TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera plus other small Opuntias

Tephrocactus articulatus **(Pfeiffer) Backeberg form *papryacanthus***
Marayes, Argentina arg05 0982
Photograph by Roger Ferryman

STUDY GROUP

Vol. 14
No. 1 March 2008

SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

Subscriptions for 2008 were due on the 1st January 2008

Subscriptions and any other correspondence must be sent to the Secretary.

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THE 2008 TSG MEETING.

As stated in the December issue this will be held on Sunday 11th May 2008 at the Great Barr Ex Service Men and Women's Club, Birmingham, which is very near Junction 7 of the M6. A loose sheet insert in this issue for UK members provides directions to the meeting place. The room will be available from 10.15 and a buffet lunch costing £5 will be provided. We will be able to use the Club bar. To help the Caterer notification of the number of people having lunch is needed by April 25th. I would be grateful if people intending to come to the meeting will let me know by that date and whether you will have the provided buffet lunch. Contact details are inside the front cover. There is no charge for attending the meeting and guests who are not TSG members are very welcome. Please will members promote the meeting at local BCSS branches? Please bring any plants of interest or for identification. Plants for sale are also very welcome and there is no commission charge.

The location is the same as last year but the date has been changed to avoid the meeting being held on the day before the May Bank Holiday Monday as was the case in previous years. The programme will start at 11.0 am with a short business meeting. The speakers will be Paul Hoxey giving an account of his travels in Peru and Martin Lowry, who has made several journeys in South America, will be discussing Cumulopuntia. The meeting will close at 4.0pm A. Hill.

TSG DISPLAY AT THE BCSS NATIONAL SHOW 2008

The following notice appeared in the December issue but so far there has been no response to it. At present I know of only two members who are prepared to help. We especially need someone who can help on the Friday afternoon. Please will you inform me in the next few weeks if you are able to help in any way otherwise we might not be able to manage the stand.

The TSG has been invited to put on a display at the BCSS National Show to be held at Wood Green Animal Shelter, Godmanchester, near Huntingdon, Cambridgeshire on Saturday 16th August 2008. Part of the allocated space to us can be used for publicity material. The display can be erected on Friday afternoon 15th August and during a short period on the Saturday morning before the Show opens. Will any member who can help to erect the display, or can help with supervision during the time of the Show, please inform me as soon as possible? A. Hill. Chairman.

CORYNOPUNTIA MOELLERI. (Berger) Knuth.

What a yellow flower and such a beauty!! (Fig. 7 P9) That flower is 5.5 cm in diameter and can open a bit more to about 6 to 6.5 cm. I have to wonder where the NCL obtains the information that the flower only is 2.5 cm. The NCL also says that there is doubt that this plant is any different from *C. bulbispina*. It is my personal opinion that these plants have not been grown by any of these people who say that plant x is the same as plant z! I went and measured some joints that I took off my plant. The longest is 5 cm and it is 3.5 cm in diameter. Most of the ones that I measured were 4 cm long and 3.5 cm in diameter. If you look at the photo of the plants showing the heads you can see that the joints are not very club shaped. They are only a little bit longer than they are wide. It is not this way on *C. bulbispina*. The

joints on *C bulbispin*a they are to 3 cm wide and to 8.5 cm long. If you count the spines then the joints are 9 cm wide. I am not counting the length of the spines in either of the plants. The spine length for *C. bulbispina* is 4.5 cm with one being 5 cm. The longest spine on *C. moelleri* is 1 cm. I have two of these plants from different places and they match each other. It always makes me wonder about those who write books and they say that two different plants are the exact same plant. I have to say that Anderson's book comes closer to describing the plant a lot better than the NCL. If you, Anderson fans, want to check out the description you will have to look under *Grusonia moelleri*. There you will find the description but no photograph to go by.

I have included two photos of the plant; the one with the flower in it is before it was cleaned up (Fig. 1). The second photo is of the plant after I cleaned the dead flower remains and seedpods off the plant and also trimmed it (Fig.2). Trimming the plant means taking off the old flower remains and seed pots along with any wandering stems. If you get wandering stems in a hot house that means that the plant can be trying to take over some other plant's pot. Or if they are hanging over the edge of the pot and go down to where they receive little light then they become really club shaped. It is a wise thing to trim the plants every couple years or sooner. *C. moelleri* does not have any roots to raise above the soil like several of the other Corynopuntias. The trimmed plant is in an eight-inch diameter pot so that gives you an idea of the plant size. I have not tried *C. moelleri* outside in the weather here but it has been where it is dry all winter yet receives all the cold. It has shown no adverse effects to that treatment. If the plants were well rooted I would think they could take the wet and cold we receive here just like does *C. bulbispina*.

Elton Roberts. California

The taxon comes from Coahuila in Mexico. First described by Berger as Opuntia moelleri in 1929 the name was changed by Knuth to Cylindropuntia in 1930 and then to Corynopuntia in 1936 in Kaktus ABC. However, the name there appears (P115) as "Corynopuntia Moelleriana *Knuth - Opuntia A berg 1929*" (sic) with no explanation for the name change. However, in Die Cactaceae (P363) Backeberg lists the name as *Corynopuntia moelleri* with the comment "(irrtumlich als C. moelleriana) thus acknowledging the mistake.

Anderson's adaptation of the description includes "Plants many-stemmed with small branches. Stem segments more or less club shaped, green, 4-7cm long, and 3-4cm in diameter, with large elongated tubercles. Principal spines usually six , bulbous basally, upper ones radiating and erect, lower ones directed downwards, flattened, whitish, slightly pubescent, to 1.6 cm long. Secondary or radial spines numerous, white, fine, upper ones grouped like glochids." Ed.

CORYNOPUNTIA INVICTA (Brandegee) Knuth.

The first time I saw *Corynopuntia invict*a I fell in love with the plant. What a build, what a shape, what form, what a dangerous looking plant and it is an Opuntia! I saw the plant at a show and asked the owner if he had any at home for sale. He grabbed a tool and commenced to try to remove a joint. It

took a lot of work as the fibres in that small area at the bottom of the stem were like stainless steel cable. He finally managed to remove the joint and just gave it to me. When he started to try to remove the joint I protested but it did no good. In a short time you could not tell that the joint had even been removed. At a later sale the plant was for sale and no one bought it. At the end of the sale he told me that anything I wanted was half priced. I obtained the whole plant to go along with the joint that was now also a multi-headed plant. I now have four of the plants and have found that the wicked looking spines are not all that bad. Put it this way, they are not like a lot of Opuntia spines. I can handle the plants like most other plants that are not an Opuntia. As you can see in the photos (Figs 3 & 4) the spines are real heavy duty. The base is bulbous and the rest of the spine is angled below to flattish on the top yet some have a bit of an angle also on the top. The longest spines are 5 cm long. At first the spines are a wonderful ruby red soon fading to grey with pink overtones. The stem joints are to 20 cm long and to 15 cm in diameter ~ this is spines and all. The size of the stem joints varies from plant to plant. One of my plants has joints that dwarf the stems on the other 3 plants. In habitat the plants make clumps that are to half a metre tall and to 2 metres across.

One photo (Fig. 6) shows the seedpod. It is not something with which you would want to be fouled up. The spines are to 1.5 cm long, needle like and needle sharp. I am more cautious with those spines than the stem spines. For the size of the plant the flowers are not all that large being up to 5 cm across. They are different from the flowers on the other plants in this family in that they have red filaments. That gives the flower (Fig. 5) an extra special look. The plants come from the central area of Baja California. For this reason it is suggested that minimum temperatures be above freezing. However, this last January the plants endured temperatures to 18 F and they showed no adverse effects to that cold. The plants had been dry for at least 2.5 months before the freeze came along.

E. Roberts. California

Captain George Porter discovered this taxon and it was first described by Brandegee in 1889 as *Opuntia invicta*. However, it was placed by Knuth into his new Corynopuntia in 1936. Once seen it is easily recognised again as it is very distinctive having, in my experience, the largest segments of the Corynopuntia group. However, until it achieves its large segment size there is sometimes confusion with *Echinocereus brandegeei* as the two species can at first glance look similar having similar spination. In an article in the BCSS Journal No 2, Vol. 6 1988 P56, Bill Keen wrote that, although the plant was not difficult to grow, it was slow, showing few signs of fresh growth each year. I have also found this with my plant which has very large segments but is only in a 7inch pot. This would appear to be different from Elton's experience on growth. One does not have to have a vast growing space to enjoy the beauty of the large segments.

Ed.

X KELVINENSIS, G. (O)

In the 1970s I saw a plant which looked very unusual in the collection of Keith Scothorn of Barnsley. He said had been given to him by friends who had visited the USA. Apparently they had found an area (I cannot recall whether it was said to be the size of a tennis court or a football pitch) on

which the plants grew looking like small Christmas trees. Later I was fortunate to obtain a plant. Keith said that he had taken one to a cactus nursery. Keith thought the plant was *Micropuntia gracilicylindrica* Wiegand & Backeberg. The appearance of the plant, plus the reported restricted area of habitat, made me eventually decide it was possibly a monstrose form of one of the Cylindropuntia. The plant forms a stem and close to the apex grows segments which form a whorl of small branches. I tried to propagate the plant using some of the branches. Some of these side segments did root. However, the result was an elongating stem with few side shoots and never the cluster of tight segments on the apex. I was not alone in this. Another Sheffield BCSS member must have obtained the plant because it sometimes appeared on Branch sales tables when selling plants to the general public. It was always the single elongating stem.

I then had the idea of taking a cutting off the plant from the top of the stem below the whorl of small branches. The cutting rooted and grew several stems from soil level. Side shoots later appeared close to the apex of each stem. Fig. 9 shows the top of the plant with two different forms of branches but not the very tight whorls of short segments of the 1970s.

Last year at the May Birmingham meeting I was surprised to see John Betteley's plant which I recognised as probably the same taxon as mine. As usual John's plant was growing much better than mine. However the main difference I noticed was the clustering growth of many stems from the base although no whorls on the apexes. Ray Weeks very kindly photographed the plant Fig. 10. John later sent an article (P. 43 and a photograph which appeared on the front of TSG Vol. 13 No. 3 September 2007). John's photograph shows further growth from May and side shoots are developing from the apex of various stems. The plant was growing as a clump when John obtained it so he cannot say what the shape of the original cutting was. It might be that generous cultivation of a tip whorl cutting has produced the plant. A less likely cause could be a single rooted segment being beheaded forcing multiple growth lower than usual on the stem. What ever the cause John's plant is growing in a different way from those in South Yorkshire in the 1970s. It will be interesting to see it with further growth next year. Does anyone else grow this taxon? Please can anyone comment on growth and propagation? I am assuming that the two illustrated plants are the same taxon.

I have been told that x kelvinensis is easily lost. I do not find keeping the plant a problem. I grow it "hard" but it does not go below 40®F.

It was only at the Birmingham meeting that I was told the name of the taxon. This has enabled me to consult Crook & Mottram's Opuntia Index Bradleya 17/1999 118. *Opuntia kelvinensis* was named in 1971 by V. Grant and K. A. Grant. It comes from Arizona and, as John states, is now accepted as a naturally occurring hybrid between *Opuntia fulgida* Engelmann x *Opuntia spinosior* (Engelmann) Toumey. Britton & Rose have a description of *O. fulgida* (P.67) which includes "…with a rather definite woody trunk 10 to 20 cm. in diameter, much branched, sometimes almost from the base, and forming a compact flattened crown…" The description of *O. spinosior* (P68) includes "…more or less definite, woody trunk, openly branching…"

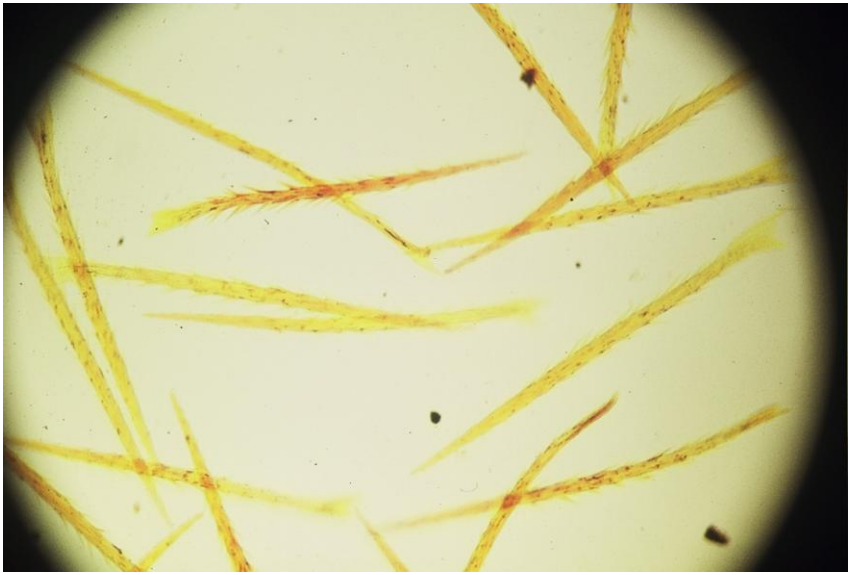
A. Hill Sheffield

Fig. 1. ***Corynopuntia moelleri*** **(Berger) Knuth.**
Fig. 2. ***Corynopuntia moelleri*** **(Berger) Knuth trimmed.**
Both photographs by Elton Roberts

Figs. 4. & 5 *Corynopuntia invicta* (Brandegee) Knuth.
Both photographs by Elton Roberts.

Fig. 6. *Corynopuntia invicta* (Brandegee) Knuth. flower & Fig. 7. seedpod. Both photographs by Elton Roberts.

Fig. 7. ***Corynopuntia moelleri*** **(Berger) Knuth. Photo. by Elton Roberts**
Fig. 8. ***Grusonia rosea*** **glochids. Note the barbs. Photo. by Gordon Rowley.**



OPUNTIA - FISSION OR FUSION? PART 1V -
OPUNTIOIDEAE: A REVISED KEY TO GENERA.
Gordon Rowley.

In contrast to its fluctuating genera the Subfamily Opuntioideae has had a robust past history as a natural group within the Cactaceae. It was presented unambiguously by Schumann in 1898 as one of three Subfamilies, with terminations as approved today:

Pereskioideae Opuntioideae Cereoideae (now Cactoideae).

Schumann originally included the enigmatic genus *Maihuenia* in his Pereskioideae, but in 1903 transferred it to Opuntioideae. Today phylogenists have elevated it to a fourth Subfamily by itself, although in collections it consorts happily with the small carpeting Tephrocacti. Some authors demote the three Subfamilies to Tribal level, as

Pereskieae Opuntieae Cacteae

but, this apart, there is general agreement that phylogenetic studies confirm Opuntioideae as a monophyletic clade with *Pereskia* and M*aihuenia* as appropriate outgroups (Wallace & Dickie 2002).

Edwards & Donoghue (2006) trace probably steps in evolution in cacti from leafy, shrubby mesophytes in Portulacaceae through to the highly specialised xerophytic Cactoideae. As a halfway stage, Opuntioideae are distinguished as a group by the green stems and progressive reduction of leaf surface down to small subterete rudiments that serve no useful purpose to the plant and soon wither. They declare the Subfamily to be "the key to understanding the processes involved in completely transferring the photosynthetic function from the leaves to the stem." Common features are the short-tubed flowers with stamens arising just above the ovary, and anatomical characters such as the rostrate (hook-like) cell bases covering the spines, and pollen type. Unique to the Subfamily are glochids, and the white bony aril that envelops the seed. *Tephrocactus* with determinate growth has a uniquely distinctive type of stem apex (Poindexter 1951-1952).

***Pereskia* and *Maihuenia* have both been honoured by classic monographs from Beat Leuenberger in 1986 and 1997, but the Opuntioideae have been less favoured. Benson did the North American prickly pears justice in 1982, James Iliff revised the Andean non-prickly-pear species and Taylor, Stuppy & Barthlott the East Brazilian Opuntioideae in the symposium of Hunt & Taylor 2002. Regional floras fill some of the other gaps, but an overall treatment eludes us.**

Cactus genera are no different from those of other plant Families in the way they are recognised and defined. The small ones stand out by conspicuous differences and are easily keyed out. The large genera are perceived from a combination of characters, none of which may be universally present. Hence key-making is difficult, with ifs and buts to cover the occasional exceptions. For this reason the following key ends up as a synopsis of the four largest genera to make side-by-side comparisons easier.

I have omitted seed characters, important though they are, because they are rarely available to collectors, at least without a microscope. They are fully described in the afore-mentioned Hunt & Taylor symposium from

which much of the data presented here are taken. Other sources of information are, naturally, the New Cactus Lexicon (Hunt 2006) and Gibson & Nobel's ever-treasured work of 1986.

GENERA OF OPUNTIOIDEAE.

A Leaves flat and persistent
B Stems jointed; flowers pale pink to red — QUIABENTIA
BB Stems not jointed; flowers yellow — PERESKIOPSIS
AA Leaves terete, usually small and soon withering
C Small geophytes with tuberous roots; fruits dry, capsular, with large flat winged seeds — PTEROCACTUS
CC Roots not tuberous, or if so then fruits juicy and seeds not winged

TRIBE OPUNTIEAE	CYLINDROPUNTIEAE	AUSTROCYLINDR-OPUNTIEAE	TEPHROCACTEAE
GENUS *Opuntia* Prickly Pear (Indian Fig, Tuna, Nopalito)	*Grusonia* Cholla, Club Cholla	*Austrocylindropuntia*	*Tephrocactus*
HABIT Arborescent with a woody trunk, shrubby or dwarf, creeping.	Treelets to much-branched shrubs with woody trunks or low clump-forming	Small to large shrubs, clumping to mat-forming	Low, shrubby to dwarf carpeters, cushion-forming to geophytic
STEMS Terminal joints ± laterally compressed into pads (cladodes), round, ovate, obovate or elongated, with areoles all round, rarely easily detachable (terete in *O.funalis, O.miquelii*)	Growth mostly determinate; joints short-cylindric to club-shaped or subglobose, tuberculate, sometimes easily detachable	Growth indeterminate; stems and joints cylindrical, long and short, some with broad, low tubercles	Growth mostly determinate; joints short, globose to ovoid, commonly greyish, branching laterally, sometimes ± flattened laterally (*Tunilla*), with low tubercles, sometimes readily detached

LEAVES Minute, ephemeral	Minute, ephemeral	0.5mm to over 10 cm, terete, fleshy, ± persistent	Minute, ephemeral
SPINES Not sheathed, nor flat and papery	With a rudimentary to full sheath, sometimes bulbous based	Smooth, not sheathed	Not sheathed, sometimes flat, dagger-like or papery
GLOCHIDS Various	Basally flattened or round	Basally flattened	Deep set in sunken areoles
FRUITS Fleshy or almost dry	Fleshy or becoming dry	Juicy, plump	Dry, dehiscent, few-seeded or juicy and indehiscent
DISTRIBUTION North and South America	North America	South America	South America

Astute observers will note the reinstatement as genera of *Pereskiopsis* and *Quiabentia*, over-hastily demoted to subgenera at the last minute in Part II of this series. Meditation and pondering of the classics demanded a recantation.* This does not violate the phylogenetic evidence: reference to Wallace & Dickie's original cladogram in TSG 10(2): 24, 2004 shows that all that is needed is one small step to the right to maintain monophylesis.
Gibson & Nobel (1986) recognised *Pereskiopsis* and *Quiabentia* as genera and reviewed the evidence for retaining them in Opuntioideae, not Pereskioideae, despite their leaves and general similarities in habit. Their stems are more fleshy than those of *Pereskia* with less wood formation, and the smaller leaves are fleshier, with palmate venation and no midribs. They stand as the most primitive members of Opuntioideae, nearest to a surviving link to Pereskioideae.

*Nomenclaturally the merger also transgressed, since *Pereskiopsis* had twelve years priority as a genus over *Grusonia*. Errol Goodwyn's oversight here was unpardonable, so I had him shot.

Fig. A.
A.V.Fric's fanciful vision of Opuntioideae 1931.
Note some anarchic spelling.

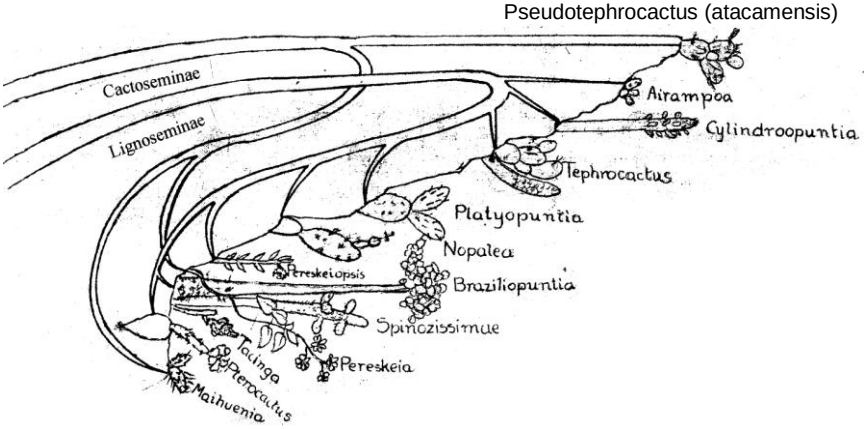
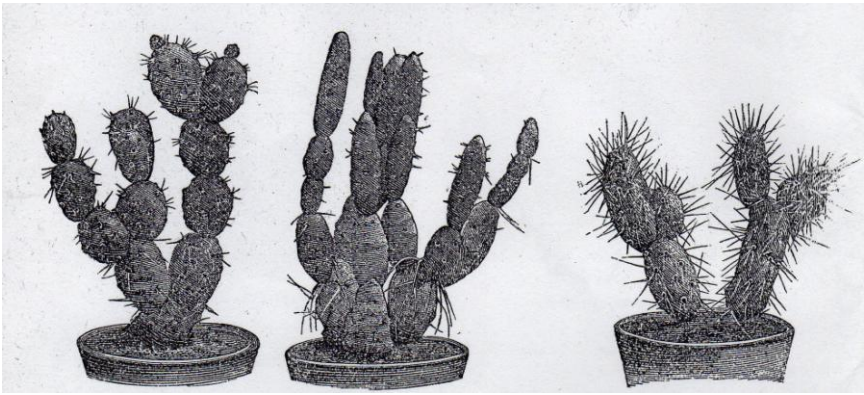


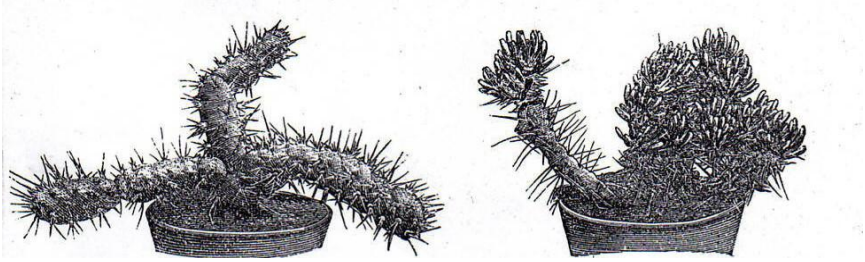
Fig. B. **Some early imports offered by Haage & Schmidt, Erfurt, 1883.**



Austrocylindropuntia pentlandii **'Boliviana'**

Tephrocactus glomeratus **'Leoninus'**

Austrocylindropuntia sphaerica **'Phyllacantha'**



Opuntia fragilis **'Brachyarthra'**

Maihuenia poeppigii

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GLOCHID BARBS.

I am grateful to Gordon Rowley for supplying the photograph shown as Fig. 8. Any grower of Opuntias will at some time have suffered the inconvenience of having glochids attach themselves to skin or clothing. Due to their small size the attachments are a nuisance and irritating rather than doing any real damage. The photograph of the glochids of *Grusonia rosea* reveals the minute barbs that enable the glochids to become attached and be so difficult to remove. Ed.

TEPHROCACTUS ARTICULATUS (PFEIFFER) BACKEBERG.

I am also grateful to Roger Ferryman for supplying a large number of photographs of Opuntias he has seen in habitat. One of these appears on the front cover. Ed.

ARTICLES.

Please will members send in material to be published in the Journal? Articles can be comments on previously published material or on new topics. You might not be able to write a long article but short articles or comments are very welcome. The latter are of value not only for their content but also are very useful to fill small spaces when the text is being laid out in preparation for the next issue. Ed.

Fig 10. x kelvinensis. Top of four small "trunks". Photo by A. Hill
Fig 11. x kelvinensis. Young plant. Photo by Ray Weeks

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Austrocylindropuntia sp **Baker 5/30. Photograph by Elton Roberts**

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THE TSG MEETING ON 11TH MAY 2008.

The second meeting at our new venue again proved to be a great success from the point of view of access and facilities. It was also a very great success in content.

As usual we opened with a short AGM during which all the previous year's officials were re-elected. The Editor's report included a request for more material from members for publication. Even if producing an article is difficult it should be possible for most members to send in a report on the progress of plants in their collection and make comments on things that had been observed. Any submission does not need to be lengthy. Queries and short articles can generate interest and further articles. It was suggested that the group should make more use of the Internet. The Officers are in the process of looking into this.

Discussion during the presentations was very valuable. The subject of the first talk was on a visit to Peru. The second was a survey on Cumulopuntia. This obviously led to some overlap in subject content but this proved beneficial as the two speakers and members of the audience were able to discuss certain points that arose during the talks. During the meeting comments were made on its success, whilst comments have been made since then from members who were present and some who had heard reports of the meeting. There was a specific request from a member that the success of the meeting should be reported here to encourage more people to attend in future. We had members from within an area from Hull to Liverpool, Basingstoke to Cambridge plus a member from Cornwall.

I wish to thank Alan James for all the work he did in preparation for the meeting and his wife for again providing an excellent buffet. I also thank the speakers for their interesting and very informative presentations. Members who attended are also thanked. Finally I thank the Officers of the TSG for the work that they have done for the group over the year and thank all those members who have contributed to the Journal.

Alan Hill. Chairman.

TSG DISPLAY AT THE BCSS NATIONAL SHOW 2008

We are still very short of people to help with the TSG at the BCSS National Show to be held at Wood Green Animal Shelter, Godmanchester, near Huntingdon, Cambridgeshire on Saturday 16th August 2008. Part of the allocated space to us can be used for publicity material. The display can be erected on Friday afternoon 15th August between 1.0pm and 6.0pm and between 8.0 m and 9.0 am on the Saturday morning before the Show opens. Will any member who can help to erect the display, or can help with supervision during the time of the Show, please inform me as soon as possible? A. Hill. Chairman.

CHANGE OF EMAIL ADDRESS.

Within the next few weeks I anticipate changing my email address. Until the change takes place I do not know the new main address. My Yahoo email address is alan.hill32@yahoo.co.uk Alan Hill.

AUSTROCYLINDROPUNTIA SP. 'BAKER 5/30'

There seems to be a lot of confusion about this plant. I have had it for years as *A. inarmata*. I also know that many other people also have the same plant under the name *A. inarmata*. When my plant bloomed for the first time I thought 'Oh oh we have a problem'. In 2000 the book Tephrocactus and Other Prickly Pears was published. There in is described this plant. On his comments for the plant Michael Kiesling says:

"Probably a new species; originally from Will Baker/England with collector's number 5/30. Not comparable to any other plant described in literature. At the first glance it seems to have a little bit of everything: segments similar to *Opuntia (Tephrocactus) molinensis* Speg., flowers similar to *Opuntia (Austrocylindropuntia) teres* Cels. And seeds similar to those of an ordinary prickly pear."

Now if you look close at the photo of the plant (Fig.1) you can see that it does look a lot like a *T. molinensis*. You have the areoles with the dense glochids just like *T. molinensis*, the joints are even shaped like those on *T. molinensis*.

Now, a few words about *A. inarmata.* According to E. F. Anderson the name *Austrocylindropuntia inarmata* was not validly published and as such is not a useable name. Also Anderson puts the plant *A. inarmata* as being the same as *A. verschaffeltii.*

The plants do grow to about the same size but the joints are a bit different. Also *A. verschaffeltii* will grow spines on older joints. The new joints do not have spines but have green leaves that are to 12 mm long and stand straight upward. On the Baker plant the leaves are only to 4 mm long and curve over the areole and it never has spines. These leaves are a hazy purple (on my plants) but the description says that they are a greenish-crimson.

Flowers on the plants of *A. verschaffeltii* and *A. inarmata* look very much the same to me. The flowers of *A. verschaffeltii* are an orange red in colour and the flower is 4 cm across. The Baker plant has flowers that are only 3 cm across and the flower colour is a deep purple-violet-red. It is a joy to look at and to take many photos of it.

The plant comes from Bolivia and there is no other information as of this date that I can find. I have several of these plants and have not had any problems with them and the cold we get here in the winters. I will give the plants a light watering once over the winter and have not had any die from that watering. The plants are in my regular soil mix. If given a small amount of shade the plants keep the wonderful look to the joints.

Elton Roberts. California

I have a small plant of this taxon (Fig. 2). Note that the stem colour is a light green whilst the description of inarmata is dark green to olive. The colour is a slight shade lighter than my normal verschaffeltii and the segments are more robust. However, the areoles could conform more to the description of inarmata than verschaffeltii (Please see the following article). How many other members grow sp Baker? Does anyone have any comments or further information on it?

Does anyone know anything about Will Baker? Ed

AUSTROCYLINDROPUNTIA VERSCHAFFELTII

As I mentioned in the article on Austrocylindropuntia sp. 'Baker 5/30', Anderson puts *A. inarmata* under *A. verschaffeltii*. To tell you the truth I see very little difference between what has been named *A. inarmata* and *A. verschaffeltii*. So far, all of the plants that I have that had the name of *A. inarmata* have turned out to be the 'Baker 5/30' plants. Looking in the books Tephrocactus and Other Prickly Pears and Anderson's book the photos of *A. inarmata* and *A. verschaffeltii* look very much a like. Look at the photo of the long spined plant (Fig. 4) and then at the photo of *A. verschaffeltii* (Fig. 3). You can see two different looking plants. That is if you take the spines into consideration. Some of the plants have no spines at all. The books call for spines up to 6 cm long. The longest spines on the forms of the plants that I have are only 3 cm long. The plant joints are also of differing length from about 1.5 cm to as much as 8 cm long.

As the flower colour and size are the same for the two plants I will have to think for the time being that they are both *A. verschaffeltii*. The flower is an orange red and to 4 cm in diameter. Plants vary in how tall they grow in cultivation. My tallest is 20 cm tall with stem diameter at no more than 1.3 cm. I have the plants in my regular soil mix. I keep them dry over the winter or give them a small drink mid winter. I have not had any problems with the cold here affecting the plants. Elton Roberts. California.

The name *verschaffeltii* has stood the test of time with the species' name surviving although it has been moved to various sub genera within Opuntia. Other species' names have appeared only to disappear completely or be subsumed into *verschaffeltii*. The purpose of the following is to examine this transition.

The name *Opuntia verschaffeltii* by Cels ex Weber was published in Bois, Dictionnaire d'Horticulture on p898 in 1898 as follows;

"Forms low, in dense clumps, much branched, joints globular to short-cylindric, 1 to 4 cm long, somewhat tuberculate, pale green; spines 1 to 3, yellowish, weak, and bristle-like, 1 to 3cm long; in cultivated plants joints elongated, 6 to 21 cm long, slender, 1 to 1.5 cm in diameter, strongly tuberculate, spineless; glochids few, white; areoles narrow, longer than broad, filled with short white wool. … Distribution: Bolivia."

The above description is taken from the translation in Britton & Rose who placed the taxon in their subgenus Cylindropuntia, Series 1 Vestitae. They commented that it was the only species in the Series that did not have hair. They also commented that it grew very different in cultivation to what it did in habitat with the short normal joints elongating. This is a feature of which present growers will be aware. Small segments do form on the plant but watering to encourage the plant to grow results in the elongation even in good light.

On the same page, p898 in the 1898 publication was erected *O. verschaffeltii v. digitalis* Weber. However, in the 1966 Cactus Lexicon Backeberg's opinion is given that this was probably only a form with very

long leaves. The name does not appear in the CITES Checklist 2nd edition but Backeberg's line of thought is taken to its logical conclusion by Anderson in his book where he places the variety name as a straight synonym of *O. verschaffeltii*.

In 1905 *Opuntia hypsophila* was created by Spegazzini and was made a variety of *Austrocylindropuntia verschaffeltii* by Backeberg in Die Cactaceae 1958. This combination with *verschaffeltii* is in line with Spegazzini thoughts that his taxon was closely related to *verschaffeltii*. In 1984 Kiesling went even further than Backeberg by examination of the holotype of *hypsophila* and identifying it as *verschaffeltii.*

In 1937 Borg erected *Opuntia verschaffeltii v. floribunda*. Although a description was given no type was cited and the name does not appear again in the available literature. In 1934 another transient variety, *O. verschaffeltii v. rubriflora*, was erected by Backeberg who then changed his mind as the name did not appear in his 1958 Die Cactaceae.

In 1950 Cardenas erected the name *O. posnanskyana*. However, Backeberg in Die Cactaceae 1958 puts the name in quotation marks as he considered the taxon to be probably *Tephrocactus heteromorphus* (Phil) Bkbg.

Backeberg in 1958 introduced the name *verschaffeltii v. longispina* with "the stem often having a reddish tinge and somewhat more strongly tuberculate. The spines 3 - 9, to 5cm long, whitish to horn-coloured" (Lexicon). In Die Cactaceae Backeberg also introduced four new relevant species names: *armata, inarmata, steiniana* and *haematacantha.* Although the names *armata* and *inarmata* lead to confusion in some people's minds there is in fact no direct connection between the two taxa. *Armata* is a spined Tunilla (although the NCL lists *armata* amongst the names whose original application is indeterminate or debatable) whilst *inarmata* lacks spines and is the Austrocylindropuntia. *Inarmata, steiniana, haematacantha* and *posnanskyana*, in the CITES checklist, are all regarded as synonyms of *verschaffeltii.* Anderson also regarded the four as synonyms along with *v. digitalis* and *hypsophila.* In his list Anderson states "Invalid" after the name *inarmata* instead of the more usual "nom. inval." But the entry does show he recognised the name exists. It therefore follows that all the names mentioned above (except *armata*) are now subsumed under *verschaffeltii* by current authors.

Several years ago my experience of growing *verschaffeltii* led me to conclude that there appeared to be two forms of plant. One was a thin stemmed form which often had problems with standing up whilst there was a more robust form with thicker stems which was more likely to remain erect and had more compact growth (Fig. 5). I found that the latter plant sometimes carried the name "*inarmata*". However, the description of *inarmata* does not mention thicker stems than *verschaffeltii*. The original description of *inarmata* in Die Cactaceae gives 1.5cm as the maximum thickness of the segments and ends by stating the flower is unknown. The Cactus Lexicon states "Body small , dark green, becoming olive; areoles wider than long, white; leaves to 15mm long, erect; Spine mostly absent, rarely 1, porrect; glochid scarcely distinguishable, hyaline; flower red with a slight tinge of orange, 4cm wide, style dark violet: filaments red: stigmas wine-red." The description shows four main differences with the red." The description shows four main differences with the description of

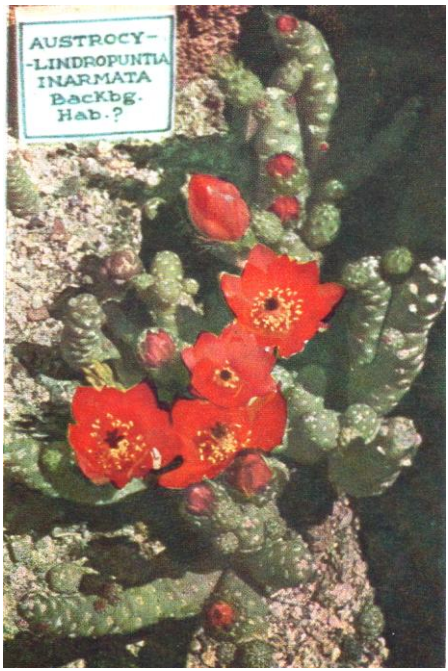
Fig. 1. ***Austrocylindropuntia*** **sp. Baker 5/30. Photo by E. Roberts**
Fig. 2. ***Austrocylindropuntia*** **sp. Baker 5/30. Photo by A. Hill.**

Fig. 3 *Austrocylindropuntia verschaffeltii* (Cels) Bkbg
Fig. 4 Same name with spines. Both photos by Elton Roberts

Fig. 5 Strong growing *Austrocylindropuntia verschaffeltii*. Photo A. Hill

Figs 6 & 7. *Austrocylindropuntia inarmata* Backeberg.

Fig. 6 from Cactus Lexicon. **Fig. 7 from Die Cactaceae.**



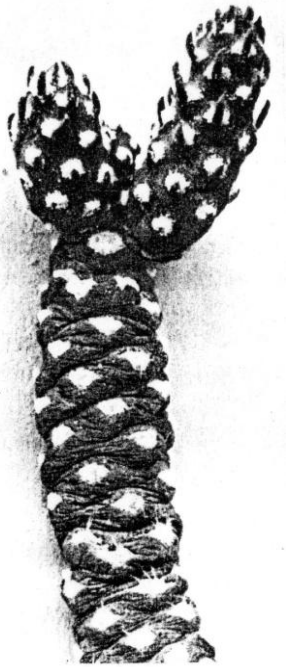


Fig. 8. ***Austrocylindropuntia verschaffeltii*** **(Cels) Bkbg. BLMT 54, Betanzos, Bolivia. Photo by A. Hill.**

Fig. 9. ***Corynopuntia planibulbispina*** **Backeberg. Photo by E. Roberts.**

***verschaffeltii*: A. Body pale green / dark green to olive, B. spines 1 - 3 / mostly absent rarely one, C. glochids few, white / scarcely distinguishable, D. areoles narrow, longer than broad filled with short white wool / areoles wider than long.**

Backeberg included two photographs of stems of *inarmata* on page 3578 of Die Cactaceae. No type is cited in the original description but R. Mottram in The Opuntia Index in Bradleya 17/1999 p114 points out that "the left-hand photo (Fig. 7) is definitely stated to be "original," a term that may be considered equivalent to "type", and should therefore be regarded as the holotype illustration". Anderson states the name is invalid. It appears that the question of validity depends upon one's interpretation of whether the requirements of the nomenclatural code have been met or not. Sometimes there are grey areas. Was Backeberg precise enough? Backeberg also published a colour photograph in Das Kakteenlexikon showing a plant in cultivation (Fig. 6). All three illustrations show wide areoles. However, whilst the Lexicon description of the areoles is generalised the original description states upto 2mm long and approximately 1.5mm high so the definition is dealing with .5mm difference. Such a difference might be affected by the turgidity of a plant. His description says the habitat of *inarmata* is Bolivia but specifically states that there is "no exact location" known. The description is based upon material in cultivation. There is always the problem of the proliferation of specific clones in cultivation leading to a false identification of a separate species. Added to this there is the problem of clines in the wild with gradual gradation, over a large area, of one species changing its morphology. Added to this is the question as to what criteria should be used to define separation of species. Thus *inarmata* could be simply a recognisable morphological form of *verschaffeltii*. As usual one makes a personal decision. A. Hill

ATTEMPTING TO GROW AUSTOCYLINDROPUNTIA LAGOPUS.

Over the years I have tried to grow *Austrocylindropuntia lagopus* (*malyana*). I have had initial success in growing them from cuttings, bought good healthy plants from various nurseries and been given them by various people, but after about a year trouble starts. The plants/cuttings appear to start to shrivel up and finally turn into mummified remains in their pots. I have tried watering them in the summer and the winter plus exposing them to full sunlight/shading but to no avail, so could anyone please point me in the right direction to successfully growing these plants?

Alan James. Great Barr, Birmingham

While we might still think of this as "*malyana*" we do have to try to become used to the new name so *Austrocylindropuntia lagopus* it is. It is usually grafted. I had examples growing on Pterocactus, Echinopsis and Cylindrica stocks. I did have one growing on *Austrocylindropuntia subulata*. However, *A. subulata* does not grow well in unheated greenhouses and my big specimen in my unheated greenhouse used to grow six inches every summer and decay twelve inches every winter. Our relationship became fraught and we parted. The *subulata* rootstock used as a rootstock did no better. I removed the *lagopus* scion taking great care to scrape away all the mush. I dusted the base with green sulphur and rested it on the compost

surface. Then I spread 5mm hen grit around the "cutting" to hold it steady. It didn't. The "cutting" floated free the first time I watered it so that from then onward it sat loosely on the grit. I kept it on top of the central heating boiler, partly in the hope that bottom heat might help but mainly because, being very visible, I was more likely to remember to water it. Nothing much happened for months. Then the tiniest of shoots appeared. I wondered whether it had rooted and made the most tentative investigation. It felt quite loose but one edge appeared to be tacked down. I dare not look properly but I think that there was one fine root: fine enough to break if I tried to do anything with the plant. So there it was, still growing after two years and probably rooted but too fragile to survive anything I might think of doing with it. Has anyone had long term success with growing *Austrocylindropuntia lagopus* on its own roots? Are the roots as fragile as I suspect? If so how on earth does one ever get it repotted?

Bill Jackson. Sutton Coldfield

I have never been able to grow *A. lagopus* on its own roots and I resorted to grafting. However, my early attempts in the 1990s at grafting the taxa failed. At that time the perceived reason for failure was stated to be an inherent fault with the only clone available which had black marks inside the body. Since then other clones have become available and the taxon has become more common. Grafted plants are available and there has also been reported early success with offsets, planted in compost, apparently growing. It would appear therefore that some knowledge will have now been acquired amongst our members about the cultivation requirements of the taxon

I have grown three plants. Two on cereus stock and one on a Pterocactus tuber. At present I only have two plants growing as the cereus stock of the first plant I obtained has shriveled away. I still have the wooly stems of the plant, without sign of any green growth at the apex but the stems do feel quite solid. However, because the stock has shriveled away the remains of the plant sit loose in the pot. It has had water poured over it and whilst there has never been any sign of roots a small green shoot did emerge but has now shriveled back into a main stem. The plant therefore at one time did look to be "growing" but the fact it could be lifted off the surface of the compost, without any sign of roots, proved long term success was very doubtful.

In TSG issue Vol. 11. No. 1 March 2005 Ken Smith gave an account of his experience with *A. lagopus*. At that stage he was hoping for success. There were some healthy looking heads in pots at one of the last TSG meetings at Slimbridge and these were quickly purchased by members. I have often wondered what eventually happened to them. Did any of them develop into nice plants?

Members are invited to send in details of their success or failure with the taxon. Has anyone succeeded in having long term success with a grafted plant and did the "cuttings" "growing" in compost actually form worthwhile roots and have survived? Which stock has proved to be the best for long term success and what cultivated treatment has been given? *A. lagopus* is said to be a winter grower. Someone who is very good at grafting told me two years ago that one did not worry about the scion that

one was growing but simply cultivated the stock. Does this mean that *A. lagopus* on a cereus should receive water only in summer, should water be applied in winter or all year round? Is Cereus, Pterocactus or Opuntia the best stock? Has any one tried grafting onto floccosa? A. Hill. Sheffield

CORYNOPUNTIA PLANIBULBISPINA.

I understand that the plant name is invalid and I have not found the plant mentioned in Anderson's book or in the NCL. So despite the plant being grown by many people since the name is invalid are we supposed to ignore the fact that the plant exists? The habitat of the plant appears to be unknown. I have read the opinion of a student of Texas cacti who has stated that it does not grow in that state and he thought, with others, that it grew further south in Mexico. It could grow in the foothills of a mountain range as it can take a good amount of cold.
Backeberg lists the plant and gives a good description of it in his 1966 Kakteenlexikon and there is a description and photographs of the plant in the 2000 book "Tephrocactus and Other Prickly Pears" by Michael KieBling. Besides that many of we Opuntia growers do have the plant!
It is different from the other Corynopuntia in stems, spines, flowers and roots. The plant makes a clump (Fig. 11) that is more compact than some of the other mat forming plants and it looks different from *C. bulbispina*. The joints are quite easy to dislodge but are still not as easy as those of *C. grahamii*. The joints are shorter and smaller than the joints of *C. bulbispina (Fig. 9)*. When I raise the roots of the two plants the root system of *C. planibulbispina* is different from those of *C. bulbispina*. The flowers are to 8 cm in diameter and the plant will bloom several times over the summer in cultivation (Fig. 10). I trim the plants at least once a year to keep it to a size to match the pots I have them in. I give them my regular soil mix and now make sure the plants gets acidic water. If they are on alkaline water very long the plants' joints shrivel and in a short time the plants really looks like death warmed over. I have had several plants outside all year long and they seem to do fine here in California's Central Valley. E. Roberts. California.

The name was erected by Backeberg In Die Cactaceae 6: 3603, 1962 based upon cultivated plants in the collections of Riviere De Caralt and a Dutch grower named Jansen. The habitat origin is said to be not precisely known but probably South West USA. The translation in the Cactus Lexicon of the description on p3603 in Das Kakteenlexikon states "Body forming dense clumps ; stems deep green, to about 5 cm long, 2.5 cm thick, later to about 7cm long and over 3cm thick, becoming greyish-green; tubercles plump, to 1.5 cm long; leaves reddish, 5mm long; glochids later light straw-coloured; spines pink at first, then reddish-brown, darker above, finally grey; radial spines to about 12, thin, light; central spines mostly to about 6, one porrect, all more or less compressed, the longest one more flattened, somewhat rough, later dirty greyish-brown, thickened at the base…"
The Opuntia Index in Bradleya notes that the name is nom. inval. (Art. 8.4, 37.1, 37.4). The exact reasons for this can be found at the web site http://ibot.sav.sk/icbn/main.htm which gives the up to date 2005 Vienna Code version of the International Code of Botanical nomenclature. Art. 8.4

states a Type specimen must be preserved. 37.1 requires a new description published after 1st January 1958 to indicate the Type of a new name. 37.4 states prior to January 2007 the type may be an illustration. This explains the comment in The Opuntia Index that "a colour photograph of a flowering plant that accompanied the protologue would have automatically served as the type until the rules were changed in the 2000 Code". If Backeberg had observed the rules then the name could have easily been validated! As it is the name could have been used by later authors by simply adding "nom. invalid" after it but as Elton points out the name appears to have been simply ignored. From a grower's point of view it does not matter whether a name is valid or not as long as there is a name for the plant.

The name *planibulbispina* does appear in a list of cacti prepared by the Scientific Authority of Mexico as a checklist for a CITES meeting in 2002 (www.cites.org/common/com/PC/12/E-PC12-14-02.pdf). *Corynopuntia planibulbispina* Backeb., 1962 is listed as a synonym of *Corynopuntia schotti*i (Engelm.) Knuth with both appearing as "*Grusonia schottii* (Engelm.,) H. Rob., Phytologia 26: 176. 1973". The article by Robinson in Phytologia appears to have consigned *C. planibulbispina* to synonymy with *G. schottii* and for this reason it has been completely ignored by later authors. Most people growing the taxon will be unaware of all this, cannot find the name now mentioned in literature and be completely puzzled.

The above covers the nomenclature history for those interested. However, the process does leave unanswered an important point for growers. Is their *planibulbispina* really a *schottii* even if they do not know of the academic change? Since the recent receipt of the above initial article from Elton several emails have passed between us. Elton has looked on the web for *planibulbispina* and reports as follows:

"Looking on the web I have found one German site that says that *planibulbispina = grahamii. I looked at many sites and none I found can do any more than point to Backeberg for *C. planibulbispina*. Many had plants for sale and those that showed photos either had the plant I have known for several years as *planibulbispina* or they had a photo of *grahamii* or *schottii* as *planibulbispina*". Elton commented that wrong information on the web goes a long way to making a wrong identification of a plant for years to come. A further comment was "When I look at *schott*ii I do not see *planibulbispina* at all but it is hard to tell the difference between *schottii* and *grahamii*. Neither looks like *planibulbispina*, or not the one that I have seen all the time over here. I have never heard any one over this side of the pond saying that *planibulbispina* looks anything like either of those plants."**

In Backeberg's original description of *C. planibulbispina* he twice mentions similarities with *C. grahamii* whilst making clear the two are separate. One can therefore understand some confusion* with *grahamii.* The article in Phytologia should help to explain why the synonymy was made with schottii. Does any one have access to this article? I would be very pleased to have a report or copy of it. Until further information appears growers can keep growing their plant and make what they will of the confusion about the name. Everyone in the end has their own philosophy about names. However, it does help if access to the full information is available.

A. Hill. Sheffield

FIELD COLLECTION NUMBERS OF THE OPUNTIOIDAEA

Bates, Lowry, Marshall & Tomlinson BLMT numbers.

Many thanks are given to Martin Lowry for providing an updated list. Items underlined indicate those which might be found in cultivation.

130.05	**Opuntia sulphurea**	**Carrizal**	**2456**
131.04	**Cumulopuntia rossiana**	**Iscayachi**	**3934**
132.07	**Opuntia sulphurea**	**Cirque**	**3647**
132.08	**Cumulopuntia boliviana**	**Cirque**	**3647**
132.09	**Cumulopuntia chichensis**	**Cirque**	**3647**
133.06	**Opuntia sulphurea**	**Cirque**	**3472**
133.07	**Cumulopuntia chichensis**	**Cirque**	**3472**
134.05	**Opuntia sulphurea**	**Cienaguillas**	**3432**
134.06	**Cumulopuntia chichensis**	**Cienaguillas**	**3432**
137.08	**Cumulopuntia chichensis**	**Iscayachi**	**3390**
137.09	**Austrocylindropuntia shaferi**	**Iscayachi**	**3390**
137.10	**Tunilla sp.**	**Iscayachi**	**3390**
138.06	**Opuntia sulphurea**	**Cana Cruz**	**2840**
138.07	**Austrocylindropuntia shaferi**	**Cana Cruz**	**2840**
140.04	**Opuntia sp.**	**Trancas**	**2164**
144.01	**Opuntia sulphurea**	**Angostura**	**1840**
146.03	**Opuntia salmiana**	**Orozas**	
152.05	**Opuntia sulphurea**	**Santa Ana**	**2300**
154.02	**Austrocylindropuntia verschaffeltii**	**Alto Espana**	**2515**
157.04	**Opuntia sulphurea**	**Tomayapo**	**2813**
157.05	**Cumulopuntia boliviana**	**Tomayapo**	**2813**
158.03	**Opuntia sulphurea**	**El Puente**	**2876**
159.03	**Opuntia sulphurea**	**La Torre**	**2792**
160.02	**Opuntia sulphurea**	**La Torre**	**2476**
161.04	**Opuntia sulphurea**	**La Torre**	**2400**
162.02	**Opuntia sulphurea**	**Villa Abecia**	**2340**
165.07	**Opuntia sulphurea**	**Culpina**	**3028**
165.08	**Tunilla sp.**	**Culpina**	**3028**
166.03	**Austrocylindropuntia verschaffeltii**	**La Ceuva**	**3105**
166.04	**Tunilla sp.**	**La Ceuva**	**3105**
167.05	**Opuntia sulphurea**	**Camargo**	**2600**
169.02	**Cumulopuntia boliviana**	**Padcoyo**	**3400**
169.06	**Austrocylindropuntia verschaffeltii**	**Padcoyo**	**3400**
170.02	**Opuntia sulphurea**	**Alto Lecori**	**3500**
170.06	**Cumulopuntia chichensis**	**Alto Lecori**	**3500**
171.07	**Opuntia sulphurea**	**Otavi**	**3620**

Figs 10 & 11. *Corynopuntia planibulbispina* Backeberg. Photos by Elton Roberts.

TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera plus other small Opuntias

Cumolopuntia unguispina **(Bkbg) Ritter PH655.03**
El Cobre, Chile. Photograph by P. Hoxey

STUDY GROUP

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SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

Subscriptions for 2008 were due on the 1st January 2008

Subscriptions and any other correspondence must be sent to the Secretary.

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

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THE TSG STAND AT THE BCSS NATIONAL SHOW.

Many thanks are given to John Betteley, Stuart Estell, Roger Moreton and Ray Weeks for their help in preparing the stand and creating a very effective display with John's plants and photographs prepared by Ray. They are also thanked for manning the stand. There was no competition this year for the best Society stand but several people complimented us on the standard of the display. A. Hill. Chairman.

NOTES ON MAIHUENIOPSIS SPEGAZZINI (CACTACEAE).

Graham Charles has written an article with the above title for Bradleya 26/2008 p63-74. The Yearbook can be obtained from the British Cactus and Succulent Society. The article reviews accepted species and is well illustrated with photographs and two distribution maps. Graham shows that he has had further thoughts on the genus since he gave us the talk at our meeting in Birmingham in 2007. The article makes very interesting reading and is recommended to you. Obviously it would be wrong to outline here the information in the article. However, it will be quite correct for TSG members to make some comments on it for discussion by our group in our own publication. Ed.

EDITOR'S EMAIL ADDRESS.

Further to my note in the June issue. I have now changed my Internet Service Provider but will continue to use alan.hill32@yahoo.co.uk as my email address.

AN UPDATE ON MY PLANTS.

(Early this year the strong winds caused severe damage several times to Royston's greenhouse with damage to the side and roof. Attempts to make a waterproof roof failed. The plants have therefore sat in trays which filled with rainwater. Ed.)

After all the heavy rain earlier, and having to bail out inches of water from the trays in which my plants were sitting, the good weather allowed me to gradually build a new side to my greenhouse. The plants therefore had to more or less look after themselves, whether roofless or under cover. It hasn't prevented them from performing with many buds on view and a number coming into flower at the moment. As a plant of the Tephro group shows sign of growth I am always eager to see if it will be a bud or a segment that will arise. I was therefore keen to complete the harvesting of last year's fruits.

On the 1st October 2007 I obtained fruit from *M. minuta* then on the 28th October those of *M. ovata*. On that date I also had fruit from my British Standard *glomerata* with just 12 seed. This, a large plant in a 10" pan, had 6 flowers whilst my medium plant overgrowing a 2¾ square pot had one flower. It was this small plant that produced another fruit with 36 seed, harvested on the 23rd April. Back in October I was surprised to see a fruit on *A. shaferi* had produced 8 seeds. In April *C. rossiana* (Phil Leigh) had fruits of 12 and 7 seed while KG 1591 had 11 seed. In May my *C. rossiana* from B/K 13 seed had a fruit on the "A" clone (the largest) with 13 seed and on the "B" clone 19 seed plus on the G. Charles 180-09 there were 12 seed. My late flowering *M. hypogaea* (Chris Hall) also surprised with fruits having

14 and 1 seeds in them. Another surprise came when my *M. darwinii* FK 91-78-383 from near Perito Moreno produced a fruit with 13 seeds inside. I hope for more success on other plant this year. One of my Pern/Watson *M. platyacantha* has a bud on.

The last Dutch light in the roof was jammed so I was waiting for someone to help me get it down. However, the gusting winds of bank holiday Monday managed to lift it and smash it down. Luckily no plants underneath were damaged except an unimportant *C. boliviana*. Just in time for the overnight rain, then Wednesday soaking! Royston Hughes. Liverpool.

AUSTROCYLINDROPUNTIA LAGOPUS.

Seeing the article by Alan James and comment by the Editor (see Vol.14, page 25-26) I would like to make a few comments about this plant. *A. lagopus* (or *A. malyana*, call it what you will), is a somewhat tricky plant to grow in our collections because we know very little about the habitat and the conditions it grows under. It would indeed be very helpful if those that travel to these parts in Peru could tell us a little more about the environment there. Things like the various temperatures during the year, the soil conditions and the precipitation.

However, as many members who have visited me will know I have grown this plant for well over twelve years grafted on various stocks with some success. The most successful stock is Pterocactus tuberosus. Not all clones that circulate are suitable, but the one that makes a particularly thick rootstock is the best. The best way of grafting on this is to cut well into the tuber, otherwise side shoots of the stock will appear.

I too have tried to grow a cutting and have kept it going for over a year in my propagator, but then it shriveled and dried up when I forgot to water it during the winter months. In the winter I do not go down to check in the greenhouse and it must have been several weeks before I remembered that it needed some water. As I later found out it needs a permanent water supply.

It is correct that at one of the meetings here at Slimbridge some cuttings were offered and they all were snapped up quite quickly! That must have been four or five years ago. I wonder if anyone who bought one has been able to grow it on. I think the vendor was David Parker (one of our former members). He gave me one of his plants (I can not remember if it was a cutting or one grown from seed, because at that time a Swedish grower offered some habitat seed). It was already potted up when I received it in a "Long Tom", the compost looked a bit like "plum pudding" with some grit (but I think the medium is unimportant). When I received it looked just like a cutting, so I kept it in the same pot with its own saucer. At first it did not show any growth for three or four years, but I kept watering it and hoping for success. The last two years it has shown some sign of growth. The whole span of time must be at least over a period of over seven to eight years, if not more. I must stress, the saucer was never without water for more than a few days and it has been in my little unheated greenhouse with the door more or less permanently open.

Now it has quite a thick, strong stem and several side-shoots looking good and vigorous (Fig. 18) and I am very pleased with it. I must stress it has never been re-potted or moved.

Just to recap, - I think the answer is to pot it into a deep 4" long tom, and never let it dry out, whether it is a cutting or grown from seed. It does not appear to be sensitive to frost and does not like re-potting and appears to like moving air. The main growing period is during the winter. However, all these are just my own observations and I would be delighted to hear from other members of their success in growing the species.

Rene Geissler. Slimbridge

CORYNOPUNTIA PLANIBULBISPINA. PART 2

In the last TSG issue, Vol. 14, No. 2 p27/28, an attempt was made to follow the references in the literature to the name *C. planibulbispina* and to attempt to identify the taxon. Although the name appears to have mainly disappeared from the literature (without an explanation) reference was made to a checklist of all Mexican cacti prepared by the Scientific Authority of Mexico in 2002 where the name appears as a synonym of *Grusonia schottii*. The authority quoted is H. Robinson in Phytologia 26:176, 1973. Not knowing the article it was assumed that it would show recognition of *planibulbispina* as a synonym of *G. schottii*. I am indebted to Gordon Rowley for the provision of a copy of the relevant article, headed "New combinations in the Cactaceae subfamily Opuntioideae". In the article H. Robinson states that "The North American cylindrical or clavate species can be easily separated into *Cylindropuntia* having the spines mostly rounded and with the epidermis separating completely in a deciduous papery sheath; and *Grusonia* with the spines flattened, roughened or bulbous at the base and with little or no distinct sheath." The article then includes seven new combinations to place *bulbispina, clavata, grahamii, pulchella, schotti, stanlyi* and *vilis* under *Grusonia*. There is no mention of *planibulbispina* even as a synonym. The query therefore remains as to why the checklist shows *planibulbispina* as a synonym of *schottii.*

Discerning members will have noticed that in TSG Special Edition on Cultivars, Vol. 13, No. 3A October 2007, p54 Gordon Rowley lists 'Planibulbispina' as a cultivar under *G. grahamii*. He has now kindly provided information on how he came to that decision. Ed.

In compiling my opuntioid checklist I relied for names at specific level on Mottram/Hunt/Anderson sources, taking the more conservative treatment where there was a difference. As a mere name catalogue it made no pretence of being a taxonomic revision, but simply aimed at a middle-of-the-road view.

Thus I regard *Corynopuntia planibulbispina* Back. in Die Cactaceae VI: 3603, 1962, as validly published - despite what you might read elsewhere - as typified by Abb.3273, the colour plate. This was not so in 2001 when Mottram wrote it up in Bradleya 19; 102-3. But the Code changed again!

Either way, 'Planibulbispina' is uncontroversial as a cultivar name, and the colour plate is ideal as a standard by which to pin it down.

As regards the botanists' treatment of it, the latest and I think the best overall listing of cactus names is that in the German edition of Anderson's The Cactus Family (2005) which has been extensively corrected and

revised by Urs Eggli (who should have been credited as co-author at least!) and he has added in numerous synonyms omitted in the Hunt New Cactus Lexicon. On page 306 *Corynopuntia planibulbispina* is synonymised under *Grusonia grahamii*. Summing up, if you prefer to consider the taxon as closer to *schottii* than *grahamii* you write *Grusonia schottii* 'Planibulbispina'; if you play for safety you just put *Grusonia* 'Planibulbispina' on the label.

G. Rowley.

A BRIEF REVIEW OF CUMULOPUNTIA *SPHAERICA* Part 1

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The genus *Cumulopuntia* was erected by Ritter (1980:399) to include a small number of dwarf South American Opuntiods. The key characteristic which distinguishes this genus from the closely related *Maihueniopsis* are the fruits which contain seeds within a dry cavity. In the New Cactus Lexicon only four species (*Cumulopuntia boliviana, chichensis, rossiana* and *sphaerica*) are accepted with a further 24 names referred to these four. No less than 11 are considered synonyms of *C. sphaerica*.

A trawl through Iliff (2002) reveals a further seven names which are associated with *C. sphaerica* giving us a potential 18 synonyms. As Iliff mentions (2002:143) this species group is not well known. As far as I know no attempt has been made to critically study the group to determine if any of the names should be retained at some sort of botanical rank. I have seen a number of populations in habitat, many of which correspond to validly published names, and I think it is useful to show the variation in the plants which are encountered under the broad concept of C*. *sphaerica* in the NCL.

***Cumulopuntia sphaerica* in the broadest sense is a very wide ranging species found on the western side of the Andes in southern Peru and northern Chile. The northernmost population (*C. kuehnrichiana*) is from the Rímac valley, near to Lima in the centre of Peru and the southern extreme is reached in the province of Coquimbo, Chile, a distance of over 2000km. I have observed populations at over 70 localities at altitudes from sea level to 3830m. The large distribution and altitude range is remarkable for a single species within the *Cactaceae*. The distribution contrasts strongly with *C. boliviana* which is a plant of the high Andes to the east and which is found at high elevations in Peru, Chile, Bolivia and Argentina. The ranges just about overlap in the highlands of southern Peru and I know of one locality near Pampa de Arrieros, on the road from Arequipa to Puno where they grow together.**

Not surprisingly for a plant with a wide distribution and so many synonyms there is a large amount of variation between populations. However I have found variation within populations to be low and the plants generally uniform in characteristics at any given locality. Perhaps this is due to a significant amount of vegetative propagation from joints which are often

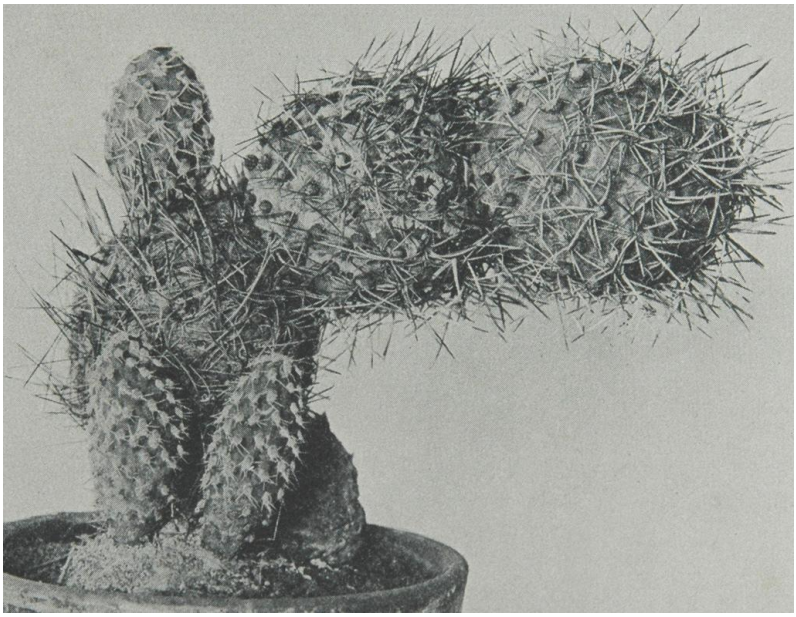

Fig. 1 *Cumulopuntia sphaerica* neotype.
Reproduced from Britton & Rose P. 96. Fig. 113.
Fig. 2 *Cumulopuntia sphaerica* ISI 1525. Good example of type form.
Arequipa, Peru. All photographs Fig 2- 17 by Paul Hoxey.

Fig. 3 & 4 *Cumulopuntia sphaerica* PH709.04.
Near Minas Cerro Verde, Arequipa, Peru. 2400m.

Figs 5 & 6.*Cumulopuntia tumida* PH 584.08.
The coast north of Atiquipa, Arequipa, Peru

Figs7 & 8*. Cumulopuntia crassicylindrica*. PH 762.03. Hacienda Ongoro, Rio Majes, Arequipa, Peru. 930m.

Figs 9 & 10. *Cumulopuntia kuehnrichiana*. PH 780.01.
Rio Rimac, Lima, Peru.

Figs 11 & 12. *Cumulopuntia unguispina*. PH769.04. Camana, Arequipa, Peru.1000m.

Figs 13 & 14 Cumulopuntia sphaerica (high altitude form). PH596.02. Road to Cotahuasi, above Chuquibamba, Arequipa, Peru. 3830m.

Fig. 15 *Cumulopuntia unguispina*. PH655.03. El Cobre, Antofagasta, Chile. 830m.
Fig 16 Cumulopuntia sphaerica (high altitude form). PH709.05.
Near Minas Cerro Verde, Arequipa, Peru.

weakly attached to each other and readily root to form new plants when detached.
The list below gives the names which are referred to *C. sphaerica* in Hunt (2006) and Iliff (2002). Not all have been transferred into *Cumulopuntia* and I give the earliest published name if that is the case. I also include *C. galerasensis* as I believe this too has become entangled within this web of names and should be covered in this discussion.

***Cumulopuntia alboareolata* (Ritter) Ritter**
***Tephrocactus bicolor* (Rauh & Backeberg) Rauh**
***Opuntia campestris* Britton & Rose**
***Opuntia corotilla* K.Schumann ex Vaupel**
***Cumulopuntia crassicylindrica* (Rauh & Backeberg) Ritter**
***Opuntia dimoropha* Foerster**
***Cumulopuntia galerasensis* Ritter**
***Opuntia ignota* Britton & Rose**
***Cumulopuntia kuehnrichiana* (Werdermann & Backeberg) Ritter**
***Opuntia leucophaea* Philippi**
***Tephrocactus mirus* Backeberg**
***Tephrocactus muellerianus* Backeberg**
***Cumulopuntia multiareolata* (Ritter) Ritter**
***Tephrocactus pseudorauppianus* Backeberg**
***Cumulopuntia rauppiana* (Schumann) Ritter**
***Cumulopuntia tubercularis* Ritter**
***Cumulopuntia tumida* Ritter**
***Cumulopuntia unguispina* (Backeberg) Ritter**
***Cumulopuntia zehnderi* (Rauh & Backeberg) Ritter**

I will not be discussing further the names *Opuntia dimorpha* Foerster, *Tephrocactus muellerianus* Backeberg, *Tephrocactus pseudorauppianus* Backeberg and *Cumulopuntia rauppiana* (Schumann) Ritter because none have a well defined type locality or type. All are accepted to belong to the *C. sphaerica* group and are best considered synonyms of C. sphaerica.
I highly recommend Iliff's "The Andean Opuntias" published in 2002 as part of the "Studies in the Opuntioideae" as an excellent reference to South American Opuntiods. I have used it extensively whilst preparing this article, particularly for information on older names in publications which are not readily accessible today.

***Cumulopuntia sphaerica* (Foerster) Anderson (type form)**
***Opuntia sphaerica* was described in 1861 by Foerster with a location given as the department of Arequipa, Peru. As no type specimen was preserved Iliff defined the type using the illustration Fig. 113 in Britton and Rose (1919:96), reproduced here (Fig.1), of a plant collected above the town of Arequipa, in the department of the same name. This is clearly a large growing form with very spiny segments with the spines on all the areoles. The illustration also shows new growth of smaller, elongated and much more weakly spined segments. I have observed this growth pattern, which is typical for *C. sphaerica,* in several populations where plants have very green weakly spined segments which are of very recent growth. The**

segments then appear to undergo a secondary growth phase to reach maturity with stronger spine growth and the toughing of the epidermis with the development of a waxy coating, turning the plant a greyish colour. Figure 2 shows clearly the mature and immature growths from a plant in cultivation of ISI 1525, collected 23km west of Arequipa at 2800m. This plant conforms closely to the type.

I found similar looking plants to the type at Minas Cerro Verde (PH709.04) just outside Arequipa on very dry hills at 2400m, growing as low loose clumps. Figures 3 & 4 shows a relatively large clone with segments roughly spherical to 8cm in diameter (and suffering from sooty mould). The body is slightly glaucus with a waxy coating. The spines emerge from large areoles and completely cover the segment; they are recurved and somewhat twisted or contorted to give the plant an overall untidy and distinctive appearance in comparison to other *C. sphaerica* forms. Also growing at this locality we found a smaller growing form, with segments no more than 3cm in diameter, with short straight spines (Fig. 16). I will discuss this plant in more detail in the comments for the small jointed high altitude form of *C. sphaerica.*

I have only encountered the type form growing at two other localities; between Moquegua and Omate at 2430m (PH618.04) and at Minas de Toquepala near Moquegua at 2620m (PH615.02) although in both cases with slightly smaller segments. All three localities have a similar altitude and arid environments, being situated on the edge and to the east of the coastal desert belt. They do not receive any coastal mist and instead rely on very limited rainfall.

***Cumulopuntia tumida* Ritter**

Ritter (1981:1254) erected this name for plants found on the coast near Chala Vieja, in the north part of the department of Arequipa. Ritter's original description calls for a loose sprawling plant made up of short-ellipsoid segments 4-8(-10) cm tall and 4-6cm across. Initially they are green turning to a more grey green with age. Areoles are 3-5mm in diameter, extending to the base of the segment and orange-brownish in colour. Spines are white to 3cm long, with a brown tip and they taper down from a thick base to a point. Spines are usually absent on the areoles on the lower half of the segment.

I was unaware of anyone other than Ritter finding this plant in habitat and it was with very good fortune we found plants on the coast near the base of the Lomas de Atiquipa, just north of Chala Vieja which correspond very well with the description, see figures 5 & 6, my PH584.08. We only encountered a small number of plants but all were very consistent in their characteristics. In general characteristics including segment size, this plant most closely resemble the type form of *C. sphaerica* rather than the smaller growing *C. unguispina* found to the south along the coast. The short white spination is slightly recurved but is otherwise very distinct from the type *C. sphaerica*.

This habitat is particularly interesting as the Lomas de Atiquipa is the most favourable locality for plants along the coast of southern Peru because of the amount of moisture available. The extensive lomas vegetation survives on sea mists, which for unknown reasons are at their strongest along this

small section of coast. The Lomas de Atiquipa is very isolated from other lomas localities as the surrounding area is much more arid. It is well known as an area with many endemic species of plants (including *Eulychnia ritteri* and *Haageocereus chalaensis* within the *Cactaceae*) and animals because of the isolation.

***Cumulopuntia crassicylindricus* (Rauh & Backeberg) Ritter**

This very distinctive plant is found in a small population in a very arid environment in the base of the Río Majes valley at approximately 1000m in altitude some 80km inland where it shares the habitat with I*slaya grandis* and *Haageocereus pluriflorus*. It was originally named as a *Tephrocactus* by Rauh and Backeberg in Rauh (1957) and was moved into *Cumulopuntia* by Ritter in 1981. The plants grow as loose clumps of segments to 10cm or more in length (Fig. 7). They are more elongated than either the type form of *C. sphaerica* or *C. tumida*. The spines are mainly found on the upper half of the segments, a character shared with *C. tumida* but not *C. sphaerica* (type form). There is usually one very robust central spine and then 4 or 5 further shorter but equally strong radials. They are always straight. Spine colour varies from grey through to black. The black colour may be due to growth of sooty moulds and appears to affect the areole wool too (Fig 8). When I visited the locality in March 2008, the plants were in full flower with fresh growth. The area was incredibly arid so I imagine the plants had taken advantage of a rare rain event some weeks or months previously to grow new segments. The new segments are clearly visible in figure 7, being bright green, weakly spined and very distinct from the mature growth. Small residual leaves are present. The strong spination (Fig 7) and grey glaucus body was a consistent feature on the mature growth of all the plants I saw. Royston Hughes has shown me material purporting to be this plant in cultivation and it is relatively weakly spined with white spines. It is likely in a UK greenhouse we can't give it sufficiently strong sunlight to develop the same degree of spination as is seen in habitat.

***Cumulopuntia kuehnrichiana* (Werdermann & Backeberg) Ritter**

This is the most northern form of *C. sphaerica* which grows in the Rímac valley inland from Lima. It was described as a *Tephrocactus* by Werdermann & Backeberg in 1931 and moved into *Cumulopuntia* by Ritter in 1981. The type locality is the town of Chosica and I have seen plants close by, on slopes where the urban spread from Lima has yet to reach. It grows into large sprawling clumps in a similar way to *C. tumida* and *C. crassicylindricus*. The segments are slightly elongated to 8cm or so in length. The spination is generally on the upper half of the segment only and relatively fine. The plant has the appearance of a weakly spined *C. sphaerica* (type form). Figures 9 and 10 show a typical plant.

The taxa *C. sphaerica* (type form), *C, tumida*, *C, crassicylindrica* & *C. kuehnrichiana* make up a group of very similar plants, characterised by large segments which vary a little in the amount of elongation. There are much larger differences in the spination which can be used to distinguish between the populations more clearly.

***Cumulopuntia unguispina* (Backeberg) Ritter**

This species was described by Backeberg in 1937. The type locality is given as the desert of Joya, south west of Arequipa. This desert belt is formed because it is too far inland for coastal mists to penetrate but also too far west for rains from the east. It is unlikely the plant grows in the total desert because of the aridity. I have found these plants in several coastal localities in southern Peru from Camaná to Tacna, always in very arid conditions in the fog zone and never in large numbers. Ritter also reports plants from similar habitats west of the desert belt, Ritter (1981:1251).

The original description calls for segments up to 4.8cm in diameter, although Ritter (1981:1251) states a maximum of 2.5cm and all the plants I have found never exceeded this segment size. The areoles are very large in comparison to the size of the segments and perhaps cover in excess of 50% of the segment surface. When young the segments have significant amounts of white areole wool. The straight, needle-like, spines radiate out of the areole and are up to 25mm in length and brown when young, turning grey with age. The original description calls for up to 18 spines but this seems to be unusual rather than the norm, and a maximum of 8 to 10 was more typical. Spines are often limited to areoles in the top half of the segment. New growth is bright green and often has small residual leaves present beneath the areole. Mature growth develops a glaucus coating to give plants a grey/green appearance. Figures 11 & 12 illustrate a plant PH769.04 at Camaná.

I consider the plants commonly found in northern Chile coastal localities to belong here. They have similarly sized small joints and large areoles which is remarkably consistent over the whole range. In the far north of Chile there is a gap in the distribution with the Peruvian populations but this is due to increased aridity of the region. They still exist at a few favourable localities south of Iquique but in the past the distribution must have been continuous from Coquimbo, Chile to Camaná, Peru.

The front cover and Figure 15 shows a plant at El Cobre, to the south of Antofagasta, Chile, which conforms very closely with *C. unguispina* from southern Peru. Note the residual leaves on recent growth. In more favourable localities plants can make larger clusters but retain the small segment size.

This dwarf headed form of *C. sphaerica* is the most often seen in cultivation, which I suspect originate from Chilean rather then Peruvian localities. Segments are easily detached and rooted. I find it impossible to grow a plant to any size as I find they disintegrate when I attempt to re-pot them. However flowering is possible on plants once they achieve chains of 4 or 5 heads high.

***Cumulopuntia sphaerica* (Foerster) Anderson (high altitude form)**

On the road which climbs out of the Río Majes valley towards Cotahuasi *C. crassicylindrica* can be found up to approximately 1600m in altitude. There is then a gap where no *C. sphaerica* forms can be found until the altiplano is reached. Here at 3830m, growing with *Oreocereus leucotrichus* I encountered *C. sphaerica* (Figs 13 & 14). I found further high altitude populations above Arequipa at 2830m and 3200m, Moquegua at 3700m and

close to the Chilean border at 3470m. Royston Hughes has also encountered similar plants in the Colca Canyon region at similar altitudes. In all cases the plants have small segments, large areoles and short, straight, spination consistent with *C. unguispina*. Figure 17 shows red flower buds but these open to reveal yellow flowers typical of the *C. sphaerica* group. The habitats of this form are very different to *C. unguispina*, as they receive regular annual rainfall but are colder due to the higher altitude. The desert belt in southern Peru which extends into northern Chile isolates the coastal habitats from the high altitude ones and forms a natural barrier between the two populations.

Surprisingly a name has not been erected for this high altitude form in Peru but in Chile we have two possibilities:

***Opuntia leucophaea* Philippi was described in 1891 with a type from Usmagana in Tarapacá, the northernmost province of Chile. Philippi describes a plant with globular segments to 2.5cm in diameter with prostrate branches and a saffron yellow flower with a short ovary. As Iliff points out (2002:207) this plant must be a *C. sphaerica* form.**

***Cumulopuntia tubercularis* Ritter was described in 1980 from Chusmiza also in the province of Tarapacá. Ritter also gives an altitude of 3000-3400m. He associates this plant with *C. berteri* (his name for *C. sphaerica* from coastal Chile).**

Both localities are close together at approximately Lat S19.75°, Long W69.23° inland from Iquique and 200km south of the Peruvian border. Unfortunately no illustrations exist for either plant and it would be beneficial to return to the localities to record what grows there. From the information we have, it appears *Cumulopuntia tubercularis* is a re-description of *Opuntia leucophaea* and both belong to the high altitude form of *C. sphaerica* and extend the range significantly southwards.

As mentioned earlier it was interesting to find a small growing *C. sphaerica* with 3cm high segments (Fig 16) together with the large typical form just outside Arequipa. Unfortunately we didn't have time to explore fully to see if there were any intermediates or if the two forms grow side by side without intermingling. I am placing this plant with the high altitude form rather than with *C. unguispina* as the location is east and inland of the desert belt.

To be continued.

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Fig 17. *Cumulopuntia sphaerica* (Foerst.) Anderson PH 596.02 Photo by P. Hoxey.
Fig.18 *Austrocylindropuntia lagopus* on own roots grown from a cutting.
Photo by R. Geissler.

TEPHROCACTUS

Incl. Maihueniopsis, Puna and related genera plus other small Opuntias

***Austrocylindropuntia vestita* (Salm-Dyck) Backeberg .**
Photograph by Elton Roberts

STUDY GROUP

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SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

Subscriptions for 2009 are due on the 1st January 2009

Subscriptions and any other correspondence must be sent to the Secretary.

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THE 2009 TSG MEETING.

This will be held on Sunday 10th May 2009 at the Great Barr Ex Service Men and Women's Club, Birmingham, which is very near Junction 7 of the M6. The room will be available from 10.15 and a buffet lunch costing £5 will be provided. More details of the meeting and location of the venue will be in the TSG March 2009 issue. To help the Caterer notification of the number of people having lunch is needed by April 24th. I would be grateful if people intending to attend will let me know by that date which might be only about three weeks after the posting of the TSG March issue.

The location is the same as last year and the date remains changed to avoid the meeting being held on the day before the May Bank Holiday Monday as was the case in previous years. Geoff Bailey, who has made several journeys in North and South America, will be discussing the Opuntias he has seen and Ivor Crook will also contribute to the programme.

Attendance is free and not restricted to members and their guests. Therefore the event could be promoted by TSG members at local BCSS branches etc. Please will members do this? A. Hill.

APOLOGIES TO DAVID PARKER.

In TSG issue Vol. 14. No.3. September 2008 on page 33 in an article on *Austrocylindropuntia lagopus* David Parker was given the correct credit for starting off the cutting that Rene Geissler has kept alive and grown. However, it was mentioned in parenthesis that that David was a former member of the TSG. This comment was totally incorrect. Although Rene was formerly the Secretary of the TSG he has no longer access to the membership lists. I should have noticed Rene's mistaken impression and should have deleted the comment. Since he first joined David has never allowed his membership to lapse and I am very happy to confirm that he remains a member. I give my apologies to David for my error.

A. Hill. Editor

CORYNOPUNTIA PLANIBULBISPINA. Part 3.

In the last issue of the TSG on pages 34 and 35 the discussion of the name was continued with some closure by Gordon Rowley. Gordon stated that as regards the botanists' treatment of the name he thought the best overall listing of cactus names is in the German edition of Anderson's The Cactus Family (2005). He goes on to say that on page 306 *Corynopuntia planibulbispina* is synonymised under *Grusonia grahamii*.

As the German edition was extensively corrected and revised by Urs Eggli a query was sent to him asking him about the synonymisation of *Corynopuntia planibulbispina*. He has very kindly replied that this name was synonymise with *Grusonia grahamii* on the authority of L. D. Benson, Cacti US & Canada, 917, 1982, as mentioned there under *Opuntia schottii*, and applying E. F. Anderson's generic concept of putting these species into Grusonia. An examination of Benson page 917 shows that whilst recognising *Opuntia schottii v. schottii* and *Opuntia schottii v. grahamii* Benson considers the Backeberg name of *C. planibulbispina* to be a nomen nudem and comments that the original description stated the plant was similar to *var. grahamii.* Ed.

CUMULOPUNTIA SPHAERICA IN CULTIVATION

In his "Brief Review of Cumulopuntia sphaerica" TSG 14 3 p.35 Paul Hoxey states: "As far as I know no attempt has been made to critically study the group to determine if any of the names should be retained at some sort of botanical rank." This, I have no doubt, is true. It is to be hoped that his studies of plants in habitat will bring enlightenment later for the botanists. A very promising start has been made.

However, for plants in cultivation the situation is very different. Take heart! Turn back the pages to TSG 13 (3A) Special Edition on Cultivars p.67 and you can find listed all 23 variants of *Austrocylindropuntia/Cumulopuntia/Opuntia/Tephrocactus sphaerica* at cultivar status, together with (at no extra cost) a free alphabetical list of latinised names, plus an overall reference to Crook & Mottram's invaluable Opuntia Index in Bradleya 1995-2005 for full documentation of publication and typification of each.

Provided that one takes care to retain collectors' numbering and field data, relabelling provides no problem. All cultivars are equal in the sight of the horticulturist - it is, after all, only a method of tagging - and because our accessions are nearly always vegetatively propagated each clone remains stable and easily recognisable. It is only the botanist compiling floras and monographs who needs to worry over subspecies, varieties and forms.

By writing the name with an initial capital, in Roman lettering and enclosed between single quotes you conform to the horticultural Code (ICNCP), and your names will be acceptable anywhere in the world where plants are grown and change hands. Further, you are not tied to any particular system of classification: *Cumulopuntia sphaerica* 'Mira' can become *Austrocylindropuntia sphaerica* 'Mira' if that is how you see it, or *Opuntia sphaerica* 'Mira', or *Tephrocactus sphaericus* 'Mirus'. Only the gender has to be changed to agree with that of the associated species. And if you are really undecided about where the plant belongs, you can leave out the specific epithet altogether.

The horticultural Code is more flexible and easy to operate than that for botanists, and it would be great if we could standardise the way we write names and end the confusion to be found in so many catalogues, journals and handbooks by authors who should know better.

G. Rowley, Reading

OPUNTIA HAMILTONII.

At the recent TSG meeting in Birmingham Eddie Newman gave me a plant bearing the name *Opuntia hamiltonii*. On trying to put it onto my plant record lists I found no references to it in any of my books apart from a mention in Bradleya 16/1998 p129. Roy Mottram's Opuntia Index in Bradleya states that the plant was found in 1935 in Mexico, Baja California near the coast at Arroyo Santo Domingo, near the Hamilton' Ranch, but the name was never validated. The Index tells you to look under the name of *Opuntia rosarica*. Can anyone shed any more light on this plant? The plant,

to me, shares many similarities with *O. miquelii* although, of course, the latter comes from South America. (Please see Fig. 7.)

Alan James. Birmingham

VARIATION WITHIN A SPECIES - MAIHUENIOPSIS SUBTERRANEA.

The variation in stem development, propensity to offset, spination and flower colour within a single species can be demonstrated by reference to four clones of *Maihueniopsis subterranea*. Occurring at various locations in Bolivia and Argentina, habitat plants have partly buried small bodies, often visible to only one centimetre above the ground. This contrasts with the often freely offsetting mode of growth in cultivation, where plants of over one hundred heads have been encountered by the author. In all cases the plant is like an iceberg - there is considerably more underground than is visible on top. In fact the major part of the plant consists of a deep tap root - necessitating a broad and deep pot with a gravelly, but rich compost in cultivation. The stems are generally cylindrical to sub cylindrical, and the ribs are divided into low spirally-arranged tubercles. The areoles are numerous, small and closely set, with a varying length of yellow to light brown glochids. Central spines are absent, whilst radial spines are thin, pectinate and adpressed.

The flowers are about 4cm in diameter and occur laterally over the whole segment - opening fully.

At one stage the species was synonymously know as *Opuntia variflorus* - indicative of the variation in flower colour. The colour varies from light pink to carmine and various shades of creamy white. There is even a deep rose-red form with the sub-specific name of "*pulcherrima*" - which has been collected by Martin Lowry and detailed in issue 4 of the 2004 TSG Journal with corrected name spelling in the following issue.

The plant in the first illustration (Fig. 3) came from René Geissler in 2001 and was originally cultivated by Alan Forno. The plant in the second illustration (Fig. 4), with longer glochids, was collected by the late Keith Grantham at La Quiaca on the Altiplano of Bolivia.

The third illustration (Fig. 5) is a much slower growing form collected in 2004 around the Yavi area, east of La Quiaca in the Jujuy province of Argentina.

The final illustration (Fig. 6) has the longest glochids and has an attractive pink flower but has no habitat data although it also was originally cultivated by Alan Forno.

In writing and illustrating this article I would like to pay tribute to TSG member David Parker, who sought out and grew these plants so well until he sold his collection and I was able to purchase them in September last year. I hope that he approves of my cultivation skills with the plants following on from him.

John Betteley, Newark.

WILL BAKER.

A message has been received from Brian Bates, who now lives in Bolivia, about *sp bakeri.* Brian has extensive documentary knowledge and says, in answer to my question in the recent June TSG issue as to who is/was "Will Baker" that he thinks Will Baker is almost certainly William "Bill" Baker

who owns/owned a nursery in Reseda, California. "Bill" was a member of the Huntington expedition to Bolivia in 1984. This was led by Myron Kimnach and also included John Donald, Seymour Linden and Henry Varney. He was also in Bolivia in 1983 and before that Mexico and Nicaragua. The last record Brian has of him is that he collected in Mexico in 1991. Brian is therefore not sure whether he is still with us. Please can anyone use this information to try to find out from where the taxon originated? It would appear that it was collected either in 1983 or 1984 in Bolivia probably by William Baker. Alternatively the taxon could be a sport that emerged in William Baker's greenhouse from a normal plant or could even be a hybrid raised there. Ed.

UNUSUAL GROWTH

Roger Moreton, a very long standing member of the TSG and very interested in growing Opuntias, has donated his entire cactus collection to the University of Birmingham and the plants can be seen in the Winterbourne Gardens. Some of these plants, plus donations of plants from other people, have formed the basis of a new national collection. The remainder of what was Roger's collection is housed in another greenhouse in the gardens. Roger has continued to take an interest in the plants. Recently he has provided the following information.

Ed.

I thought you might be interested in the two photographs of plants recently transferred to Winterbourne Gardens, University of Birmingham. If you look carefully you will see the original growths, (Figs 1 & 2) when they were in my custody, which closely resemble growth in the wild. When the plants went to Winterbourne they were re-potted into compost consisting of 50% Petersfield Professional peat free compost and 50% grit. The only heat they got was natural sun heat. The greenhouse by the way is a large commercial variety, a hundred feet long or so and, of course, quite tall. At first there was some light shading, which was later removed. I was not doing the watering, but other members of the BCSS were. I know that they got more than I would have given then and they also had some feed, Chempak 4 or 8. The funny thing is that only a few plants have shown this abnormal growth. At first sight one would think that the *Maihueniopsis conoidea* was a Pterocactus! All the other genera of cactus seem to be enjoying the new habitat, making lots of quite normal growth, except for one exception, a *Copiapoa tenuissima* which is very bloated. I know that I grew my cacti hard, but this is ridiculous! Any comments or suggestions (Not too rude!) would be welcomed.

Roger Moreton.

PROBLEMS WITH THE CULTIVATION OF MAIHUENIOPSIS CAMACHOI.

This year I made an effort to repot my plants into larger pots. The plants appeared to improve as a result except for my three *Maihueniopsis camachoi* from seed collected by Graham Hole on the Calama to St Pedro road, Chile. All three began to look very unhappy with one in particular having the end segments turning yellow, then black. Removal of the effected segments had no desired effect on the next lower ones which in

Fig. 1. ***Maihueniopsis conoidea***
Fig. 2. Cumulopuntia *sp RKH 129 Chivay*.
Both unusual growth. Both photographs by Roger Moreton.

Fig 3

Fig 4

Separate Clones of *Maihueniopsis subterranea*

Photographs by J. Betteley

Fig 5

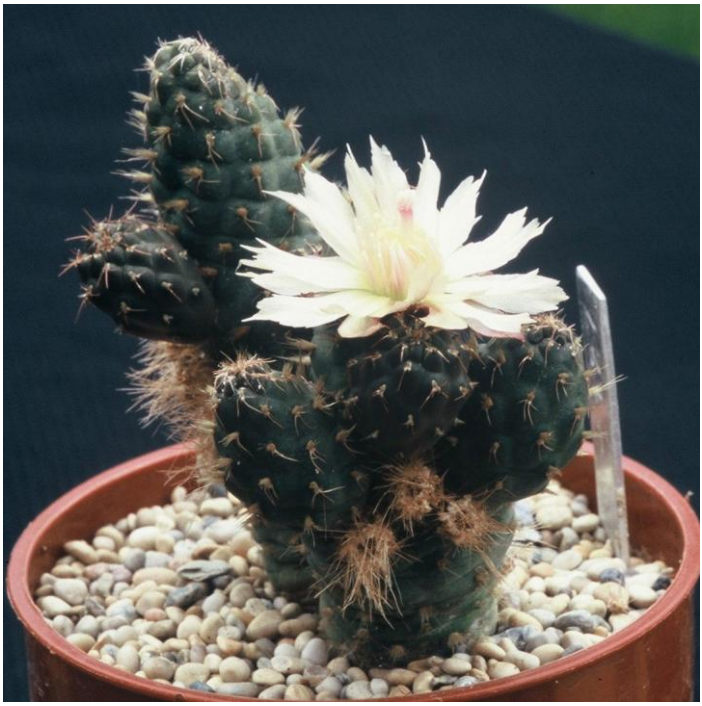

Fig 6

Fig 7 *Cylindropuntia hamiltonii* (left) & *Austrocylindropuntia miquelli*
Photograph by Alan James.
Fig. 8 *Austrocylindropuntia vestita* Photograph by Elton Roberts.

turn went through the same process leaving me with four living but unhappy stumps standing in the pot. Another plant started to replicate the yellow to black change but then stopped although it still looks unwell. Has anyone else had this problem with *M. camachoi*? Could it be that the plants at a certain size resent root disturbance or are the only ones to react to the fresh compost which is my usual mix? Perhaps Elton's article below perhaps points the way to try to make the plants recover. However, the query remains as to why these three (my only *M. camachoi*) were the only plants to react to the repotting.

A. Hill. Sheffield

TEPHROCACTUS GEOMETRICUS

John Cox has sent in some lovely pictures of his *Tephrocactus geometricus* in flower. Fig. 9 shows the plant with two others. He commented that the plant, with only two pads, appeared to be very immature to be flowering. However, I have found that the species does flower well on plants with two or three segments. It appears that the plant does not always throw out a new segment each year but obviously the existing segments continue to mature and will eventually flower. John obtained a pad five years ago and since then the rooted pad has produced only one extra pad before flowering for the first time this year. (Fig. 10).

It is possible for an Opuntia cutting to flower. I have flowered single pads of flat padded Opuntias which were cuttings rooting down that year. The flower buds apparently form the previous year of the flower appearing so the flower bud was ready to start developing when I took off the pad. Needless to say the pad rooted down but produced pads for several years before it would flower again. Apparently cuttings revert to a juvenile state which means they have to develop into mature plants before they will flower. Ed.

AUSTROCYLINDROPUNTIA VESTITA AND ACIDIC WATER.

***Austrocylindropuntia vestita* (Salm-Dyck) Backeberg (Fig. 8 & frontispiece) is a much different plant in cultivation than its description in habitat. The habitat description is of a plant that is only a few cm tall and the stem is spherical. That sure is different from what we see in cultivation. Most plants I have seen in cultivation have stems that can reach 40 cm long and some are not much thicker than 1.5 cm in diameter. They are rangy looking plants in cultivation. Maybe this is because many people do not know what to do with the taxon once they have obtained it. It appears to want to grow long and lay over other plants. However, the best plant I think I have ever seen was a clump with stems about 2.5 cm in diameter and about 25 cm tall. The person that possessed it did not know what to do with it. She said it was always in the way where ever she put it. So she put it under a rain downspout in hopes that the winter rain would kill it. When I saw it the plant had been there for some years and was just as happy as could be. It received the right amount of sun and shade and it was more or less ignored for years. The water from the downspout had washed half the soil out of the pot and I do not remember now if the roots had grown into the ground or not. That was the first *A. vestita* that I saw in bloom and it was loaded with flowers. Since then it is not very often that I have seen one of**

the plants in flower. It is not that they do not grow for me it is just that most of the time I did not see them flower. During the times that the plants have had to endure me giving them alkaline water they have not grown or flowered, just the opposite as the stem tips have died back and a few of the plants even died. When I started giving acidic water the plants started growing again and bloomed for the first time. A friend that lives just across the river also started giving acidic water and soon afterwards her plant also bloomed. She said that she has had the plant for years and it never bloomed but with a few acidic waterings it produced flowers.
New stems can have leaves that can be to 3 cm long. Backeberg listed the main plant and then three varieties. The main plant has leaves that just protrude from the hair. Variety *chuquisacana* has somewhat longer leaves, variety *intermedia* has what he calls medium-long leaves and variety *major* has the longest leaves that are to 3 cm long. He says that there are also some differences in the hair or the spines on these varieties. The stems of the plant are covered with white hair. This hair can be quite dense on plants that are given lots of sunlight or it can be quite sparse in plants grown in shade. The flowers are a wonderful red colour with what I would call violet highlights. They are bell shaped and meet Backeberg's description of 3 cm across or a little more when wide open. I give the plants my regular soil mix. I have some plants out side all year long and they do fine here where I live. I do not know the elevation in habitat but the plants have managed to come through the minimum of 9® F and all the rest of the cold we have had here. The plant under the downspout was in the city of Stockton and it also lived through the big freeze as we call it.

For the readers in areas where there is not any alkaline water to worry about or for those in countries other than the USA an explanation is required. The USA is a quite large country and in many areas of the country the water is alkaline. That means that somewhere along the line the water passes over or through limestone and becomes alkaline. My well water has a pH of 7.8. PH 7 is neutral, any water above that is alkaline. Any water below pH 7 is acidic. In several places where I have lived the water was acidic and I could grow the plants beautifully. When I moved here I could not grow the plants. It took me close to three years to discover the reason; it was the water. When I discovered that it was alkaline I was able to make the water acidified and the plants grew with out any problems. At the time I was using a pH balanced fertilizer. When I could not obtain that any more I tried one that was suppose to work in the same way but it did not work at all on cacti. When some one came over and told me that my plants looked awful I figured the fertilizer was not working and that is what the problem was. For it to work the soil had to remain damp all the time. It was then that I had to go back to acidifying the way that I learned back about twenty three years ago. That was to use 1 table spoon of vinegar to 5 gallons of water. Most cities in the USA make their water alkaline. The pipes do not corrode, the people do not get metal poisoning and the cities do not have to replace their pipes all the time. At one time I lived in the small town of Gerber and that was one place that had acidic water. They were always replacing the water mains when I lived there. They were putting in plastic or PVC pipe. The city of Sacramento, California raises the pH of the water

to 8.5 before it leaves the treatment plant. One person lives in the "Land of Sky Blue Waters" that is Minnesota. He thought that his water was perfect until he did a pH test and discovered that the water delivered to his home is 8.2 on the pH scale. Regardless of what people say or think most plants will not grow in alkaline water. Some cacti succumb to alkaline water faster than others. All the plants that are known as hard to grow are ones that hate alkaline water. I have also noticed that the higher elevation plants also react badly to alkaline water quicker than low elevation plants. It is for these reasons that I now include information on alkalinity when giving information on the plants.

Elton Roberts, California.

The description of *Opuntia vestita* quoted in Britton & Rose, p71, describes the taxon as growing in small clumps 30 cm broad or less and nearly as high. The stems are said to be 1 to 1.5cm thick and the habitat is said to be in Bolivia around La Paz. They also give *O. teres* Cels as a synonym. In the Cactus Lexicon p77 Backeberg states the taxon grows in Bolivia but gives the stem as 40cm long and 2cm thick. Hunt in the CITES Cactaceae Checklist 2nd edition p244 gives *O. chuquisacana* Cardenas, *O. teres* Cels ex Weber as synonyms of *O. vestita* Salm-Dyck and extends the habitat to include Argentina. Iliff in Studies in the Opuntioideae p239 states stems up to 50cm high and 3 cm thick with the habitat in Bolivia and Northern Argentina. These last measurements are also in the NCL which also gives the locations as Bolivia and "Ar (Jujuy)". Flower length is quoted as 2cm (Br & R) and 3cm (Bkbg). If all this discrepancy appears confusing it is not because of the recognised difference noted between cultivated and habitat growth. Iliff on p240/241 of Studies in the Opuntioideae gives the explanation by opening his comments by stating "Of all the clearly quite distinct plants considered in this study O. vestita is the least well understood, and any further field work that will add clarity to its circumscription will be timely and welcome". It might therefore be helpful if any TSG members visiting the localities will try to pay some attention to the allied plants in the group (names such as *A. vestita, shaferi, heteromorpha, teres, weingartiana, humahuacana* and *chuquisacana*) to help understand any synonymy or differentiation.

When describing his cultivation of Corynopuntias on P27 of the recent June TSG issue Elton mentioned using acidic water. Elton and two co-authors have not only written a lengthy article on the subject for the American Journal Vol. 80 5 p245/250 but have included "before" and "after" photographs to show the beneficial effects with the "after" illustrations showing a renewal of growth on previously moribund plants. Amongst these plants was an Ariocarpus. Initially this appears strange as a check on www.living-rocks.com confirms that all Ariocarpus grow on calcareous soils. However, the website then gives details as to why these soils are not highly alkaline but are generally on the slightly acid side of neutral. Thus although the website's recommended potting mix contains 20% limestone chippings Elton and Co's use of acidic water to stimulate growth on a moribund Ariocarpus makes sense as presumably the plant previously had suffered from a too alkaline potting mix.

Acidic water for South American has been mentioned over many years. At the recent Zone 3 Rally a speaker, who has traveled extensively in South America and is a very good grower, told the audience that acidic water, not alkaline, is needed by all South American cacti. However, many illustrations in lectures over the years have shown areas of apparently calcareous rocks in South America which therefore appeared to nullify the blanket advice to use acidic water. If one is to accept the information on the Ariocarpus website then the anomaly of these calcareous rocks and use of acidic water can be explained. In the postscript, page 98, of the book "The subgenus Tephrocactus" by Leighton-Boyce and Iliff mention is made of surface soil around a plant of *O. platyacantha* near Neuquen as being alkaline (pH 8.90). This figure of alkalinity again raises queries about the indiscriminate use of acidic water on all South American Opuntias. However, the papers of G. Leighton-Boyce* show that the results of this soil sample, whilst obviously accepted as correct, were carefully considered and treated with caution. The postscript states that "no examination was made of the underlying soil". The actual report on the soil sample contains the comments that "Care should be taken not to draw any sweeping conclusions from the examination of a single sample such as this one". Mention is then made of the need to take samples at various places across the habitat and each sample of surface soil should be accompanied by others taken at chosen depths. It was also observed that whilst some soils can show fairly uniform characteristics over a wide are, others vary sharply over short distances and that surface soil will usually differ to some extent from that deeper down. The latter feature is said to be because the surface soil is differently affected by the climate, by the soil fauna and by the vegetation.

The usefulness of acidic water can be illustrated by the cultivation of an Opuntia clavarioides which was as big as the one recently the subject of an article in the BCSS publication "CactusWorld" 24 1 17, now occupying a 24 inch pan. For years I had the privilege of seeing the former plant grow to a large size. The owner put vinegar and sugar in his water. Whilst my friends and I could not understand the use of the sugar it was clear that by using vinegar he was giving acidic water. The owner of the plant featured in "CactusWorld" prefers to use rainwater for his plants which is a way of avoiding tap water which might be made alkaline by water authorities. (However, will the rain water be acidic?) It will be worth while checking the pH of your own tap water but do not rely on one single test. An expert on keeping aquarium fish advised me not to change the fish water just before the weekend as that is when, he said, the water authorities increase the chemical additives. On a Monday my tap water was pH 7 (neutral) whilst puddles of rain water were pH 6.5. On the following Saturday the tap water was nearly pH 7.5. **A. Hill. Sheffield**

*** I am grateful to Brendan Burke for providing these papers. The son of G. Leighton-Boyce, who co-authored with J. Iliff the book "The subgenus Tephrocactus", wished to dispose of the papers but not destroy them. He thought that they might be of interest to cactophiles and has given permission for information in them to be published if the source is identified.** **Ed.**

FIELD COLLECTION NUMBERS OF THE OPUNTIOIDAEA

Bates, Lowry, Marshall & Tomlinson BLMT numbers.

Many thanks are given to Martin Lowry for providing an updated list. Items underlined indicate those which might be found in cultivation.

171.09	Cumulopuntia chichensis	Otavi	3620
172.03	Tunilla sp.	Pocoata	3500
172.04	Austrocylindropuntia shaferi	Pocoata	3500
173.02	Opuntia sulphurea	Llallagua	3745
173.03	Cumulopuntia boliviana	Llallagua	3745
173.04	Tunilla sp.	Llallagua	3745
177.01	Austrocylindropuntia floccosa	Hualata Chica	
177.03	Cumulopuntia boliviana	Hualata Chica	
179.02	Austrocylindropuntia floccosa	Ventilla	3923
179.03	Cumulopuntia boliviana	Ventilla	3923
180.03	Austrocylindropuntia verschaffeltii	Palca	3540
181.01	Austrocylindropuntia floccosa	Palca	
183.05	Austrocylindropuntia verschaffeltii	Quiquijana	2750
184.03	Austrocylindropuntia verschaffeltii	Quiquijana	2740
185.04	Austrocylindropuntia verschaffeltii	Quiquijana	2805
186.07	Opuntia sulphurea	Quiquijana	2813
190.02	Opuntia sulphurea	Quiquijana	2745
196.06	Opuntia sp.	Zudanez	2075
200.03	Opuntia anacantha	Nuevo Mundo	1300
201.07	Opuntia anacantha	Nuevo Mundo	1220
206.06	Opuntia sp.	Cochabambita	1550
207.06	Opuntia anacantha	Comarapa	2050
226.06	Opuntia sulphurea	Omereque	1950
227.03	Opuntia sp.	Aiquile	2550
240.03	Cumulopuntia rossiana	Sucre	2960
240.04	Opuntia sulphurea	Sucre	2960
241.04	Cumulopuntia rossiana	Sucre	2919
244.05	Opuntia sulphurea	Aiquile	2350
252.01	Cumulopuntia boliviana	Caracollo	4100
253.01	Cumulopuntia boliviana	Panduro	3750
254.01	Cumulopuntia boliviana	Callmarca	4090
255.01	Cumulopuntia boliviana	Achacachi	3850
255.02	Austrocylindropuntia floccosa	Achacachi	3850
256.01	Cumulopuntia boliviana	Oruro	3650
256.06	Tunilla sp.	Oruro	3650
257.03	Cumulopuntia boliviana	Pazna	3625
257	Tunilla sp.	Pazna	3625

Figs 9 & 10.
Tephrocactus geometricus **(Cast.) Backeberg.**
Photographs by John Cox.