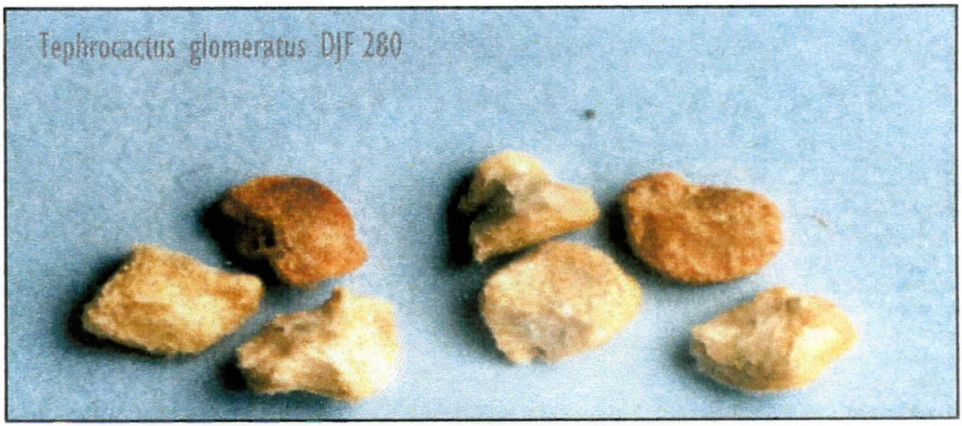
I would be pleased to receive comments on this "new" variety and would be interested to know if anyone else has a similar plant. Although almost spineless, as is the way with these plants one pad has produced a couple of spines. Of course it may be a hybrid. (There is a similar plant on p.31 in Leighton-Boyce).

Martyn

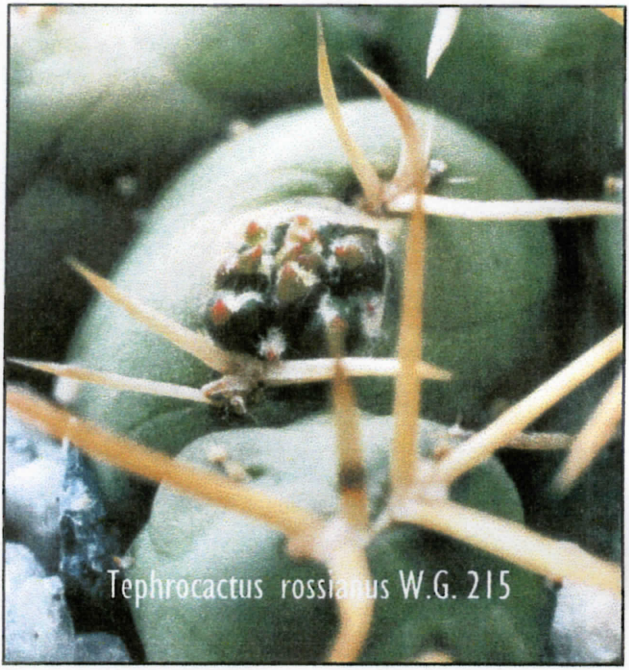

Tephrocactus articulatus DJF274

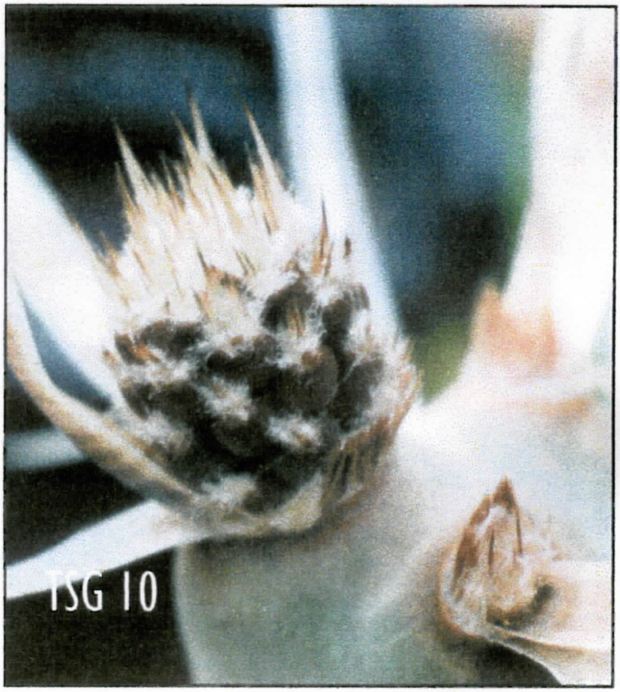

Tephrocactus paediophylla DJF 475


Austrocylindraopuntia vestita G.K.



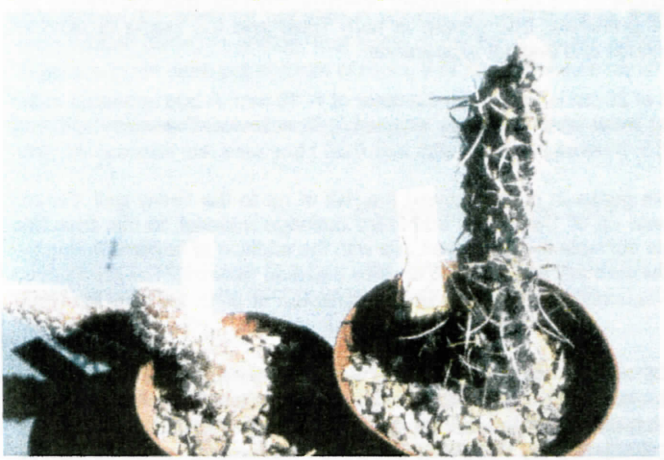
Photographs by Roger Morton


Tephrocactus rossianus W.G. 215


TSG 10

Pterocacti

Assuming that these beautiful plants fall within our remit I have included two photographs, the first shows my plant of P. australis WG 232. This was obtained from Rene two years ago as a single headed plant so as you can see it is not a slow grower ! It seems to be the exception to the usual rule that the most attractive plants are always the most difficult (I have probably now sentenced it to death !) I entered this plant in our local cactus show and got a Highly Commended - it really is a lovely plant and several members asked me where they could get one.



The second photograph shows P. valentinii WG266.and P. fischeri WG232. both obtained from Rene. The valentinii presumably came from the plant shown in the set of Photographs but my plant seems to be very slow growing and stays this reddish brown - maybe it needs more shade The fischeri is similar to australis but is taller growing and only now starting to offset at the base.

Pterocacti are tuberous rooted plants the best known of which is P. tuberosus (kutzei) which will regrow even if all the stems are removed. The name comes from the fact that they have winged (ptero) seeds. They grow mostly in Argentina and require full sun and only moderate watering in summer, cool and dry in winter.

Martyn

Pterocactus tuberosus

(Pfeiffer) Britton & Rose
(Translated from French by: S. Brooker)

Synonym: Pterocactus kuntzei (Karl M. Schumann)

Family: Cactaceae
Sub-family: Opuntioideae

Pterocactus tuberosus can be found in West Argentine (Mendoza).

The name of the genus means "Winged Cactus. This refers to the particular shape of the seeds which are " winged " (pteron - winged). The name of the species refers to the tuberous root.

Pterocactus tuberosus has a turnip-shaped root which, according to Backeberg, can reach a length of 12 cm and 8 cm diameter. From this root brown spines appear- reddish, up to 40 cm long and up to a diameter of 1cm. The stems have minute areols with fine, white spines, equally minute and resemble silken hairs.

The diurnal flowers are entirely yellow, 3 cm long and 3-4 cm in diameter. They are always emerging from the apex of the stems. The dry fruit measure 4 mm.

I have two *Pterocacti tuberosus* and at the moment they have roots of approx. 3.5 cm in diameter. One of the plants has three thin stems of 5-6 mm in diameter emerging from the root and the are 20-25 cm long and the top has 2-4 branches. The growth is fairly rapid and the stems grow in all directions, this gives the pant a curious and original appearance.

The other plant has a single stem of 20 cm length and a diameter of 7- 10 mm. A bud appeared at the end of July on a very hot day and I was able to admire a superb yellow flower. The next day it had already faded.

Good drainage is essential for this genus in order to avoid the risk of rot to the fleshy root. For my Pterocactus I use a substrate made up of 1/3rd loam and 2/3rd drainage material. In this case fine gravel and Vermiculite. Our friends cultivate them in pure Lava with the addition of fertilizer during the growing period. In Summer, I water normally and leave to dry well between watering. They are placed directly in full sunlight. The over-wintering of the plants is at a minimum of 5° C. and are left totally dry.

Propagation can be carried out by seed (I have not yet had the opportunity to try) and by cuttings which is very easy. Last year I broke a 5 cm piece of them off accidentally and after some days I placed in the gravel. In Spring, I noticed that the cutting had formed roots and a new shoot had appeared. After 11 months a new small root had also formed.

P. tuberosus is a species which I personally find very attractive and it's only demand is good drainage.

Alain Letroye

Hallo Tephrofans,

The start of this year has been a difficult one with several trips to the hospital and my parents in law in their nineties, we had to make endless trips to see them. This all has put me back quite a lot and I have not been able to give my plants all the attention I would have liked to.

But somehow most of them have been re-potted now and they are looking better than ever. There are buds galore on most of the *Maihueniopsis* and the *Pterocacti. Maihueniopsis madragora* is always the first to show the first buds will open any day now. *M. walterspiehi* has a well developed bud on every terminal join, despite the fact that it is only five inches across. Two separate clones of *Pterocactus valentinii* are also in bud and *P. australis* has opened for the time this year. They are a real sight with their large, luminous terminal flowers. Even *Maihueniopsis nigrispina* (previously *T. Nigrispinus*) has three buds for the first time despite the fact that a large proportion of joints fell off last Winter.

Tephrocactus articulatus v. oligacanthus is already showing tiny buds and almost every terminal joint will flower with at least one or two white iridescent flowers and the last of them will open late in Summer. *T. kuenrichianus* has flowered until mid-Autumn last year and new buds are already ready to burst again this year.

I find when plants have flowered once and the are of a certain age they will than flower readily every year and the number of flowers increases with each new season.

Although my plants have been re-potted, they will receive a feed of Phostrogen in a couple of month time and watering will start in normal, regular amounts from now on until late Summer. I have noticed during re-potting, that some of the tap roots are getting very long and it is only when those are given deep pot and lots of room, that *Maihueniopsis* begin to flower well.

I would be interested to hear what success other members have had this year, because it was a long dry Summer last year and I think that influences the amount of flowers in the following year.

Progress of the TSG

This year we have again increased our membership considerably and it looks as though this will continue, but I am very disappointed though that other members are not participating as much as we had hoped.

This may be due to the fact that we are all in the process of learning more about our plants and everyone is afraid of looking silly if an article they contribute does not sound deeply learned. This is a misconception! The problem is that there is no one publication that covers our subject and we are all have to gather information from other previously published material be it older works such as Lemaire, Backeberg, Ritter, or Roberto Kiesling more recently. It is this gathering of information that should be our task to make a little more sense of the confusion that exists with plant material in circulation.

I had hoped that more members would take part in gathering this information, which then can be made available to all would help us to share that which is hidden in various publications. I think it is true to say

that quite a lot of recent information appeared in articles in various journals and just need to be gathered. Not every one has access to all the journals and it would help if members could help in this search.

All these snippets, together with members own experience and than published will in the end help each and every one. Unfortunately we are not at liberty to reprint articles in our journal without the authors and/or publisher's permission, but if members put their own interpretation on any article and comment, or describe plants they grow, that is another matter.
I would like to appeal to members to help write their own contribution, otherwise it falls on just the very few regulars to do so. I realise the difficulty and time it takes to make the effort and it is all to easy to receive the Journal and then forget about it until the next one arrives.

During this time of the year it is the busy season and many plants are flowering. So this is the time to take lots of photographs and then tell us about each plant that has succeeded particularly well and describe the condition under which it was grown.

Please, please, we need your help too! I too will do my best to do what I can, but don't leave it all to the few! Don't let Tony, our editor pull his hair out when it comes to the deadline date.

Rene

Those who Dare.....?

Following some recent comments about cultivation in the last few issues of the T.S.G. I'm a little disappointed by suggestions increasingly inclined towards the idea that the best way to keep all our plants is tucked up in greenhouses with heaters on. So in light of this I would like to suggest a motto for the group and it is this.....NOTHING VENTURED NOTHING LOST.

Last summer during a very long cool wet spell in London in which some of my plants (being outside unprotected) remained 'wet' continuously for about l~2 weeks, I lost the roots off three *M.boliviana* plants and my *M.flexispinus*. I managed to re-root the *flexispinus* as the tuberous part of the root was intact, but I had to take virtually cuttings from the *boliviana* plants to salvage them. Perhaps my soil-mix is not porous enough? Out of all my plants left unprotected these were the only ones that seemed to suffer markedly from the conditions. In pots interspersed between them were *M.glomeratus, T.alboareolatus, austrocylindropuntia* etc; and they were all fine - strong roots coming out of the bottom of the pots. In future I will be more careful with the *boliviana* type plants regarding water at the roots.. ....still, nothing ventured nothing gained !

Kevin Lear.

TSG Membership

The following is a complete list of members at present and I would be very grateful if you would check your address for any mistakes and/or changes, also advise me of your current Telephone Number so that I can complete this list and keep it fully up-to-date.

Any future addition to our membership will be made in future with each issue and when necessary a full list will be published again.

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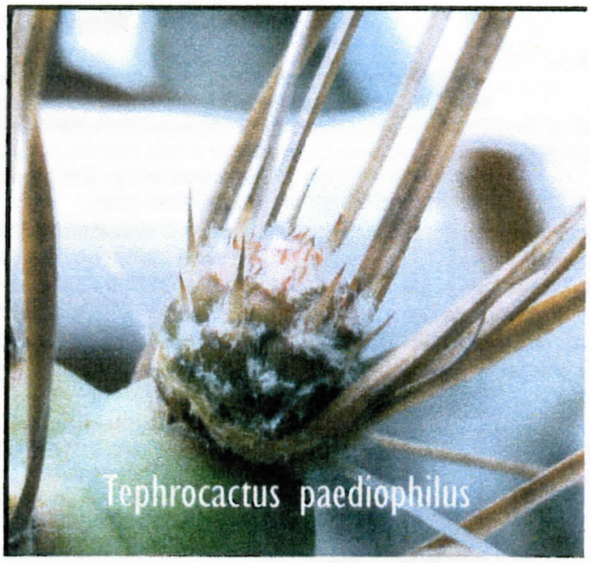
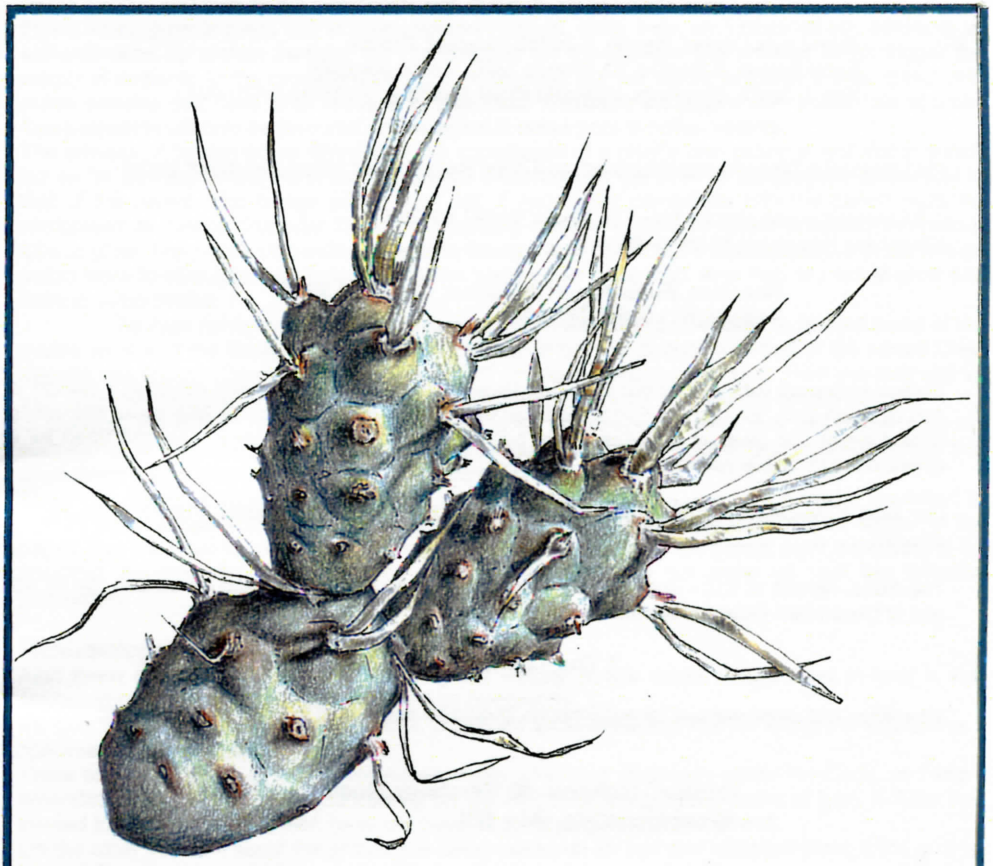
Cam,
Glos.
GL11 6JA
Tel.01453 543549


Tephrocactus paediophilus


Tephrocactus strobiliformus

TEPHROCACTUS

Incl. Maihuniopsis, Puna And related genera



Kevin Lear

Tephrocactus articulatus

STUDY GROUP

Vol. 3 No.3 Sept 1997

Notes from the Secretary

Since the last Issue three New Members have joined us:

Jean-Louis Casual, Kermo, F-29710 Plozevet, France
Rene Samek, 5 Kwetna 10, Prague 1400, Czech Republic
Ken J. Smith, Shealings, Wasdale Road, Gosforth, Cumbria CA20 IAU

I bid them all a "Very Hearty Welcome" and hope the will enjoy taking part in our study!

John Gamesby has changed his Tel. No. to: 01642 899216.
Kevin Lear Has changed his address to

Ronoleen, Rodborough Hill, Stroud, Glos. GL5 3SW
Telephone :- 01453 753 988

Sixteen members took part at our One-Day-Meeting on the 3rd. August and although it started to rain by lunch time, we managed to avoid most of it indoors with Brian Bates with some interesting habitat slides. He gave us a flavour of the conditions our plants grow under. Thanks Brian for a splendid talk!!! Thank you for coming!

Our Next "One-day-Meeting will be held on Sunday the 2nd August 1998!!! Further details to be advised.

The Subs. remain at £10.- and run from January to December and should be sent to me by the end of December! Cheques should be made out to:

" The Tephrocactus Study Group "

All articles and other matters for publications should be addressed to our new Sub-Editor:

William Jackson 60 Hardwick Road. Sutton coldfield.
West Midlands, B74 3DL Tel. 0121 3535462

Finally, please will you remember to tell me if there is any change of your address or Telephone number

Rene Geissler

Comments on Vol.3 No.2

Pollination p.172.

Plants favour cross-pollination to effect the greatest number of new combinations of genes. Pollen grains grow through the stigma and down the style by a process in which nutrients are supplied first by the stigma, and then by the innermost walls of the (in cacti) hollow style.

Plants which grow in areas rich in pollen vectors (insects, birds, bats, etc.) close off any possibility of self-pollination by protein barriers. As I understand the mechanism, the proteins which trigger the supply of nutrients to the growing pollen and pollen-tube will not supply nutrients if they detect only pollen proteins that have DNA identical to their own. Therefore the plant's own pollen fails to grow. Self-pollination will only be favoured and selected in areas poor in pollen vectors.

The process of foreign pollen stimulating the acceptance of a plant's own pollen is well documented, but as far as I am aware, none has conclusive evidence that the DNA of the progeny is identical to that of the parent. The foreign pollen itself will, if genetically compatible with the parent plant, be recognised as having dissimilar DNA and therefore release sufficient nutrient to enable the pollen-tube to grow. The plant's own pollen should, in theory, be rejected. But if the acceptance of the foreign pollen were to stimulate the acceptance of the plant's own pollen too, then they too would grow and fertilise some ovules.

As Alan rightly points out, some foreign pollen will grow and attempt to fertilise some of the ovules as well. If the foreign pollen carries DNA that is not too distinct from that of the parent DNA, meiosis can occur in the ovule and fertilisation will proceed, producing a hybrid. Thus you may end up with progeny that have the identical DNA to the parent, or that plus a proportion of new hybrids.

In practice, the foreign pollen is probably going to be so distant and alien that this pollen does not succeed in producing a match and the ovule does not develop into a seed. The consequence is that all progeny will be genetically identical to the parent or very nearly so.

Therefore, it seems possible for selfing to occur with foreign pollen, but care must be exercised to identify those progeny which are genuine hybrids, and sometimes they might be so similar to the parent that it is hard to tell. This would be particularly hazardous if the parent plant happened to be polyploid, because then even progeny with different DNA will not show up until the following generation.

Mahlueniopsis p.174.

Alan threw the ball into my court regarding the validity of this name. The answer in brief is that *Maihueniopsis* certainly is validly published by Spegazzini.

It's type is cited as *Mailliieiiiopsis molfinoi,* published simultaneously, and for which the holotype is a specimen at Buenos Aires.

There are no concepts of validity for subsequently amended diagnoses under the *Code,* so Ritter's amended Latin description has no bearing on the validity of Spegazzini's name or type. If Ritter had wanted to change the type, then he would have had to change the name as well.

On the other question about the protologue being based on an odd and untypical plant, it too is of no importance. The name *Maihueniopsis* Spegazzini is permanently fixed by the specimen at Buenos Aires. All types of genera are specimens or illustrations. The citation of a species name is taken to mean that the type of the genus is the also automatically the holotype of that species.

If we now say that the type species, *Maihueniopsis molfinoi* is a later synonym of *Opuntia glomerata,* the type of the genus is still the type of *M. molfinoi,* not the type of O. *glomerata.* In practice we are saying that both names belong together under the same genus, so there is no conflict.

Opuntia glomerata does indeed occasionally produced joints which are dichotomously branched. I have not seen one that is branched more than once in the same segment, but that is not to say that it cannot happen, and I feel sure that the type specimen of *Maihueniopsis molfinoi* is normal, not a teratological mutation (monstrous). That it is unusual is undisputed, and Spegazzini based his genus on a branching character that was unreliable, but this does not invalidate his description or affect the nomenclature in any way.

Opuntia weberi p.173.

I agree that this species is best considered as a member of the *Austrocylindropuntia* group, rather than *Tephrocactus*. It has indeterminate growth.

Circumscription of the Study Group

Can someone decide which genera are included here. *Austrocylindropuntia* includes such species as *Opuntia subulata* and O. *vestita*. Are these eligible? Only *Opuntia floccosa* seems to be considered *tephrocactoid* so far.
Airampoae are closer related to *Opuntia* subgen. *Opuntia* than to *Tephrocactus*.
Maihuenia does not belong in the same tribe, and but for it's well-developed spines would have to be considered a *Portulaca* judging by recent gene sequence studies!

Roy Mottram

more Comments on Vol.3, No2

Maihueniopsis molfinoi P.173

Many years ago, before I ever had a deeper interest in the Opuntioideae and Tephrocactus in particular, a very kind friend gave me a cutting of an Opuntia that carried the label "Maihueniopsis molfinoi and purported to originate from a Dr. Merrett.

This friend of mine had close connections with Dr. Merrett of Cheltenham and one day he took me to see his collection. Dr Merrett had been associated with James Iliffe and had a what in those days would have been termed a very comprehensive collection of Tephrocacti, housed in three large outside frames.

Dr Merrett was quite old and infirm when we visited him and he told us to help ourselves to as many cuttings as we wanted and I noticed a plant labeled M. mofinoi there too. This was in the latter part of the 1960's when I had only a passing interest in such plants, so only two plants remain with me from that collection, T. bolivianus and M. molfinoi. And here is the problem!

Five years ago a respected member of the BCSS gave me an identical plant with the name T. pentlandii var. fuauxianus. Some month later when I joined the German Study Group, one of their founder members sent me a cutting (along with others) an identical cutting of this plant under the name Maihueniopsis rossiana var. fuauxiana and was very certain that that was the correct name for name for this plant and "molfinoi" was invalid.

Backeberg's photograph in "Die Cactaceae" vol.1, p.322 would certainly correspond to the plant in my photograph in all respects and does indeed carry the name Tephrocactus pentlandii v. fuauxianus, but on page 320 of the same work he illustrates T. penlandii, which looks very much as

T.(Maihueniopsis) rossianus to me. The growth of both of these plants is very similar, in that as Ritter wrote "all segments are united at the base" only the segments of rossianus are much, much larger.

Ritter describes the plant M. molfinoi in "Kakteen" vol.2, p.384 - 387.

Now, I accept that according to the latest thinking and studies by Dr. R. Kiesling, the plant belongs to the " glomerata group ", but what is its varietal name? Is it molfinoi, pentlandii, or rossianus fuauxianus? Help!!! Can anyone comment as to which is the correct name for this piants in the photograph?

From the accompanying photograph you can see that these plants are very easy to grow and flower freely.

Rene Geissler

Please read this page after Page 192

Backeberg reports that this plant was originally collected in northern Argentina by Fric and was confused with T. subterranus.

Dr. Roberto Kiesling includes them in the M. minuta group, which grow very similar in habit, but much more compact. Indeed Backeberg too, puts them both in the " Globulares " group, subgroup 5, Macrorhizi. Both stated to come from northern Argentina. This would explain the diversity of forms.

CULT I VATI ON

All Maihueniopsis require the same treatment and are happy in almost any medium as long as its main constituent is mineral (sharp washed grit). The pot should be generous in size and deep so as to accommodate the development of the long and fleshy tap-root. The plants benefit from generous watering in Spring and Summer as it gets warmer, but watering should cease at the beginning of September to enable the soil to dry out completely for the onset of Autumn and Winter. Regular addition of a low potash fertilizer when watering in Summer will also benefit the plants and this can take place overhead. On no account should water be given in the Autumn and Winter months.

Plants also benefit with regular re-potting early in spring as growth requires. This renews the compost and gives them new vigour, always remembering the tap root lengthens each year.

Remember, these plants need maximum light and place them as near to the glass as possible. In Summer they enjoy a place outside in the sun, but beware, the slugs like them too.

Seed collected from my own plants has germinated, starting in slow succession after two weeks to five month without any special treatment or chitting, in a gritty compost right near the glass in full sun. It is important that the compost should never dry out completely until germination is accomplished. These are ideal subjects for some one who has never experienced the flowers and the beauty of these interesting plants, where success is almost guaranteed if just a few basic requirements are followed.

Literature: C. Backeberg, The cactaceae Leighton-Boyce & Iliff, The Subgenus Tephrocactus Roberto Kiesling, Darwiniana, 25 (1-4) 1984

Rene Geissler

The editors welcome Articles, Opinions, Comment, and News about all aspects of cactus cultivation, especially if related to the study of South American Opuntioideae. Contributions may be typed, or on 3.5" disc In either TXT or Word 6 format. Handwritten items can be accepted if legible. Photographs are particularly welcome. Prints, or strips of negatives can be processed but single negatives and slides cannot. A stamped, addressed envelope must be enclosed if any material is to be returned.
All contributions should be sent to...

Mr. W.L. Jackson
60 Hardwick Road
Sutton Coldfield
West Midlands
B74 3DL

Tel.0121 3535462

A New Appointment. Sub Editor.

At the one day meeting on 3rd. August it was obvious that Tony Higuera needed some help in preparing the Journal. You know how these things are done. Somebody says something along the lines of...

"So we have decided to appoint a Sub Editor and throw the meeting open for volunteers."

There is no silence on earth like the one that follows this.
People seem to shrink and become less noticeable. They don't cough or shuffle.
They don't blink in case someone says "Was that a bid sir?' It is a test of willpower. Everyone sits there thinking
"We do need a journal. Those pictures are really useful. Tony deserves a bit of help."
But they also think
" If I keep quiet somebody else will probably crack first."
In spite of my age and experience somebody, in this case, was me. Having been lumbered I shall try and do something.

I do know that dozens of journals fail. In issue after issue the editorial appeals for contributions become more and more frantic and the proportion of material written by the editor and one or two regulars becomes bigger and bigger. In the end he says, well never mind what he says, but he gets fed up and it finishes. Only one thing can prevent this; contributions from the members.

It is not obvious why contributions are so difficult to come by. Editors try to think of reasons, to reassure people and to remove real or imaginary obstacles. I've tried to think of some. Before listing one or two perhaps we should emphasise the point made by Alan Hill.

This journal is not intended to be a mini version of the BCSS one. It is derived from a Round Robin and should show a similar emphasis on News, Opinion and Comment. We don't want it to be stuffed with learned articles paraphrased from some other publication. Our group objectives are to exchange information in order to learn. Don't misunderstand this. Learned articles are welcome, but so are much less heavyweight contributions. I, for one, would love to hear that somebody else didn't know what a floccosa was.

1. To remove one real obstacle, my address and phone number will appear in a box, like the one on page 189 this will appear in every issue. Contributions should be sent to me.

2. For a start, at least, material can be accepted in any format although I should say now that, if you dictate it, I am a slow writer and you are paying for the phone. These details will also be specified in the box, in every issue.

3. Photographs are especially valuable. Next time you take a photo take two, or get two prints of it. The point I am trying to make here is that if you plan to write something and then decide to take a photo to illustrate it the weather will go dark, the camera will go on the blink, your children will get married or some other disaster will hold up the photo and your 'will to speak' will gradually evaporate. Do it now. It is much easier to frame your thoughts once you have the picture.

4. I can consult Roger Moreton who does know something about this subject and lives fairly near. Having done this I can then give the contributor a ring. In fact I will be happy to talk to anyone about any kind of contribution.

Bill Jackson. August 1997

Maihueniopsis madragora (WG. 231 / 299)

Tephrocactus madragora Backeb.1953.-
Maihueniopsis madragora(Backeb.) Ritter 1980.-
Opuntia madragora (Backeb.) Rowley.

M. madragora forms a long, thick tap-root and has ovoid joints 20 - 35mm in length and l5mm in diameter. Spines 2-3 per areole are short and thin. the sunken areoles are sparse with yellowish bundles of glochids. The joints grow upright and sideways, grass green and form tight mounds.

Buds appear at first reddish brown, one per joint, are 25 - 3O mm long 20 mm in diameter with minute leaves, glochids and 5 - 10 fine spines on the sepals. the iridescent flowers are 50 - 60 mm in diameter with orange to yellow petals which have a reddish tinge on the outside and the edges are crinkled. Stigma greenish and stamens yellow. (see fig.1) Backeb. states that the flower is unknown to him. Presumably because the specimen described was not in flower at the time.

Flowers are reluctant to open in dull weather, but open quickly as it gets sunny and hot. In my collection the plants flower at the end of May - beginning June on the two clones I have (WG.231 and 299). Seed pods develop freely when pollinated with other clones and take a full season to ripen. Normally 4 - 8 seeds per capsule.

Maihueniopsis madragora

Backbg. WG.469

On this clone joint are somewhat short and stubby, 20 - 25mm long and 20 - 25mm diameter, blue green in colour with sunken areoles, minute glochids and 1 - 3very short blackish spines. Growth is more open and joints procumbent. Buds 1 - 5 per joint, appear reddish purple at first and have numerous scales with minute leaves that are a reddish green. Buds are bare and without spines. Some buds abort as others swell, making joints shrivel somewhat.

This is an extremely free flowering clone and flowers will appear when only 3 - 4 joints, on some occasions even a single joint may flower. Flowers are pale yellow, as are stigma and anthers. Diameter of the flower is 30 - 4O mm, smaller than in WG.299 / 231. One of my plants is only 60 cm in diameter , but has produced eight flowers in 1997 with 2 - 3 open at the same time. (see fig.2)

These are very rewarding plants and flower with certainty if grown in full light. Kept dry and airy, they can take down to at least minus 10 C°. In my collection, all Maihueniopsis live in an "Access" frame with plenty of ventilation, even in Winter.

Although my plants came to me as M.(Tephro.) madragora, there is just a chance that they came from a different location if the name is correct, but I have little doubt that they are closely related and show similar characteristics in many respects. The latter (WG.469) is more widely known and cultivated in the U.K. under the name of Tephrocactus madragora.

Please now read Page 189

Rene Geissler

THE AUGUST 1997 ONE DAY MEETING.

Once again we met at Rene's but with a vastly increased attendance of fifteen people. As was outlined in Rene's letter we considered the effect of the increase in membership and the need for more formal organisation. The result was that the elected Officers are as follows. Chairman Alan Hill. Secretary Rene Geissler. Treasurer Alan Welsh. Editor/Publisher Tony Higuera. Sub Editors Bill Jackson and Roger Moreton. All material for publishing in the Journal should be sent to Bill Jackson. All other correspondence should be sent to Rene including subscriptions and requests for back numbers of the Journal.

The Journal is intended to continue to be the main channel of communication between members. We are a Study Group and as such we hope all members will be active and contribute to the Journal. Other articles will, however, be sought from people with specialist knowledge and from those who have visited habitats. Publication dates for the Journal are to be on the 28th of March, June, September and December. To allow adequate time for preparation of the contents all contributions should be in the hands of Bill Jackson by the 15th of the previous month i.e.: February, May, August and November. When back issues are required the four issues of each volume will be printed together to form the one volume.

The Treasurer reported income for 1996 was £260.41 with expenses £108.46. Income for 1997 50 far was £197.50 and expenses (entirely on the Journal) £129.95. The financial balance at present is £387.92. It was agreed that in future the accounts will be audited.

Discussion took place on next year's one day meeting. In view of the increasing membership and the possibility that even more people might attend next year, a larger meeting place is required. It was agreed that Rene would book the small Church Hall at Slimbridge on Sunday 2nd August 1998. The hire cost is expected to be very low. The plant group for discussion at that meeting will be the pentlandii / bolivianus complex.

The plant group for discussion at the present meeting was the sphaericus group. A full report on this will be given in the next Journal. Brian Bates from Worksop also gave us an illustrated talk on the Tephrocacti he had seen in Bolivia.

The question had again been raised about the extent of the Study Group's sphere of interest in view of some of the plants which have been mentioned in the Journal. Suggestions for definitions included "South American small Opuntias", "Tephrocactus sensu Backeberg" or the more vague "Mainly Tephrocactus". The latter was also suggested as a good name for our Journal. It was agreed that we would not do anything new at present as it was understood that an article in the forthcoming Journal (the one you are reading) would help stimulate thought and future discussion.

The future of the TSG Plant Reference Scheme was also discussed as the increase in membership numbers could create problems in distributing cuttings to all those who attended the One Day Annual Meeting. It was agreed that we would continue the scheme for the time being and cuttings were issued of two more Reference Plants.

On behalf of those members who attended the meeting I again thank Rene and his wife for providing the meeting place for the group and for the generous hospitality they gave us.

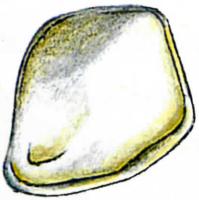
Alan Hill.

Drawings from seed.

I decided to try from seed after reading Martyn's piece (p.135). I sent to D&V Rowlands for seed - I don't know the address of Mesa Gardens? There's not much to mention; I haven't been very successful so far after 7 weeks. With M.glomeratus 10 have germinated out of 10. With T.alexanderi 3 out of 14 seeds. The glomeratus germinated and are growing with no trouble on an outside windowsill with some mesh shading. The alexanderi in a heated home-made propagator at about 80 100 degrees f. I am also trying A.floccosus + V. ovoides, crispicrinitus, and 2 varieties of Maihuenia both outside and in the propagator but so far no sign of anything. In the drawings seeds are named as T.glomeratus + T.alexanderi from D & V. Rowlands

Kevin Lear.

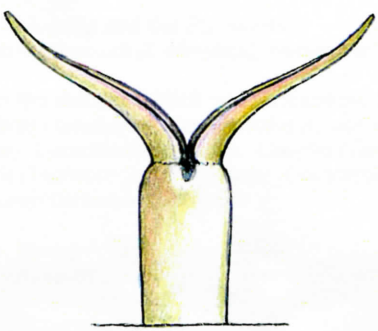
Maihueniopsis glomeratus from seed.



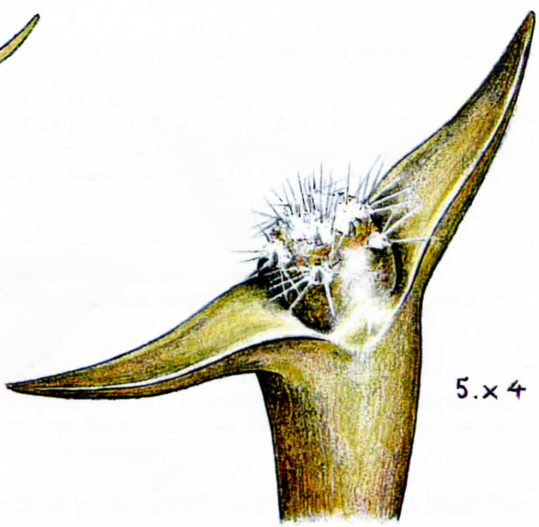
1.x6

2.x3

3.x6



4.x3

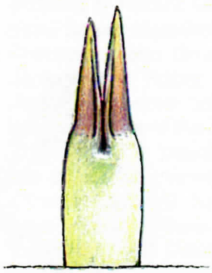


5.x4

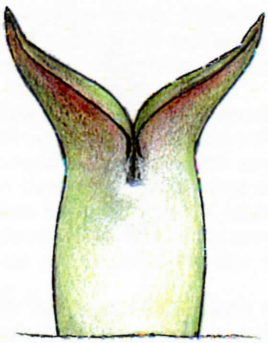
Kevin Lear

1. Seed. 2.seedling a few days old still with seed case. 3.discarded seed case. 4.seedling at 1 week. 5.seedling at 3 weeks.

Tephrocactus alexanderi from seed.

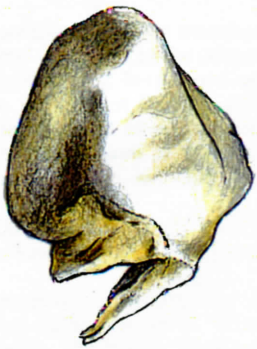


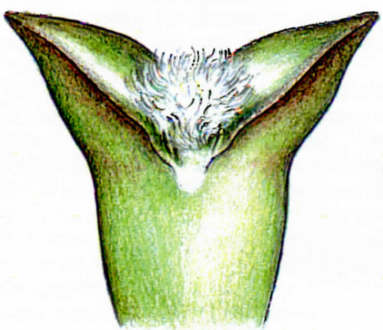
1. x 4



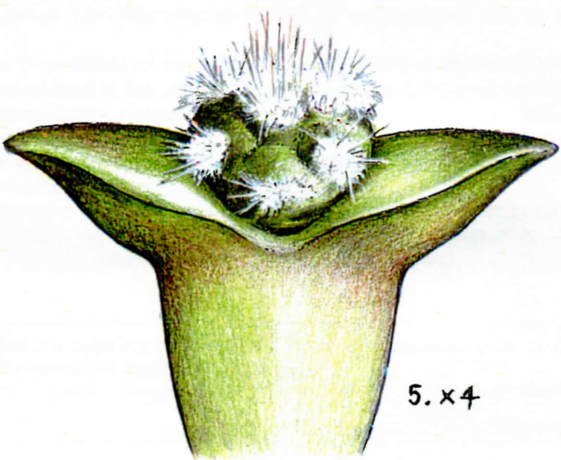
2. x 6

3. x 6





4. x 4



5. x 4

Kevin Lear

1. seedling right after dropping its seed case here the seed leaves remained unusually upright. 2. seedling at 3-4days. 3. discarded seed case. 4. at 2½ weeks. 5. at 5 weeks.

Each year Specs, Sociedad peruana de cactus y suculentas publishes a magazine, called 'Quepo', meaning glochid. I would like to give a short summary of the locations of Opuntias, given in this magazine (1992-1996).
I used the I.O.S. names (Cites, Cactaceae checklist) but have given the name used in the magazine between the brackets.

Lombardi G., 1995, Cactus de Moquegua y Tacna

Travel in Southern Peru, June '95

Quebrada de la Loca between 1.750 and 2.000 m:
Browningia candelaris, Haageocereus platinospinus (aff. pluriflorus), Neoraimondia arequipensis and *Opuntia sphaerica.*

Lombardi G., 1944, Expedicion al sur del Peru

Travel organised by the Desert Botanical Garden, Phoenix, Arizona together with the I.O.S.

Regio Quechuca : between 2.300 and 3.500 m
Corryocactus, Echinopsis (Lobivia), Opuntia (Tephrocactus), Oreocereus (Arequipa) and *Weberbauerocereus*

Between Llegada and the Panameric
Neoporteria islayensis (f. aticensis), Haageocereus decumbens and *Opuntia sphaerica*

Between the vulcanos Misti and Pichupichu (2.700 and 3.400 m)
Corryocactus brevistylus, Corryocactus aureus (Erdisia meyenii), Echinopsis pamparuizii (Lobivia mistiensis), Loxanthocereus spec., Opuntia (Tephrocactus) ignescens (with photograph), *Opuntia sphaerica (Tephrocactus dimorphus), Oreocereus hempelianus (Arequipa erectocylindrica)* and *Weberbauerocereus weberbaueri.*

Between Mollendo and Arequipa at 780 m (km 40)
Cleistocactus (Loxanthocereus) sextonianus, Corryocactus brachypetalus, Echinopsis (Weberbauerocereus) cephalomacrostibas, Haageocereus australis, Neoporteria islayensis, and *Opuntia (Tephrocactus) sphaerica*

Santa Rosa de Quives (1.300-1.400 m) and Quebrada de Tinajas (1.000-2.000 m)
Armatocereus matucanensis, Cleistocactus (Loxanthocereus) acanthurus, Espostoa melanostele, Haageocereus limensis (acranthus), Haagespostoa (Neobinghamia) climaxantha (var. lurinensis), Mila nealeana, Melocactus peruvianus and *Opuntia pachypa.*

Guillermo Madico Leon, 1992, Cactus y suculents del callejon de Huaylas

Travel July '92.
Armatacereus mataranus (var. ancashensis), Cleistocactus (Clistanthocereus) fieldianus, Loxanthocereus sulcifer (L. granditesselatus and *L. sulcifer), Echinopsis (Trichocereus) santaensis, Espostoa nana, Matucana blancii (yanganucensis), Mila caespitosa (pugionifera), Opuntia floccosa (Tephrocactus crispicrinitus), (Austrocylindr)opuntia subulata (exaltada)* and *Opuntia (Tephrocactus) puntia caillan.*
Euphorbia weberbaueri, Peperomia nivalis, P. macrorhiza, Villadia spec., Tillandsia spec., Puya spec.

Soldevilla F., 1996, Cactus del Nororiente del Peru

Jaen
Browningia chlorocarpa, Opuntia quitensis (macbridei) and *Pereskia humboldtii*

C. Ostolaba, 1996, Cactus de Churin y Ancash

Sayan at 960 m - *Espostoa melanostele, Haageocereus multangularis (pseudomelanostele var. dichromus)* and *Opuntia sphaerica.*

Sayan at 1330 m - *Armatocereus procerus, Espostoa melanostele, Haageocereus limensis (acranthus var. achaetus), Haageocereus multangularis (pseudomelanostele var. dichromus), Melocactus peruvianus, Mila nealeana, Neoraimondia arequipensis (var. roseiflora)* and *Opuntia tunicata*

Sayan at 1840 m - *Armatocereus matucanensis, Echinopsis peruvianus, Haageocereus limensis (acranthus var. achaetus), Espostoa melanostele, Mila nealeana (M. churinensis), Opuntia pubescens* and *Opuntia tunicata*

Around Conococha (3.900 m) - *Opuntia floccosa (Tephrocactus crispicrinitus), Opuntia punta caillan* and *Oroya borchersii*

Around Caraz - *Armatocereus mataranus (var. ancashensis), Cleistocactus fieldianus, Espostoa nana, Mila caespitosa (pugionifera), Loxanthocereus sulcifer (L. granditesselatus)* and *Opuntia subulata (exaltata). Furcraea andina, Euphorbia weberbaueri*

Callejon de Conchucos - *Opuntia floccosa*
Around Huaraz at 3.400 m - *Opuntia subulata (exaltada)*
Huaraz - Punta Callan - *Matucana blancii (M. yanganucensis), Opuntia floccosa* and *Oroya borchersii (var. fuscata)*

Valley of the Rio Chillon - *Cleistocactus acanthurus (var. faustianus), Espostoa melanostele, Haageocereuslimensis (acranthus), Haageocereus multangularis (pseudomelanostele var. aureispinus), Melocactus peruvianus, Mila nealeana, Neoraimondia arequipensis (var. roseiflora)* and *Opuntia pachypa.*

G. Lombardi, 1996, Cactus y Suculentas de Ecuador In Ecuador one can find 18 endimic cacti (8 Opuntias)

Ecuador continental
O. aequatorialis : Pitishi, Chimborazo (hybride I.O.S.)
O. bakeri : Guayllabamba, Pichincha, at 2.100 m (hybride according to the I.O.S.)
O. soederstromiana : nordliche Sierra (Chimborazo); San antonio and Pomasqui (Pichincha).

Ecuador : Galapagos
Opuntia echios : from 100 to 200 m
5 Varietäten : *barringtonensis, echios, gigantea, inermis,* and *zacana*
Opuntia megasperma : up to 200 m
3 Varietäten : *megasperma, mesophytica* and *orientalis*
Opuntia galapageia : up to 100 m
3 Varietäten : *galapageia, macrocarpa* and *profusa*
Opuntia insularis : between 100 and 400 m
Opuntia saxicola : at 100 m, on Isla Isabella up to 1.500 m
Opuntia helleri : up to 120 m

Other Opuntias
Opuntia cylindrica : Sierra to Northern Peru
Opuntia stricta (O. dillenii) : from Mexico to South-America
Opuntia ficus-indica : widely distributed ('Tuna')
Opuntia pubescens : from Mexico to Argentina
Opuntia quitensis : Sierra to Northern Peru
Opuntia subulata : Sierra (Peru)
Opuntia tunicata : from Mexico to South-America

Joost Van de Steen

The Beginner

I would like to consider my self as general plants man with a tendency to grow unusual plants. My main interest is researching and growing Adansonia. But that is for another day. I have several cacti and a large selection of succulents. In the main cacti look good for several weeks of the year where as Tephrocactus and related genera are worth looking at all the year round. With new pads being added and the splendid unusual spines enhances the flowers. My main requirement was cold hardy cacti that are interesting all the year- round with excellent flowering and so commenced my growing of these wonderful plants.
My collection of plants consists of:-

Airampoa Erectoclada	WG 063	Puna subterrana	WG 233
Austrocylindropuntia verschaffeltii	WG 007	Pterocactus kunzei	WG 085
Maihueniopsis alboareolata	WG 077	Pterocactus kunzei	WG 379
Maiheueniopsis glomerata	WG 099	Tephrocactus articulatus v calvis	WG 160
Maiheueniopsis glomerata v. fulvispina	WG 216	T. articulatus v inermis	———
Maihueniopsis kleinoides	WG 247	T. articulatus v oligacanthus	WG 162
Maihueniopsis pentlandii	WG 155	T. articulatus v papyracanthus	WG 080
Maihueniopsis dactilifera	WG 183	T. sphaericus	WG 104
Maihueniopsis flexispina	WG 244	T. weberi (white spines)	

Potting medium

Over a number of years growing various plants I have experimented with different types of growing mediums. At present I am using grit for all plants that do not require a humus base. This comprises of three grades of , two sizes of pea grit (the type used in fish tanks, natural colour) and Cornish grit these are mixed in equal parts. I also use charcoal at the bottom of the container, primarily to prevent loss of grit through the drainage holes but also to keep the container sweet.

Incidentally I leave the old compost around the roots of plants when I transplant them so as not to disturb the root system and using the grit the plants do not require annual potting unless the plant has out grown the pot. I find this system has a number of advantages :-

1) The compost does not compact.
2) It gives better root development.
3) Lack of root pests.
4) Total control of the amount of feed given to the plant, with no lasting residue.

To be Continued Next Issue

Ed Fletcher

2 year old cutting of
Tephrocactus paediophilus

Tony Higuera

TEPHROCACTUS

Incl. Maihuniopsis, Puna And related genera

STUDY GROUP

Vol. 3 No.4 December 1997

The Secretary's Page

First of all I would like to say a warm welcome to all the new members who have joined us during this year 1997 and hope that you will enjoy learning more about our common subjects.

With this month issue comes some rather disturbing news of our Treasurer, who has fallen 15ft off the roof onto concrete, broken several limbs, and has severe head injuries. As I write this he is on life support and gravely ill. I am sure you will join me in wishing him an early recovery!

We have not been able to get all his document yet, but according to my records,

every one's subscription for 1998 will be due on the 1st January 1998!!!

Those who have already paid their subs. For 1998 are as follows:

Les Hewiff,	Dorothy Minors	Dawn Nelson
Eric Pounder	Ian Robinson	Mal Weobley

For all other members, please make sure your subscription are paid promptly!!!

> Subscription remains the same for 1998 at £10.00 and should be sent to me: W.G. Geissler, Cheques to be made out to **"The Tephrocactus Study Group"**

Tony Higuera, our Editor also had a long spell of illness, which delayed our previous issue, but he assures me that he is now on the mend. We need to remember that all officers of the Study Group perform their duties voluntarily and sometimes such delays are inevitable. We thank them for all their efforts!

Important!!!

We urgently need your experiences, reports and photographs! Questions too are welcome and some one will try to answer them I am sure!

And as this is my page, I must tell you a little story.- I used to know a scholar of Botany who was in the process of writing a book on a large and very popular group of cacti. We met at a meeting fifteen or more years ago when he told me that it was almost complete. Only a few amendments had to be made here and there and a chapter rewritten. That became the phrase he told me successive years we met, until three or for years ago it was when he told me that finally it was with the printers, although there was still a passage or two he had to bring up to date. I was delighted naturally, because I was eager to read this wonderful work of his at last, but he always wanted his work absolutely correct and was afraid others might castigate him for some imperfections. A year later he sadly died and the book was never published. Now we will never be able to enjoy and read his life's work.
This is a very true and sad story and it has a moral. Don't ever wait until you are old and full of the wisdom and perfection. Only those who never say or do anything, never make mistakes! !!

Please don't be affright to pass on to others the little wisdom you may have! Our Open-Day last August was enjoyed by all those who attended and we are planing to hold another here at here again at Slimbridge, at the Village Hall, please make a note of the date in your diary now:

Open-Day Sunday August the 2. August 1998

Now it only remains for me to wish every one of you:

"A very Happy New Year in 1998"

Rene

New Publications

K.Gilmer & H-P. Thomas, *"Zusammenfassung der Beobachtungen über Fundortbedingungen und kultuerfahrungen bei der Gattung Tephrocactus"* (in German).
Published by the authors as a second edition, in A4 format.
DM53.00 Soft back. 45 pages, 34 colour illustrations & distribution map.

With a dearth of informative, published material on the genus Tephrocactus it is refreshing to see that these two intrepid visitors to habitat in Argentina have made this gallant effort. This is a very descriptive account of all the true species of Tephrocacti *(sensu Lemaire)* found in Argentina. There are seven section, dealing from species-definition, habitat, synonyms, to a large section on cultivation.
The habitat photographs are superb and show the variation in forms, spination and terrain in which the plants grow. Each species is illustrated clearly and at the same time indicating the manitude of and forms. There is also a considerable amount of information on cultivation and basic requirements for the plants.

One of the most interesting feature is the comparison table which shows clearly the comparison of thought of these two authors, with the previously well known authors such as Backeberg, Ritter, Kiesling. Klaus Gilmer & Hans Peter Thomas support the view that only five basic species of Tephrocactus exist and in describing the similarities in characteristics and distribution, try to show that a number of previously described species are no more than varieties at best, or just simply forms. For instance: most of the many previously described varieties of T. articulatus, are here regarded as just forms within the populations of "articulatus". T. geometricus is also regarded as a variety, or form of T. alexanderi.
For some one who is really interested in the study of Tephrocacti and able to understand German, this publication is a varitable mine of information. I understand a further edition is planed in modified form by the German Cactus & Succulent Society (DKG) in "Schumannia", which is the equivelant of our "Bradleya".

Rene Geissler

Update on Growing from Seed - vol.2 no.4 p.135

All surviving seedlings were potted up into individual 2" sq. pots in the spring and all have grown well this year - most have doubled in size. Pots where no germination had taken place continued to be watered but no more germination took place. I did however have a total of five seedlings come up this year in pots where there was already a plant. My guess is that the additional moisture level held by the host plant facilitates germination. On this performance however, I do not see any great benefit to keeping seeds for more than one year but someone else may prove me wrong. For the record the plants that came up this year were: M.glomerata (2),T.articulatus, T.aoroacanthus & A.rauhii.
I have passed a selection of duplicate seedlings to Rene for his National Collection as he obviously needs documented plants but as my plants grow I hope to be able to make cuttings available to other members. This may not be necessary of course, as I am sure that you are all growing from seed by now !!

Comments on vol.3 no.3

Maihueniopsis molfinoi p.18S
I cannot add much to this debate except to say that my own plant (vol.3,1 p.183) was bought with the label T.pentlandii v. fauxianus but from an unreliable source. On consultation with Rene I changed the name to rossianus. I have a plant labelled as pentlandii obtained from K&C Cacti which I believe to be a "good" variety - it is like a small bolivianus or dactiliferus but quite different from "rossianus" I have never seen a plant with the name molfinoi. This would make a good group for our next one day meeting.

Seeds p.193
The address of Mesa Gardens is: Mesa Garden, P0 Box 72, Belen, New Mexico 87002, USA. Tel: (505)464-3131 (remember the time difference - I didn't!)

Martyn Collinson

Tephrocactus Berteri (For The Last Time?)

At the August meeting I gave a talk on the sphaericus group of Tephrocacti (sensu Backeberg) and started with an attempt to kill the idea of there being such a species as Tephrocactus berteri. I covered some of the material that I mentioned in TSG Volume 1, No.2. Page 3 and some will therefore be repeated in this article.

In 1833 Luigie Colla published some names for cacti collected by his friend Carlos Bertero in Chile. One was Cactus berteri. An illustration and description was given. In 1956 Backeberg published some new names of Tephrocacti and in 1958 Ritter rebutted some of these claiming they were examples of Cactus berteri which in fact should now be known as Tephrocactus berteri. Ritter based this on his recognition of Opuntioide features of the plant published by Colla. Thus, if you agree with Ritter, then there is a Tephrocactus berteri. If you do not then Cactus berteri is some other plant. When Tom Jenkins went to Chile in the 1980s he followed the Ritter naming of plants hence his initial field list showed TJ 16 as T. berteri. Progeny of his collection therefore came into circulation under that name.

Bertero or Colla, writing about the plant, said that it was difficult to see the arrangement of the tubercies due to the dense spination. Britton and Rose stated the name Cactus berteri was a synonym of Neoporteria subgibbosa with which Kattermann (who has written a recent book on Neoporteria / Eriosyce) agrees. R.Crook and R.Mottram have given an outline of the various name changes and state "The poor first description and illustration is easily misidentifiable, but most authors now agree that this taxon is Eriosyce subgibbosa (Haworth) Kattermann". J.Iliff has said that he has studied the description of Cactus berteri and does not think it is an Opuntia.

When I gave an outline of the above to the people at the August meeting I also added my opinion that the illustration did not look to me like an Opuntia. To me the plate showed a single body with the start of a tap root at the bottom, an area showing tuberdes stripped of spines (which easily happens with Neoporteria), a growth mark causing the body to go in (and perhaps give the impression of two segments) and finally very dense spination on the upper area which did not look Opuntioide. In my opinion the plant looked like a Neoporteria. However there was some disagreement with me about this. It was stated that the dense spination could be due to it growing in habitat where spination is generally much stronger than in cultivation and that, as it was a drawing, one needed to know how good was the artist and that it would be helpful to compare the drawing to other examples of his / her work.

Since the August meeting there has been an issue of The Chileans magazine and in it there is an article on Cactus berteri. None of the commentators try to make a case for it being a Tephrocactus. R.Ferryman, who has been to Chile many times and is a recognised authority on it's cacti, equates Cactus berteri to Neoporteria subgibbosa (for a number of reasons) and points out that the original collecting location for Cactus berteri (near Valparaiso) is where Neoporteria subgibbosa grows near Neoporteria horridus. Cactus berteri and Cactus horridus were reported to grow together. R. Ferryman points out that no Tephrocactus is found growing near Neoporteria subgibbosa and Neoporteria horridus. Tephrocacti grow further inland. Thus Cactus berteri cannot be a Tephrocactus.

If Tephrocactus berteri does not exist (although the name was validly published by Ritter) what is the name of the Tephrocactus being distributed under that name ie: what is TJ 16? The Chileans Supplementary Field List Compendium shows TJ 16 as Tephrocactus dimorphus. Ritter in Kakteen in Sudamerika gives the following as synonyms of "Cumulopuntia berteri (Colla) Ritter comb. nov. Tephrocactus berteri (Colla) Ritt. 1958, Cactus berteri Colla 1833, Echinocactus berteri (Colla) Remy 1847, Opuntia sphaerica Foerst. 1861, Tephrocactus sphaericus (Foerst.) Backbg. 1935, Tephrocactus. sphaericus v. glaucinus (Foerst.) Backbg. 1963, Opuntia campestris Br. & R. 1919, Opuntia leucophaea Phil. 1891, Opuntia corotilla K. Sch. in Vpl. 1913, non Tephroc. corotilla Backbg., Tephrocactus dimorphus sensu Backbg. 1942, non Opuntia dimorphus Foerst. 1861, Tephrocactus pseudorauppianus Backbg. 1935, Tephrdcactus dimorphus sensu Backbg. v. pseudorauppianus (]3ackbg.) Backbg. 1958.

If Ritter is wrong in his observation that Cactus berteri is an Opuntia but correct in his observation that all the above quoted names (except berteri) refer to the same taxon then the species name to use is the one which has priority. Sphaerica is the oldest and therefore TJ 16 is an example of Tephrocactus sphaericus (Foerst.) Backbg. However, if Ritter was wrong to lump all these names together that could open up a totally new discussion on what name replaces berteri. Adriana Hoffinann accepted Ritter's lumping of the species names under berteri but published a new name of Opuntia berteri (Colla) A.Hoffinan comb.nov. in her book on Chilean cacti. This raises another new discussion but not on "berteri". A certain member of our group has said to me several times that he is not sure that the sphaericus group are Tephrocacti!

Written Description:

C.Berteri Nob. Ovate, sub cylindrical, rounded at the apex, unbranched at the base, with small dark green compressed ovate tuberdes very close together, lacking hair, very spiny at the apex, spines twice the length of the tuberde, whitish, becoming blackish, 2-5 upper ones upright radiating, rigid, the others flexible.

Literature cited:

Memorie della Reale Accademia delle Science di Torino. 37: 77, t. 17, fig.2. 1834, preprinted May 1833. The Cactaceae. Britton and Rose. 3: 97/98.1920., Bradleya 13/1995. Opuntia Index. R.Crook and R.Mottram. P.112. Kakteen in Sudamerika. Ritter. 3:885.1980. The Chileans. Vol 16 No 54 P146. 1997 The Chileans Compendium of Field Number Lists First Supplement 1994. Cactaceas En la flora silvestre de Chile. A.E.Hofflnann J. P.244.1989.

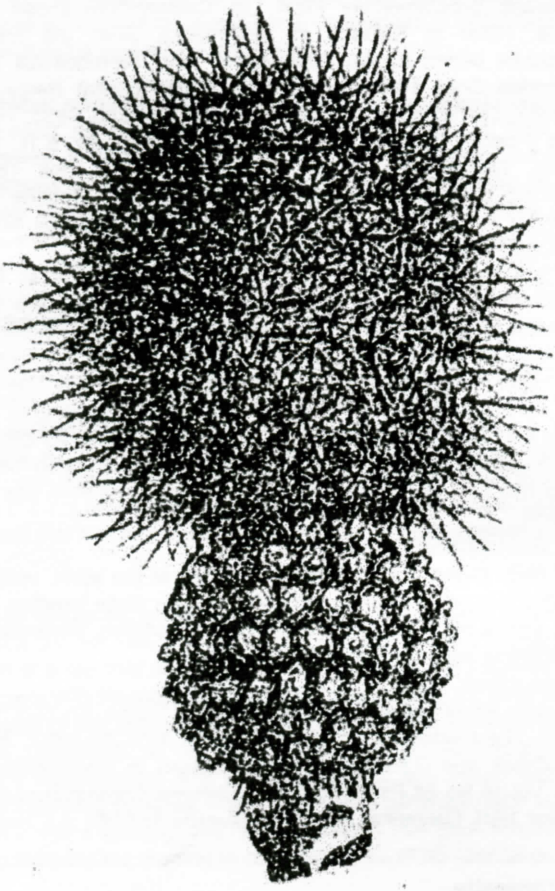
A.Hill.

Jules Bouquette

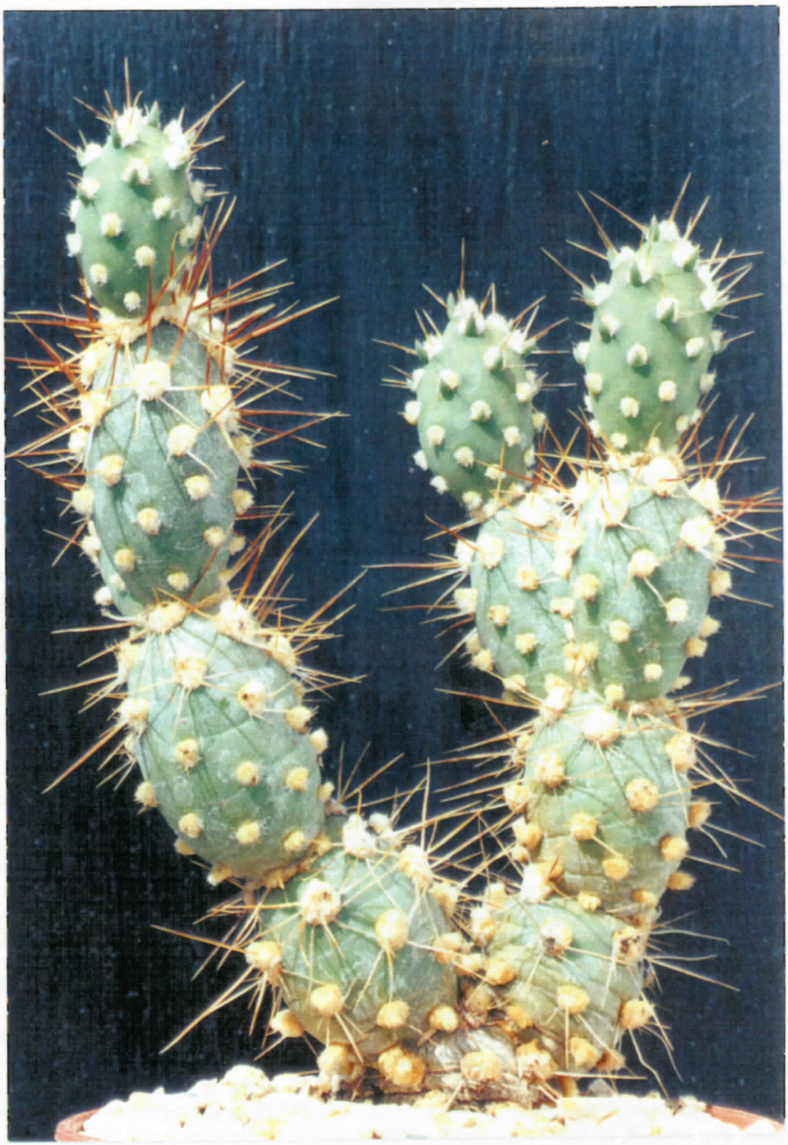
We have received a letter from Jules. In this he says that he likes the Journal. (Anyone saying that is obviously a good bloke). He also says that his English is no good so that he cannot write for us but that he does take a lot of slides (dias). He has enclosed thirteen of these which we hope to publish in future issues. They represent the start of his photographic efforts which he wants to continue. In particular he wants to photograph the collection of Elk Blankenberge, in Belgium, and to make 'macros' of segments, areoles, glochids, spines and many of the other differences between species, forms and varieties. He is a member of the German group and, next year, will be going to the meeting at Bad Hersfeld in June. This will be an opportunity to visit his German friends' collections, get more pictures and, perhaps, exchange a few cuttings. He is interested in Tephro's and Maihueniopsis only, and searches for different forms of these. Finally he mentions two other growers with large collections, a Mr. Hillman in Swizerland and Mr. Hakan Sonnermo in Sweden.

From Jules bouquette typed by W.L.Jackson.

Fig: II



Cactus Boliui A.



Cumulopuntia berteri (Colla) Ritter . WG 221.

DISCUSSION AT THE ONE DAY MEETING AUGUST 1997.

The agreed topic for discussion was the Tephrocactus sphaericus group. We began with the attempt, already outlined, to kill the idea of an actual plant named Tephrocactus berteri. Then plants were placed out on the lawn and path to represent roughly were they would be in relation to each other in habitat. Thus three plants of T. kuelmrichianus (WG 103, one ex KK and one ex Kuhas BB 91/287) were placed on the path away from the house in an area to represent Peru. Two plants labelled T. mirus (ex T.Johnson/collected KK and one ex G.Charles KK 764) were placed near them. Then two examples of T. sphaericus collected by R.Hughes (RKH *85* from Torata, Moqueque and RKH 133 from Colca, Cruz del Condor) were placed in "southern Peru" nearer the house, followed by the ISI T. dimorphus, a C. Hall T. dimorphus (CJH 324), a T. dimorphus V. pseudorauppianus from K. Gilmer and then several examples of TJ 16 "T.berteri" placed " where they were found" in an area representing further south in Chile, plus examples of the same (axon collected by R. Morton.

The relationship between the plants was immediately obvious although, as one member remarked they were all small plants. Apart from the larger and rounder segmented T. kuelinrichianus all the others looked similar. This pointed to Ritter's attempt to lump most of them together being accurate. One could also see why A. Hoffmann stated that "Opuntia berteri (Colla) A. Hoffmann comb nov." has a wide range from sea level to about 3,500m in the mountains and stretches from latitude 33 degrees South in Chile to 16 degrees South in Peru, thus there being millions of plants. Bertero must have collected his plant at about the most southerly point of the range of the species. Tom Jenkins collected his plants at about 30 degrees South. Other personally known recent visitors to Chile have reported unbroken distribution of the plant in the areas that they have travelled (although no one claims to have covered all the length of the distribution). Roger Morton reported to the group that he had noticed there appeared to be an increase in the size of the segments as he travelled from Illapel in Chile to Combarbala (an area about 31.5 degrees South). Just how this observation on a relatively small area can be fitted into the context of the whole population remains to be seen. Ritter said that T. mirus was a synonym of T. kuehnrichianus. The T. mirus examples at our meeting had larger segments than the others in the range but looked like large sphaericas with the typical segment shape although the spination was different from the plants to the south and to the rounder segmented T. kuehnrichianus. The overall impression one could gain from the plants on display was summed up by someone who said that there was an apparent cline from the extreme south of the range in Chile to the north in Peru, with the rounder segmented T. kuehnrichianus then replacing the spherical shape. Unfortunately rain and time for lunch curtailed discussion and photography.

A plant which looked similar to a sphaericus form was examined. The given provenance of the plant was ex Graham Charles, ex Woody Minich (USA), ex habitat collected by Kiesling (Argentine) from Neuquen, Argentina. The plant raised a number of questions. The taxon whose distribution area covers both Chile, between approximately latitudes 30 and 33 degrees South, and the Argentine is reported to be T. ovatus. A. Hoffmann reports it growing in Chile from 2,OOOm to 4,OOOm in the distribution area. In this area there are at least two passes below 4,OOOm leading to the Argentine. The plant being examined could be said to have some similarities with A. Hoffmann's drawn illustration of T. ovatus, so could it be that species? However, the collection site of Neuquen is further south than is reported for T. ovatus in the Argentine and the plant looked to be a sphaerica form. Could Kiesling really have collected it in Neuquen? The question then was how reliable was the provenance? Since the meeting I have discussed the plant with Graham. He says that he has had a number of negative comments about the plant, that the plant is obviously a sphaericus and so he has now labelled it as such, dropping the attribution to Kiesling. Graham says that Kiesling did collect a plant in Neuquen but Woody must have mixed up his labels and thus misled Graham over the source of Graham's plant. This is probably the case, as was suspected, but we cannot be absolutely sure until we find out what was the plant that Kiesling collected. The episode illustrates the problems of identification even with plants with a stated provenance.

Literature. Cactaceas en la flora silvestre de Chile A. E. Hoffmann J. 1989 Kakteen in Sudamerika. Ritter 3:885 & 4:1253/4 1980

A.Hill.

COMMENTS ON VOLUME 3 NUMBER 3.

Circumscription of the Study Group P187.
I have no desire at the moment to propose a definitive limit to the scope of our discussion but offer a few observations. When we began our discussions we had three recent authorities to whom we could refer: the outline of Tephrocacti sensu Backeberg, the ideas of Riffer and the work of Kiesling. This has resulted in our discussing plants which have been accepted as Tephrocacti but are now regarded, at least by some of us, as Austrocylindropuntia. I see no reason why we should not continue to discuss these interesting plants as I am sure that most of us will continue to grow them. Information on. their close relatives such as 0 subulata and 0. vestita should be welcomed. I see no contradiction in this just as I see no reason why airampoae should not be mentioned. The latter are often mistaken for Tephrocacti and some knowledge of them is useful in furtherance of our main topic of study. Whether we should change our name is a matter for discussion. The purists might argue that we should become The Tephrocactus (sensu Backeberg) Study Group or stop considering plants which are by some referred to as Maihueniopsis or Puna. My inclination is to leave the name as it stands as it makes sense to most cactophiles and gives them an idea of our purpose. To change to "Small South American Opuntia Study Group" or some similar name opens the door to reference to the larger padded Opuntias and will inevitably create more problems of delineation e.g.: how small is small?

I agree with Roy about Maihuenia but I think Rene only put in the article because we were short of copy and the plant is an interesting one. There has been a suggestion that we should include Pterocactus in our studies. The reason given was because the proposer was interested in them. So am I but this is not a good enough reason to start discussing them. However, Pterocacti are often confused with Tephrocacti so on those grounds I see no reason why they should not be mentioned. The same case can be made for Austrocacti although they are not Opuntias. To sum up I think we should continue to have the main concentration on Tephrocacti sensu Backeberg but be not too tight on delineation. I would of course be against us becoming too broad in the range of plants featured in our publication. I hope there will be many comments on this topic so that the feelings of the membership can be gauged.

Maihueniopsis molfinoi P173.
The simple short answer to Rene's query about the name of the plant in the photograph on P188 is that it is Tephrocactus pentlandn v. fauxianus (13ackeberg). There is some doubt as to the identity of the actual plant that Pentland found and for which Salm Dyck erected the name. Backeberg identified a plant as T. pentlandii and then linked two varieties to it. One was v. rossianus (Heinr & Backbg). The other was v. fauxianus (Backbg). Whether Backeberg identified the correct plant as pentlandii and whether rossianus and fauxianus are related to it and to each other is immaterial to this part of the answer. Backeberg erected the names (although Kiesling states v. rossianus is invalid due to lack of stating a type) and as long as one attributes the name to Backeberg when naming the plant that is a correct name for the plant i.e.: it is Backeberg's Tephrocactus pentlandii v. fauxianus.

However, Backeberg might have been wrong with his version of pentlandii (at some time we must discuss this) and thus also his name of T. pentlandii v. fauxianus. I have not been happy with Backeberg's identification of pentlandii and then found that Ritter was of the same opinion as me. Ritter erected a comb. nov. Cumulopuntia rossiana (Heinr. & Backbg) Ritter although Kiesling states that this is also illegitimate. Ritter mentioned fauxiana in his book but apparently considered there was need of more fieldwork research before making it a variety of rossiana. I know of no legally erected Tephrocactus rossianus v. fauxianus although it would make sense to me. Does anyone have information on this? I know of no suggestion that the pictured plant is pentlandii.

The attribution of the name Maihueniopsis molfinoi to the plant is, to me, mistaken for reasons I have stated previously (TSG Vol.3 No.2 P174). Spegazzini found a plant he named Maihueniopsis molfinoi (Speg). I am unconvinced that there is a specimen of M. molfinoi (Speg) in cultivation although there might be labels with that name on them. The name molfinoi is not invalid but should not be attributed to the plant on P 188. As for Ritter writing that "all segments are united at the base" I might be accused of arguing on semantic grounds but one must do so if one is trying to identify a plant from a description. If the segments of a plant were not united at the base then they would all fall off They are "attached" at the base to the previous segment or root. M. molfinoi (Speg) is said to have segments where the body of the segment itself is branching. The latter is a feature I have not observed on a rossianus or fauxianus plant although I have seen it on one of my Tephrocacti which shows the feature on one segment. In Backeberg's Lexicon P661 there is an illustration of the drawings by Spegazzini of M. molflioi. The cut cross section of a segment shows four branches. Also note the spination does not fit a rossianus type plant as the spines are more upright.

The statement that "according to Kiesling, the plant belongs to the "glomerata group"." apparently presupposes that the plant in the picture is M. molfinoi. Kiesling went further than attributing "M. molfinoi" to the glomeratus group. He stated that M. molfinoi Speg. is a synonym (just another later name) for M. glomerata. The latter name therefore has precedence. By making Molfinoi a synonym Kiesling in fact is saying that in his opinion molfinoi does not exist as an actual species. He mentions Cumulopuntia rossiana (Heinr. & Backbg.) Ritter under "species not included in his classification". I cannot find a reference by him to "fauxiana".

Has the text on P189 been misplaced? Kiesling did not attribute any of the plants mentioned on P188 to the M. minuta group as is stated on P189 but did so for the plants pictured on P191 and P192. Also Backeberg reported T. mandragora as being originally collected by Fric. I presume, therefore, that the text on P189 should appear on P193.

Maihueniopsis mandragora P191/2.
Rather than just two separate clones, as mentioned in the text, I believe that the two photographs show two separate species according to Backeberg. The plant on P191 is Tephrocactus minutus (Backbg) although it is often seen labelled as T. mandragora. The plant on P192 is T. mandragora (]3ackbg). The two plants fit the description in Backeberg's Lexicon. Amongst the photographs a number of us purchased in 1995 there were three relating to the plants illustrated on P191/192. These were WG 190 listed as russellii, 230 listed as mandragora and 231 listed as mistiensis. On P 151 of the TSG Vol 2 No 4 I stated that "although Kiesling made mandragora a synonym of minuta (Darwiniana 25 (1-4)1984 P204) I prefer to keep them apart as I have two very distinct forms. I would classify these prints as M. minuta."I still prefer to retain the distinction. There is a different form of growth in that cuttings of minutus have sent out many very small segments (hence the name?) which with age will develop into larger segments whilst the mandragora appear to develop the adult size segments more quickly. However, the main difference is the colour of the epidermis with the mandragora having the blue/green body described by Backeberg whilst minutus is much darker green with the reddening round the areoles again as described by Backeberg. Backeberg gives Northern Argentina as the location for both species but gives a more specific location of Los Andes for minutus. There is no doubt that the two are closely related but until evidence of field studies show that they are growing as an integrated population then I prefer to keep them apart.

In any case it is easier to follow Backeberg than having to say "The Maihueniopsis minuta with the blue body" (meaning mandragora) if one follows Kiesling. I accept that one could be simply a form of the other. Ritter changed Tephrocactus mandragora Backbg into Maihueniopsis mandragora (Backbg) Rin. comb nov. (mentioning the blue green body and giving Puerta Tastil, Province Salta as a location) and gave T. heteracanthus Ritt. nom nud. as a synonym. He did not give T. minutus Backbg as a synonym. Nor, however, did he create Maihueniopsis minuta in its own right. I find it difficult to understand what Ritter wrote about Tephrocactus minutus on P383, 398 and 489 and I would be grateful if someone can translate it for me. To summarise on the names: two separate Tephrocactus species according to Backeberg, both M. minuta according to Kiesling and only M. mandragora classified by Ritter.

As already stated Kiesling does not differentiate between "minuta" and "mandragora", but he does give more information on the distribution. He states the species is found in Jujuy and Salta, at an altitude of 2,500 - 3,OOOm. Besides the locality of the neotype it is also observed in the Quebrada Grande de Tumbaya (Dept Tumbaya, Jujuy) and in Puerta Tastil (Dept R. de Lerma, Salta) the locality originally known as the "territory of Los Andes".

Drawings from seed P193.

The address of Mesa Gardens is P.O. Box 72, Belen, New Mexico, 87002, USA. Whilst one can deal direct with Mesa Gardens it is much easier to contact their representative in England who is David Rushforth, 10, Grinstead Close, Hillside, Southport, PR8 4RP who can supply their plant and seed list and take orders.

Species List P196.

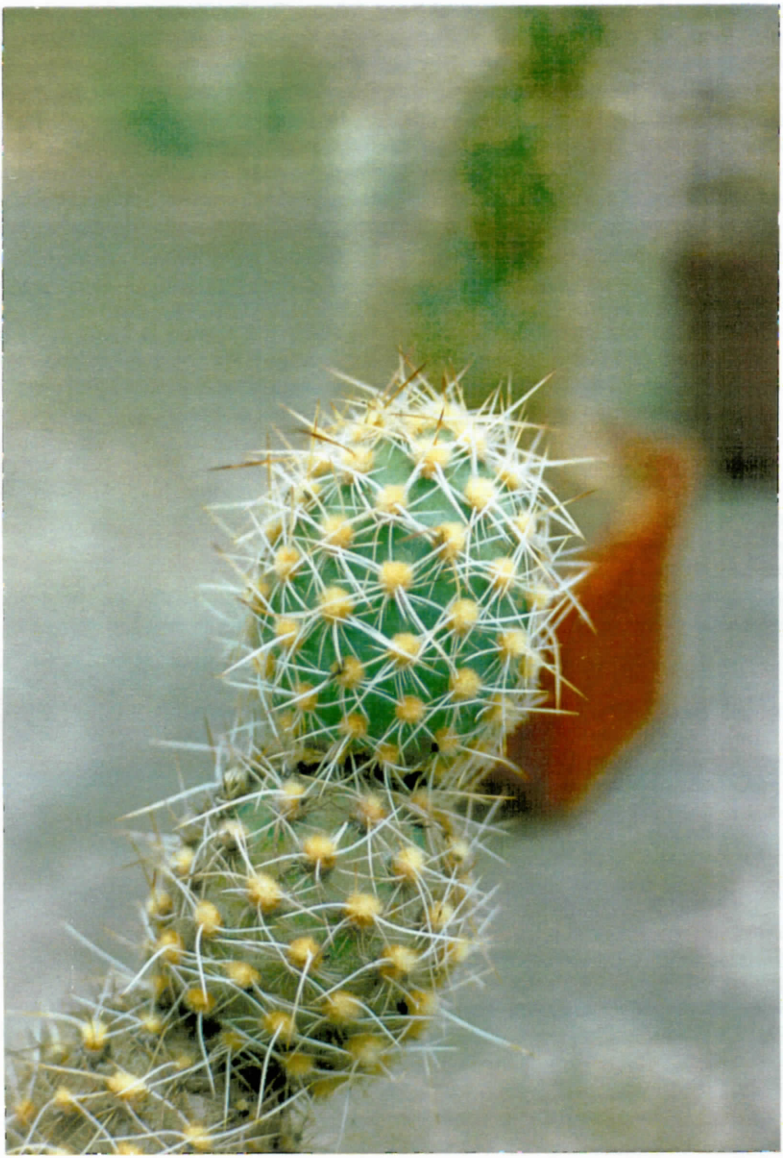
I am very grateful to Joost for supplying the field data. The more of this we can collect the more we can understand the distribution of the plants and their relationship to each other.

A. Hill.

On the 10th July 1996 a friend in Sussex Gave me a cutting of a plant called Decepiens, this was placed in a mixture of 50/50 fine sand and peat. By the 15th August it had rooted well and was potted on . some time after this I noticed that the top of the plant seemed to be lifting up, it was then obvious that this was in fact a seed pod. There were three disc like seeds, I saved the seeds in a film pot until the spring 1997, Placing them on a pot of compost and lightly covering them with fine grit. One seed germinated and now is about 1.5 inches high.

The photo was taken on the 16th October 1996 Rob Seward

I now have a new address which is:-
Cwmbologue Farmhouse, Dulas,
Longtown,
Hereford HR2 0HW 01873 860676



Tephrocactus mirus KK collected

The Photographs were taken at the one day meeting 3/2/97
the names under the photographs are as the plant labels
Tony Higuera

Tephrocactus kuehnrichianus KK

Tephrocactus mirus KK 764(H)

Tephrocactus mirus KK collected

Tephrocactus sphericus

Tephrocactus kuehnrichianus WG 103

Tephrocactus kuehnrichianus BB 9/281 Kuhas, Peru

Container

The size of container will vary with the size of plant. Slight underpotting is best for plant growth. Using my grit medium, described in the last issue, plastic presents no problems in water logging and aeration is excellent. I prefer black containers for two reasons...

(1) The colour enhances the aesthetic qualities of the plant.

(2) Black absorbs heat from the grit medium which is most beneficial for the root system and, using grit, the roots will not overheat. (I believe that the same principle is invoked by Arabs wearing black, their bodies remain cooler than with other colours.)

Watering

I have found rainwater best for my plants. This is collected from the garage roof and, in my area, is of good quality with a pH of 7 which is ideal. The problem with our tap water is the high concentration of calcium carbonate which raises the pH making the water alkaline. Used with soil based composts this can lead to rapid compaction, especially where the compost contains lime. Root developement and plant growth are reduced unless annual repotting takes place. In their natural habitat the plants we are studying grow in a mineral medium with very little calcium. This is born out by studying the geography of these areas.

Feed

I have also been experimenting with different types of feed with the best being a mineral type. The main requisite is low nitrogen, no higher than 4%. This is best supplied as equal parts of nitric and ammoniacal nitrogen. The beet I have has NPK equal to ~ and all the trace elements. This gives good growth translated into good body, spine colouration and excellent flowers. Feeding is done with every third watering because I believe that container grown plants are easily overfed, even using my grit medium. I prefer to grow them hard. This Autumn I will be using a 0-10-10 which will promote a strong root system for the winter and enhance flower output for next year.

Position

Having started to grow Tephrocactus and related genera this spring I made extensive enquiries. The conclusion seems to be that the best results are achieved by growing in a cold frame. Having only a small collection my frame is 4ft by 2ft. The plants containers stand on wooden slats which, in turn, stand an paving slabs. These are supported on a single layer of bricks. The slats allow free drainage ensuring that the plants remain completely dry throughout the winter. The frame is situated in an open aspect in which the plants receive maximum sunlight all day, when there is any.

Ventilation

Air movement around the plants is beneficial. The cold frame has sliding and lifting tops. Maximum ventilation is given during rainless days but reduced at night. This helps to reduce moisture build up on the plants during still air periods. Winter ventilation will be closely monitored.

Growth Pattern

Being my first year, I have no datum line to work from but, so far, the plants look very healthy with good body bulk and no tall spindly bits. New growth seems to be in fits and starts. Whether this is due to our present summer or is their natural growth habit will be monitored over the coming years. Body and spine colours are very sharp and shiny. Since the plants I purchased were very young there has been no flowering as yet but their various forms are already pleasing to the eye.

Pests and Diseases

To date the only pest damage encountered has been nibbling of some parts of the new growth on Pterocactus kunzei The culprits were earwigs. There have been no signs of root infestation. I attribute this to the use of the very open, sterile grit medium. One plant has succumbed to black, sooty mould. This was prior to getting the coldframe. Since then the rest of the plants are fine, presumably because of the improved ventilation. The coming winter will tell. They will be closely monitored.

Propagation

I have no experience of seed raising these plants but it has been earmarked for the future. I have tried various offsets with good results. I place them in single containers of the grit medium and keep them warm and moist. Rooting takes place within three weeks. During this time they are under growing lights along with some of my other succulents. Once roots are forming they are moved to the cold frame. So far there has been no top growth but a strong root system is forming.

Conclusion

Having grown these plants for a short time only I am impressed with their variety of forms and types. I look forward to their progress and will record my observations as they become older and bigger. That is, if they become older and bigger. Are they long lived? I would like to suggest that one aspect of our study should be to build a picture library of field grown plants contrasted with our cultivated specimens. But I guess that is what we are all doing already.

This was written by Ed. Fletcher and typed by W.L. Jackson

Seeds for sale or exchange

Maihuenia patagoensis - Field collected Argentina Mendoza - Malargue East of Los Molles 2000 Metres In gravel.
Maihuenia poeppigii - Field collected Chile Volcano Antuco 7000 feet 37.20s , 71.44w (GPS reading)
A primitive plant is slow growing, forming a low dense group of cylindrical stems with persistent leaves and strong white spines. It produces very large yellow starry flowers and pigeon - egg sized seed capsules. Seed is black, hard coated and with a long viability. Extremely hardy, will withstand
-20°c, and will take water throughout the winter. Though a dry atmosphere is preferred.
Ed. Fletcher , 17 Winton road, Hatherley, Cheltenham, Glos. GL51 5AX

Falling Joints

I really can not remember how many times I have been asked, why Tephrocactus articulatus forms have a habit of shedding their joints in the Autumn and Winter. I wish I knew the complete answer to this problem, but I have a few ideas that may throw a little more light on why it may happen. It is however to early to say whether it is the complete solution.

As far as we can ascertain from various accounts, T. articulatus forms add only one pad per growing season to previous years growth. In habitat we understand they have a relatively short growing period of 3 - 4 months, during which they receive a relatively liberal supply of rainfall. This is the time during which most of the growth takes place.

Here in cultivation, we do not follow this pattern closely enough, or it may be difficult to replicate. But if we observe the plants closely, they could well indicate when they wish to start into growth. The old joints from previous year may start to show signs of new activity at the tips. This is the time to begin watering and it may vary from season to season.

One grows has started, T. should never be allowed to dry out completely and water should be given liberally after the first couple of light waterings. Whether the offering of water is given from the to or from below seems to matter little, but in fact my plants appear to enjoy the overhead watering can, as long as the water given is adequate to keep the substrate moist at all times during the growing period.

So we could say that growth begins more or less at the beginning of May and the cycle ends after flowering in late August. During this period is were some hick-ups may occur. The soil may have dried out for longer periods, perhaps during an extended holiday, absent mindedness on our part. The plants may get the impression that the growing period is over (no more water) and go into the resting phase early. Later, suddenly the host returns and remembers to water again and plants can wake up to add another joint to the first making the plant structure short and weak. It becomes difficult to support flirther growth next year. All adding to shedding joints.

During late Autumn too, there may be periods, when the humidity drops on sunny days after watering has ceased, but quite high temperatures, whereas later during dull periods in Winter humidity may rise dangerously in the greenhouse. The plants react drooping joints and becoming upright again during rising humidity. We can certainly help by equalising these extremes by ventilating freely and taking out sharp temperature fluctuations.

Good strong growth during the main vegetative period will help to lessen the problem of falling joints, unless of course you want plenty of cuttings to pass on. Tephrocacti soon show their disapproval if we neglect their needs.

Has anyone have a better explanation?

Rene Geissler

The TSG Set of Photographs

After several false starts I have finally managed to get some thoughts together in response to Alan Hill's article in vol.2 no.4 p.149. Rather than analyse the photos in a different way I have broadly used Alan's group order to save even more confusion. My findings are as follows ("Ok" just means I am in agreement with the species name as far as my limited experience goes)

Group	WG no.	As named	Comments
Pterocactus	232	P. australis	Ok
	288	P. valentii	Ok
Airampoa	54	Pl. Subcompressa	Ok
	380	M. minuscula	is this the same as M. minutes?
Geometricus	no number		Ok
Molinensis	112	T. molinensis	Ok
	207	T. molinensis	Ok
	359	T. molinensis	Ok
Nigrispinus	237	M. nigrispina	Ok
	304	M. spec.(Rio Janc)	not sure-spines wrong colour?hybrid
Subterraneus	124	P. subterania	Ok-is this a monstrose form?
	233	P. subterania	Ok
Austrocylindropuntia	93	A. flocosa	Ok
	105	A. lagopus	Ok
	120	A. rauhii	Ok
	120	A. rauhli	Ok -diff. Form
	172	A. inarmata	Ok
	219	A. verticosa	Ok
	276	A. steiniana	Ok
	284	A. yanganucensis	Ok
	316	A. spec.KK~391	Ok
	330	A. malyanus	Ok
Webreri	222	T. weberi v. setiger	Ok
	235	T. weberi v. setiger	Ok -long spined form
	423	M. weberi	Ok -is this var. dispar ?
Paediophillia	39	T. paediophyllus	Ok
Arliculatus group	82	T. articulatus f inermis	Ok
	126	T. turpinii f.monstrosa	Ok
	139	T. art.v.syringacanthus	Ok
	160	T. art.v.oligacanthus	Ok
	I 75a	T. artv.oligacanthus	Ok
	204	T. art.v.diadematus	Ok
	248	T. art.v.diadematus	Ok
	318	T. articulatus form	
	438	T. aiticulatus v inermis	Ok

Austrocylindrica? what is the difference between this and the above?

I do not Know enough about this group to comment on species names

not sure about the "monstrosa" though

Looks to be some oligacanthus in this one

I must agree with Alan when he says that he believes that all these are forms of articulatus but there do seem to be distinct differences which warrent varietal status especially when other species are differentiated just by length or shape of spine - so how could you say for example that inermis and oligacanthus are one and the same?

Group	WG no.	As named	Comments
Platyacanthus	187	M. platycantha	Ok
	258	M. hiokenii	certainly looks like platyacantha
	278	M. platycantha	Ok
	314	M. buisselIii	certainly looks like platyacantha
	436	M. platycantha	Ok
Rossianus/fauxianus	61	T. rossianus v.fauxianus	Ok
	61	M.rossianav.fauxiana	Ok
	139	M. glomerata form	I think it should be WGI38
	188	M. rossiana form	Ok
	218	M. blankii (rossiana)	Ok
	361	M. spec.	identical to 139 & 188
	361	M. spec.	was 423-looks like 444 ?pentlandii var.
Alexanderi	293	T. alexanderi	Ok-no problem with this
	297	T. alexanderi	Ok-was 320
Aerocanthus	262	T. aerocanthus	is this the same as aoroacanthus?
Glomerata	92	M. flexispina	Ok
	100	M. glom. v.longisplna	Ok
	127	M. glom. v.longispina	Ok-spines not so long though
	151	M. longispina	no-looks more like boliviana/ferocior to me
	159	M. fulvicoma	looks more like andicola
	193	M. spec.	definitely looks like a glomerata not darwinii grp.
	216	M.glom. v.fulvispina	I have this form labelled as vaginata
	227	M. glomerata	Ok
	234	M. rossiana f. BM	this is surely a very spiny glomerata
	246	M. glomerata form	Ok
	251	M.PCW 4045	definitely looks like a glomerata
	252	M. glom. v.longispina	Ok
	307	M. glomerata	Ok
	353	M. fuivi. v.bidor(bolivians)—	It looks more Like a boliviana than a glomerata
	369	M. glomerata	a form of 216 perhaps
	326	M. terres	could be a splner flexisplnus
Sphaerica group	103	M. kuehnrichiana	Ok
	191	M. sphaerica	Ok
	220	M. kuehnrichiana	I believe this to be pseudorauppiana
	221	M. berteri	I believe this to be pseudorauppiana
	224	M. kuehnrichiana	Ok
	352	M. dimorpha v.pseudoraupplana	Ok
	371	M. dimorpha	Ok
	398	M. berteri	no photo received
	424	M. sphaerica	I believe this to be pseudorauppiana
	493	M. pseudorauppiana	Ok

Group	WG no.	As named	Comments
Darwinii group	101	M. hickenii	Ok
	184	M. darwinii	Ok
	186	M. hickenii	Ok
	213	M.rossiana CH184	
	228	T. spec.	looks very like neuquensis to me
	299	M. spec.ex.Blaokbum	no photo received-deleted
	459	M. neuquensis	Ok
	247	M. kleinoides	darwinil or ? neuquensis (see 459)
Minutus		I am not aware of this name	
Mandragora	190	M. russellii	certainly looks like 231
	231	M. madragora	Ok
Pentlandii group	102	M. ignescens	affinity with 173,182~420
	140	M. ex.LB (no spines)	this is subinermis as I know it
	140	M. ex.LB (spines)	not sure what this is
	173	M. boliviana	Ok - a very spiny form
	182	M. boliviana v.ferocior	Ok I think it should be WG185
	223	M. madragora	looks like dactilifera 255 etc.
	255	M. dactilifera	Ok
	319	M. variflora	looks like 182
	320	M. bulbispina	looks like 182
	327	M. pentlandii V.	looks like dactilifera
	403	no name	not on Renes list but in this group
	418	M. dactilifera	a bit of a weird one if it is!
	420	M. boliviana (gigas)	this is another strange one
	422	M. pentlandii	looks like dactilifera
	444	M. spec.RBT77	(pent.monst)
	441	M. boliviana	a similarity to 418
	230	M. mistiensis	?
	321	M. mistiensis	Ok
	77	M. alboareolatus	Ok
Unassigned plants	355	M. chickensis	should this be "chichensis"-pentlandii group?
	356	M. spec.	? pentlandii group
	363	M. atacamensis	?
	419	M. spec.(Wallenspielli)	similar to crassicylindricus
	457	M.spec. (russellii)	?

I have This as " Rio Janc " but its close to this group

Incidentally is it mandragora or madragora ?

But where does it fit, is it a very spiny boliviana ?

I believe I have covered every photo in my set but you may find that your sets differ slightly. Having been through the photos in detail I am once again struck by the similarity between plants and I am sure it would be an easy task to arrange all of the groups (indeed combined groups in some cases!) in a progression from "no spines " to "very spiny". This point has been made by other contributors. So who is going to be next to take the plunge?! (note I can supply this list in numerical order if anyone is the slightest bit interested)

Martyn Collinson

Comments on the Sphaerica Group

At the one day meeting the main topic for discussion was the Sphaerica Group comprising Opuntia sphaerica, kuehnrichiana, dimorpha, ovata and berteri. The plants brought were laid out on a rough map of S. America (Rene's back path !) in the positions they were known to come from. There appeared to be a sort of progression with 0.sphaerica in the north down to 0.dimorpha in the south (If I remember correctly). The general feeling was that we were looking at varieties of the same plant although I had my doubts.

0. sphaerica (fig.1)

This drawing is taken from the Lambs' Illus.Ref.,3:608 and is claimed by them to be a donotype specimen. Many plants are labelled sphaerica but this is the true type. Leighton-Boyce and Iliff in The Subgenus Tephrocactus (p.79) make the point that this (the Lambs) plant "is probably the indirect source of most of the correctly named plants in this country." The two or three plants brought along to the one day meeting Looked very like this plant i.e.. with large round joints with the distinguishing feature being the dense and untidy, mainly flattened spines.
it would seem that this "true" sphaerica is actually not all that common in collections therefore it would be a good idea if anyone with a very large or spare plant offered to propagate it for the group.

0. kuehnrichiana (fig.2)

This drawing is also from the Lambs' Illus.Ref.,3:603 and would appear to be the variety applanatus which Backeberg describes as "segment broad and round". Good examples of the basic kuehnrichiana seem to be WGI03 and WG224 from the TSG set of Photographs. Leighton-Boyce and Illiff question the status of kuehnricniana and imply that it is a form of sphaerica (p.79).

0. dimoipha (fig.3)

This is a drawing of one of my own plants which I believe to be a "good" dimorpha i.e.. the mature joints are round with thick white areoles, the glassy white spines thinner and shorter than the preceding two species, also the joints are smaller. The variety pseudorauppiana is similar but has several long reddish-brown spines coming from the top of the areoles which are yellowish and the plants tend to have a glaucous tinge to them.

0. ovata(fig.4)

This is taken from Lambs' Illus.Ref.,3:804 and is quoted by L-B & Illif as being as near to the "original entity" as any they had seen. It Is Interesting that the base segment has exceptionally long spines as the plants I have acquired snow the same habit although newer joints are quite different in fact one plant I acquired had four offsets that could all have come from different plants due to the different spine length, abundance and shape ! (see also L-B & Illiff p.36).

Many small Opuntias are labelled as ovata or T.ovatus and this is probably one of the hardest to identify. I have not commented on 0.berteri as although I have a plant with this name which looks similar to 0.dimorpha v. pseudorauppiana there seems to be a lot of doubt as to the validity of this name and where, if anywhere it fits into the sphaerica group. One final point I would like to make is that I was struck by how much use people like Backeberg, Borg and so on make of the growth habit i.e. tight, loose, small etc. dumps when deciding on species status. We can never hope to emulate this with our small pot-grown plants where the growth habit appears to be much the same for all of them.

Martyn Collinson

Fig 1 O. spherica

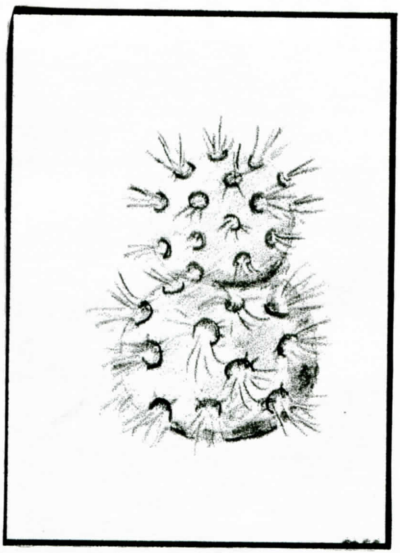


Fig 2 O.kuehnrichianus

Fig 3 O. dimorpha

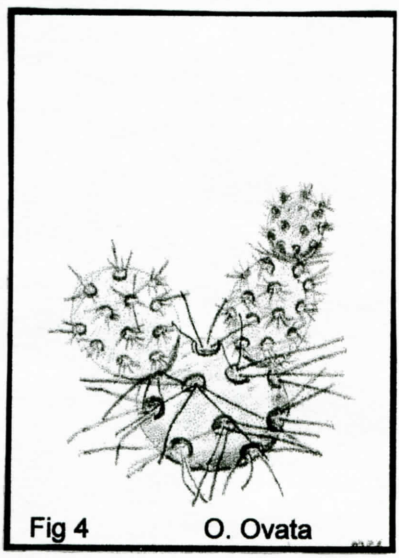


Fig 4 O. ovata