TEPHROCACTUS

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

Tunilla corrugata **(S.-D.) Hunt & Iliff. (*hintonii*)**
Photograph by Ray Weeks.

STUDY GROUP

Vol. 13

No. 1 March 2007

SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

Subscriptions for 2007 were due on the 1st January 2007
Subscriptions and any other correspondence must be sent to the Secretary (Please see address below).

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THE 2007 TSG MEETING.

As stated in the December issue the meeting will be held on Sunday 6th May 2007. Unfortunately our usual meeting place at Slimbridge is no longer available so our meeting this year will be held in Birmingham. Fortunately a meeting place has been found at the Great Barr Ex Service Men and Women's Club which is 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 £4 will be provided. We will be able to use the Club bar. Please will you inform me by 20th April if you intend to come to the meeting and whether you will have the provided buffet lunch. Contact details are inside the front cover.

The programme will start at 11.0 am. Speakers will be John Betteley on current classification of smaller opuntias and Graham Charles, who has travelled in Argentina, on Maihueniopsis. There will also be a short presentation by Ivor Crook plus a short AGM. The meeting will close at 4.0pm.

There is no charge for the meeting. All members of the TSG are welcome and you can bring guests who are not members. You are welcome to bring plants for sale and any other plants you think will be of interest or you would like identified.

Alan Hill

FRONT COVER

Whether one calls it Opuntia, Airampoa or Tunilla species hintonii (which is an invalid name), longispina v. brevispina or corrugata, the taxon in the illustration is very easily recognised. Whilst not challenging the placing of the taxon within corrugata in my mind this desirable taxon deserves some form of separate recognition from simply "corrugata".

As yet my specimen has not flowered. Ray Weeks is congratulated on his success in cultivation.

Ed.

PENTLANDII AND BOLIVIANA.

The New Cactus Lexicon recognises *Cumulopuntia boliviana* (S.D.) Ritter as a valid species but lists *C. pentlandii* (S.D.) Ritter as a possible synonym of *C. boliviana* (S.D.) Ritter. The intention of this article is to outline the history of the relationship of the two names but not to examine the morphological differences/similarities that have been discussed about the two taxa.

1845 Allgemaine Gartenzeitung 13(49). Salm-Dyck

P. 387-388 *Opuntia pentlandii*.

P. 388 *Opuntia boliviana.*

The names were given to plants which originated from J. B. Pentland who had travelled in Peru and Bolivia in 1826-28 and 1836-39. There is no indication as to whether he actually collected the two taxa or had them given to him. Nor is there evidence as to whether the plants were collected at the same time or in the same place.

1899 Gesamtbeschreibung der Kakteen. K. Schumann

P. 748 *Opuntia boliviana* S-D listed under insufficiently or not described species.

P. 698 *Opuntia pentlandii* S-D. is described.

One has to wonder why the *O. pentlandii* S-D. description is considered adequate for reference but not the *O. boliviana* S-D. description.

1919 The Cactaceae. Britton & Rose

P. 71 When commenting on series Vestitae they include the statement "*Opuntia boliviana* and *Opuntia pentlandii*, both from Bolivia and described at the same time by Salm-Dyck, and which we have united, seem to represent two forms of the same species, *Opuntia pentlandii* being the abnormal form."

P. 90. (Subgenus 2 Tephrocactus.) Series 4 PENTLANDIANAE. Species 73 *O. pentlandii. O. boliviana* not listed.

P. 97 & 98*. Opuntia pentlandii* Salm-Dyck described with *Opuntia boliviana* Salm-Dyck as a synonym. "Very common on the high pampas of south-eastern Peru and Bolivia and adjacent Argentina."

Britton & Rose therefore treat the two names as referring to the one species. Despite the comment that *pentlandii* is the abnormal form they make a definite decision to give priority of that name to the amalgamation of the two taxa and for the group.

1958 Die Cactaceae. K. Backeberg.

P. 311 Unterreihe 4. Pentlandiana (Br. & R.) Backbg.

P. 314 *Tephrocactus pentlandii* (SD) Backbg. Syn. *Opuntia pentlandii* S.D. non *Op. pentlandii* sensu Br. & R.

P. 319 *Tephrocactus bolivianus* (SD) Backbg. Syn. *Opuntia boliviana* S.D. and *Opuntia pentlandii* S.D. sensu Br & R.

Thus Backeberg undid the Britton & Rose synonymy of the two taxa. However, he had identified *O. pentlandii* S-D. with what most people now consider to be a form of *Cumulopuntia rossiana* and had introduced the name *Tephrocactus subinermis* Backbg in 1935 for what could be *O. pentlandii* S-D..

1973 The subgenus Tephrocactus. G. Leighton-Boyce & J. Iliff.

P. 9. "Opuntia pentlandii group" is one of the four groups considered to be true Tephrocacti and on page 46 is listed the names of *O. pentlandii* S.-D. and *O. boliviana* S.-D. as in the group. However, in discussion they state that the "group should be regarded as entirely provisional and "may ultimately seem better regarded as an *O. Boliviana* group since *pentlandi*i in its habit character is a little out of line with the others" (in the group).

1980. Kakteen in Sudamerika. F. Ritter.

P. 488. *Cumulopuntia pentlandii* (S.-D.) Ritter comb. nov. Syn. *T. bolivianus* sensu Backbg 1950, non *Opuntia boliviana* S.-D. 1845.

Page 492. *Cumulopuntia boliviana* (S.-D.) comb. nov. syn*. Opuntia boliviana* S.-D. non *T. bolivianus* sensu Backbg.

Ritter therefore did not accept Backeberg's concept of the two names.

1984 Estudios en Cactaceae de Argentina, Darwiniana 25(1-4) R. Kiesling.

P. 207 *Maihueniopsis boliviana* (S.D.) nov comb. Neotype Argentina. Prov. Jujuy; Dept Cochinoca, Abra Pampa A. Castellanos 13-11-1937

P. 211*. Maihueniopsis pentlandii* (S.D.) nov. comb.

The subgenus name is changed but the species names refer to two separate taxa. A neotype is erected for only one of the names.

1999. CITES Cactaceae Checklist 2nd Edition. D. Hunt.

Accepted taxa P. 232 *O. boliviana* Salm-Dyck and synonymies given.

P.240 *O. pentlandii* Salm-Dyck and synonymies given.

2001 The Cactus Family E.F.Anderson

P. 198*. Cumulopuntia boliviana* (Salm Dyck) F. Ritter 1980.

P. 201. *Cumulopuntia pentlandii* (Sam-Dyck) F. Ritter 1980.

Different synonymies are listed under each species.

2002. The Andean Opuntias. J. Iliff. In Studies in the Opuntioideae (Cactaceae) Eds. D. Hunt & N. Taylor.

P. 180. *Opuntia boliviana* Salm-Dyck. In the Boliviana Group

P.218. *Opuntia pentlandii* Salm-Dyck. In the Boliviana Group.

Following the 1973 comment on grouping there has been a transition to the change of name for the group. The two taxa are kept separate. In the discussion on *pentlandi*i there is a comment that more work is required before a neotype is made.

2006 New Cactus Lexicon. D. Hunt.

P. 68. *C. boliviana* (S-D) Ritt. 1980/KSA.

P.69. *C. pentlandii* (S-D) Ritt. 1980/KSA→ *C. boliviana ssp boliviana.*

P. 198*. O. boliviana* S-D → *Cumulopuntia boliviana ssp boliviana.*

P. 207*. O. pentlandii* S-D → *Cumulopuntia boliviana ssp boliviana (C. pentlandii*)

In the NCL → indicates an unaccepted species referred to an accepted species but there is no taxonomic transfer.

The present situation therefore appears to be that there is a neotype for *boliviana* and a grouping of plants under that name. The New Cactus Lexicon recognises *Cumulopuntia boliviana* (S.D.) Ritter. Ritter in his formal establishment of the name included some synonyms but these did not include *pentlandii.* However, the NCL "refers" *pentlandii* to the recognised *C. boliviana* (S.D.) Ritter name.

Several years ago a TSG member with serious editorial experience drew attention for the need to quote the authorship when writing the name of a species. The intention being to convey exactly what the name was intended to convey i.e. whose version was intended. Eventually this was accepted as TSG practice. In the NCL page 2 it is stated that the citation is "of little practical use without a reference to the place and date of publication as well". The NCL therefore includes this information after each recognised species. It is not the intention to start to do this in the TSG publications. However, if a member now wishes to use the name *Cumolopuntia boliviana* in an article how should it be indicated whether the Ritter or NCL interpretation is intended? Should "NCL" or "sensu Hunt" be inserted after the name for the latter interpretation?

I have no wish to challenge the synonymising of the *pentlandii* and *boliviana*. However, there is a query about an agreed name. In The Opuntia Index (Bradleya 19/2001 p96) R. Crook & R. Mottram state that if the names belong to the same plant, "then, as both names were published simultaneously, the first author to choose the priority name ought to be followed.....Britton & Rose (1919:97) made a definite selection of *Opuntia*

***pentlandii* over *Opuntia boliviana*". This fact can be seen in the above outline. Despite Britton and Rose commenting upon pentlandii being the abnormal form (whatever they meant by the term) the name is given priority. Is there any indication in their unpublished papers for the reasons for their choice? I have read (I apologise for not having the reference) the eminently reasonable statement that in the case of names in the same publication then priority is given to the first entered name. *Pentlandi*i appears for the first time in Allgemaine Gartenzeitung on page 387 and *boliviana* on page 388. Thus it would appear that the name *pentlandii* has precedence over *boliviana* on two counts.**

SOME COMMENTS ON TSG BULLETIN Vol. 12 (4)

Maihueniopsis subterranea P.51/2

On our recent trip to Bolivia (November 2006) we revisited the type locality of the subspecies *pulcherrima* and found many plants with several heads, a lot of them in flower. It is not unusual for this form to become caespitose. Neither do I think it unusual for the type subspecies. In 2000 at a location some kilometres east of Yavi (BLMT439), Argentina we found several specimens with more than one or two heads. Roberto Kiesling has also commented to me that he has seen large mats of the plant near the type locality.

In cultivation both subspecies have a tendency for the heads to become elongated and look rather unnatural. This maybe because they don't have enough root room. Following a slightly glib remark regarding *Copiapoa tenuissima* made to me by Brendan Burke; "*If they can't go down [then] they'll go up*", I now keep all my specimens in very deep pots such that the roots don't touch the bottom. Unfortunately my largest plant of spp. *pulcherrima*, the one pictured in the bulletin in September 2004, reached the bottom of its 34cm deep pot early last year and I don't currently have one deeper!

Cumulopuntia boliviana & chichensis P. 53.

John's article very clearly pulls together the recent history of this genus and concisely presents the current situation. The majority of the illustrations are also very good and augment the text very well. Unfortunately the two illustrations of *C. chichensis* don't really show off the characteristics of the species very well. The first, GC64.04 is very close to, and may even be, *C. boliviana*; the second may be correct but it is difficult to tell since the defining characteristic spination is very poorly developed. I guess the fact that John didn't supply the illustrations and that Alan couldn't find one in his collection shows how little known this species is in cultivation. This situation probably underlies Alan's suggestion of the synonymy of *Tephrocactus ferocior* with *C. chichensis*. Maybe the images I've provided will throw some light on the situation (Figs 1 - 8). For me the most important morphological characteristics of *C. chichensis* which separate it from *C. boliviana* are the joint shape and spine disposition but there are several useful differences as shown below.

Fig. 1 *Cumulopuntia boliviana*. BLMT 110.01. West of Oruro, Bolivia.

Fig. 2. *Cumulopuntia chichensis*. BLMT 116.03 Chacoya, West of Atocha, Bolivia. Both photographs by Brian Bates.

Fig. 3. *Cumulopuntia boliviana* segment. BLMT 110.01 West of Oruro, Bolivia. Photograph by Brian Bates.

Fig. 4. Cumulopuntia chichensis segment. BLMT 124.06B North of Tupiza, Bolivia. Photograph by Martin Lowry.

Fig. 5 & 6. *Cumulopuntia* chichensis. BLMT 124.06B from North of Tupiza, Bolivia. Both photographs by Martin Lowry.

Fig. 7. *Cumulopuntia boliviana* BLMT 110.01 from West of Oruro. Bolivia.

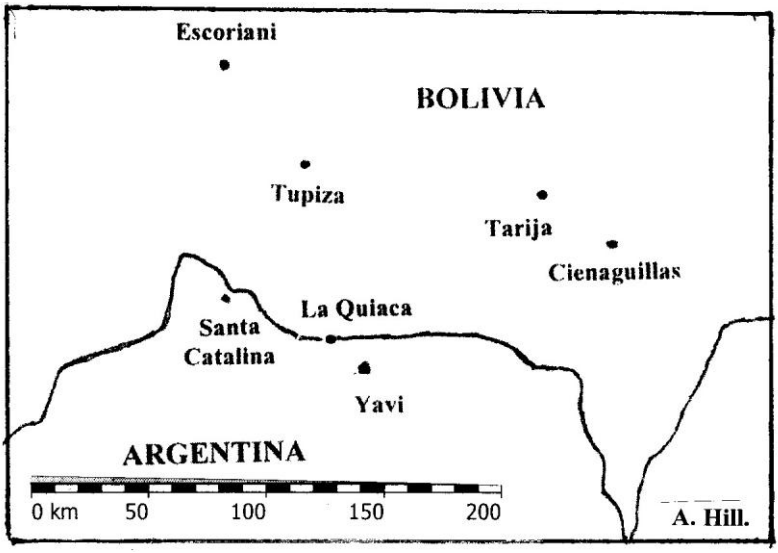
Fig. 8. *Tephrocactus ferocior* BLMT 437.03 from West of La Quiaca, Argentina. A younger plant than the above .

Both photographs by Martin Lowry.

Species	*C. boliviana*	*C. chichensis*
Joint shape	elongated ovoid	spherical to slightly ovoid
Epidermal texture	shiny	matt
Spine disposition	ascending, clustered	twisted, spreading randomly
Spine colour	pale yellow, reddish through brown to black	whitish, with a mix of orange
Flower colour	bright yellow, rarely orange or red	white to pale yellow

Compared to *C. boliviana* the geographic distribution of *C. chichensis* is quite small, but appears like a spear thrust in the flank of the former. The type locality, near Escoriani in southern Potosi is probably near its north-western boundary. From there it spreads eastwards beyond Tupiza towards Cienaguillas in Department Tarija. Going south from Escoriani it can be found west of Santa Catalina in Jujuy, Argentina and again just west of Yavi in the same province. It is probably not a coincidence that this is the driest and coldest region of the altiplano. On all sides it is surrounded by numerous populations of *C. boliviana*. It is on the eastern flanks of its distribution that plants of *T. ferocior* can be found. For me this taxon has characteristics intermediate between *C. boliviana* and *C. chichensis* in particular it has the joint shape and spination of *C. boliviana* along with the epidermal texture and flower colour of *C. chichensis*. I do not, however consider it a first generation (F1) hybrid, maybe originally, but now through many back-crossings it may have quite different proportions of influence from the supposed parents. It is best considered a strong-spined form of *C. boliviana*.

Martin Lowry. Hull.



MY PERSPECTIVE.

It has been only a couple of years since I was told by several people, who are suppose to know, that the plants named *Cumulopuntia kuehnrichiana* are just that. Now here it is less than four years later and the names have been changed and they are now nothing but *Cumulopuntia sphaerica*. In the TSG volume 12 No. 4 December 2006 page 58 are two photos of what I have for years known as *kuehnrichiana* but now changed to *C. sphaerica*. With this article I including a hand full of photos of different forms of plants that several people insisted are the *C. kuehnrichiana* and also the different plants that came to me as *Tephrocactus sphaerica* or with no name on them (Figs. 9 - 18)

Here is a little information about my self that many in the TSG do not know. I have a cactus nursery that consists of seven greenhouses and six outside tables. Some of the tables are covered to protect the plants from the rain. I have catalogued in my own collection 2,050 different named plants. I grow lots of plants from seed and I want that seed to be true for the named plant. As seen in the Anderson book and the New Cactus Lexicon it now seems that there is no reason to try to keep plants true. With all the name dumping and name lumping what use it there to keep different looking plants true? I might was well cross any of these different looking plants of "*Cumulopuntia sphaerica*" as that is what they are all now called. I guess that I do not have to keep *C. recurvata* pollen away from any other plant that is now just *C. boliviana ssp. boliviana*. Why now you can cross a lot of plants that at one time you tried to keep true to the appearance that came out of habitat. Going a bit further out into the cactus world, with all the lumping going on, there are soon going to be a lot less distinct Mammillaria, Echinocereus and many other family groups. Names are being dumped at a high rate, names that brought a certain look in the mind when mentioned. Now these distinct looking plants have disappeared under plant name "X". For example *Echinocereus baileyi* and all the different forms of the plant that use to be named have all just become *E. reichenbachii ssp. baileyi*.

***Tephrocactus alexanderi, T. alexanderi* subspecies *bruchii* and *T. alexanderi ssp. geometricus* are now all the same plant so I guess that I can now cross any of them with each other. It should not make any difference and if any one wants what is called *T. geometricus* I can send them any plant that I have handy regardless as there is no such thing as a *Tephrocactus geometricus* any more! ! !**

Elton Roberts. California.

Elton deliberately has taken a very strong view on what is happening to names of plants with some well known names apparently heading for the waste bin. However, as I have said many times in my written comments there is no need to accept all or any of the changes to names although if one is interested in the plants then one should be aware of what has been proposed. Members can still keep their old labels in the pots if that is their wish. Any proposed changes may be noted on the labels but the concept with which one is comfortable can be retained, if so desired. The New Cactus Lexicon is a very valuable publication and those who have contributed to it are to be commended. It is a very valuable book for

reference, encourages thought and will aid further discussion. The contributions to the TSG December issue and the present one show this. My impression is that the contributors to the NCL have logically progressed along the path that has been growing for several decades of grouping names that refer to very similar if not the same taxa. The point at which one draws a line of demarcation will be a personal one depending on one's particular view. Some TSG members, name lumpers, might argue that there is still more amalgamation to be done whilst others, splitters, might say it has gone too far. There will be others who are prepared to agree to some more lumping of certain taxa whilst wanting to keep others apart that have been lumped. Your views (on a particular taxon or many taxa) will be welcomed for discussion in our pages.

Amalgamation of names need not mean certain plants lose their specific identity. Field numbered plants should still be cherished and taxa from a specific wild population continue to be propagated separately in cultivation to retain the genes mixture of that population. A long cline of plants might be given the same name by taxonomists because there is no distinguishable boundary between them. However, to cross two plants with the same name but from opposite ends of a cline that might be several hundred miles apart will, in my view, simply create plants of no merit to the enthusiast. A separate issue is that because of some perceived difference early enthusiasts sometimes erected separate names for what are now regarded as clones of the same species. I hope that, whilst accepting the relationship with the other clones, specific attractive clones will not disappear.
Alan Hill.

CONTRIBUTIONS

One of the "challenges" to an Editor is to make a satisfactory lay out to a publication so that articles can appear in desired positions. Often this is very difficult and compromises have to be made. The layout on this page is an example. Something was required to fill this space. The little material in hand did not contain a short enough article. I have asked members in the past to please contribute to the Journal. I repeat the plea. We do need articles of all types and lengths. The space taken up here by this request, however, shows that even small snippets of correction, comment or information are very valuable as a contribution in more ways than one.

FIELD COLLECTION NUMBERS.

After the publication of the December issue an email was received from Martin Lowry. It included the following comments.
"I must admit to being a little disappointed with the appearance of such an outdated collection of names in the list of my field numbers. Please don't take this the wrong way, I am very happy for you to publish my field numbers. (However few of them are actually in cultivation!) What concerns me is the use of several names which I now eschew, particularly the use of *Tephrocactus bolivianus* and *T. rossianus*! I find this rather embarrassing in view of my involvement with the production of *The New*

Cactus Lexicon **and its acceptance of the new view of *Opuntia*. I'd be very happy to supply updated names if you wish to publish further instalments".**
My reply included the following apology. "I apologise for any embarrassment caused by printing names that are now out of date. When we began, in September 2003, printing the lists I wrote a short article on the intention to publish the lists and stated that the information against the number is the original information and therefore not now necessarily up to date. I did invite comments on the names but have never received any until now. I am very pleased therefore that you have commented. We had completely overlooked the fact that we could (and should) have approached people we know, like you, and invite them to update the list. I am very grateful that you are willing to provide some updates. If you start at the beginning of the BLMT list I will publish corrections and, if there are many changes, repeat the whole correct list to replace the December issue list". Martin has very kindly provided an up-to-date list and this is reproduced on the next page to replace the December publication.
The 2003 article did ask members to go through the lists and from their experience/knowledge draw attention to any changes that are required to the species names. I must admit that I, like other members, have not commented apart from one change of place name spelling. Members who received plant list from Bill Greenaway will have seen that in 2004 Bill commented that RH 384 & 747 listed as *Cumulopuntia pentlandii* looked to be the same as a C. *rossianus*. When I obtained the plants it was obvious that R. Hillman was following Backeberg's classification on *pentlandii* and the plants were indeed *C. rossianus* (Heinr & Bkbg) Ritter. They appeared as such in Bill's next list. This is the kind of identification change I would hope from TSG members. If one sees a misidentification has occurred then a correction can be made in our lists. It might also be possible to identify some plants that were originally shown as "sp" (unidentified). It should not be thought that Martin's welcome changes show the lists are useless as they are out of date. They are not useless. They contain the original given name against each number and the place of origin is given. Some members stated that this information was desired in order to draw up their own distribution maps etc. Any information derived from such personal study of the lists will be very welcome. The exchange of information between members is the basic purpose of our study group.
Recently I have had loan of the book "Englera", by U. Eggli, M. Schick & B. E. Leuenberger, "Cactaceae of South America: The Ritter Collections", which comprehensively lists and details them. I was completely unaware until reading the book that Ritter had a field number for each species. Often plants of the same species, from different locations, would be given the same number. Thus the Ritter numbers we published do give a location but there might be other locations for plants with that number. Ed.

FIELD COLLECTION NUMBERS OF THE OPUNTIOIDEAE.

Bates, Lowry, Marshall & Tomlinson BLMT numbers amended.

The changes are not all direct substitutes of new names for old. Some species were originally wrongly identified and Martin has now included a correct identification by going over his field notes and also re-evaluating the slides. Items underlined indicate those which might be found in cultivation.

REVISED LIST

BLMT Field No.	Name given in last issue	Current Name
1.01	Tephro bolivianus	Cumo boliviana 4km N. Calamarca 090m
2.03	Opuntia sp	Opuntia sp. 14km NW. Quillacolla 2970m
2.04	Opuntia sulphurea	Opuntia sulphurea " " "
5.07	Opuntia sulphurea	Op sulphurea 7km S. Cochabamba 2700m
7.04		Austrocyl verschaffeltii 1km N. Anzaldo3120m
8.04	Austro weingartiana	Austro verschaffeltii 7km W. Tiraque3130m
8.05		Opuntia sulphurea " " "
9.04	Tephro rossianus	Cumo rossiana 1km E. Kayarani 3522m
9.05	Austrocyl teres	Austrocyl vestita " " "
16.06	Opuntia sp.	Opuntia sp. Comarapa 1930m
24.03	Opuntia sulphurea	Opuntia sulphurea 24km E. San Isidro 2135m
25.07	Opuntia sulphurea	Opuntia sulphurea 1km N. Pulquina 1540m
25.08	Opuntia retrorsa	Opuntia anacantha " " "
32.04	Opuntia sp.	Opuntia sp. 11km W. Aiquile 2521m
34.04	Opuntia sp.	Opuntia sp. " " "
49.06	Austro verschaffelti	Austro verschaffeltii 1km NW. Yamparaez 3081m
49.07	Opuntia sulphurea	Opuntia sulphurea " " "
50.01	Tephro rossianus	Cumo rossiana 3km E. Yamparaez 3052m
51.04	Tephro rossianus	Cumo rossiana 15km E. Yamparaez
52.06		Opuntia sulphurea Yotalla
53.01	Austrocyl weingartiana	Austrocyl shaferi 27km E. Betanzos
54.07	Tephro bolivianus	Cumo boliviana Betanzos
54.08	Tephro rossianus	Cumo rossiana "
54.09	Austrocyl verschaffeltii	Austrocyl verschaffeltii "
54.10	Austrocyl weingartiana	Austrocyl shaferi "
54.1	Opuntia sulphurea	Opuntia sulphurea "
55.03	Tephro bolivianus	Cum boliviana 1km E. Huari-Huari 3830m
55.04	Tephro rossianus	Cumo rossiana " " "
55.06	Opuntia sp	Tunilla sp. " " "
55.07	Austrocyl weingartiana	Austrocyl shaferi " " "
56.03	Austrocyl verschaffeltii	Austrocyl verschaffeltii 3km S. Huari-Huari
56.04		Tunilla sp. " "
57A.02	Tephro chichensis	Cum boliviana (ferocior) 29km S. Puna 3465m
57A.03	Tephro chichensis	Cum boliviana (ferocior) 10km N. Otavi 3800m
57.09	Tephro bolivianus	Cumo boliviana " "
58.05	Tephro rossianus	Cumo rossiana 22km NW. Padcoyo 3400m
58.06	Tephro chichensis	Cumo boliviana (ferocior) " "
58.08	Opuntia sulphurea	Opuntia sulphurea " "
62.06	Tephro rossianus	Cumo rossiana 2km SW. Yuqu 2990m
63.04	Austrocyl weingartiana	Austrocyl shaferi 3km SW. Yuquina 127m
63.05	Tephro rossianus	Cumo rossiana " " "

Many thanks are given to Martin Lowry for providing an updated list. Please note that the final layout and contraction of names was editorial due to lack of space. Ed.

Fig 9.

Fig 10

Fig 11.

Fig 12.

Fig. 13.

Fig 14

Fig 15

Fig 16

Fig 17

Fig 18.

Figs 9-12 labelled Cumulopuntia kuehnrichiana.
Figs 13 -18 labelled Cumulopuntia sphaerica.
All photographs by Elton Roberts.
These are some of the photographs provided by Elton as mentioned in his article on page 11.
Any comments on the above identification or the article? Ed.

TEPHROCACTUS

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

***Maihueniopsis subterranea* (Fries) Anderson**
Photograph by Graham Charles.

STUDY GROUP

Vol. 13
No. 2 June 2007

SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

Subscriptions for 2007 were due on the 1st January 2007
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THE TSG MEETING ON 6TH MAY 2007.

The new meeting place was very easy to access from the M6 motorway and was easy to find. It also provided all the amenities we wished.

We opened with a short AGM and short reports from the Officers. It was pointed out that we are still very reliant on a very small editorial team of two. It is important that more volunteers come forward to help. A flow of more contributions of material for the journal was requested. Although, as was commented at the meetiong, this request is a common thing from Editors to ask the request should please not be taken lightly.

The first talk, illustrated with plants and slides, was given by John Betteley on the classification of small Opuntias in the New Cactus Lexicon. John is prepared to give this talk to local Branches. The second talk was given by Graham Charles on Maihueniopsis. The talk was illustrated with a digital presentation, plants, a handout and the use of a floor map. Graham very kindly agreed that his material could be used in our Journal and has provided the article and photographs that appear on the following pages. Ivor Crook provided an insight into his ideas for the greater use of a website and ideas were exchanged with the audience.

In the three talks questions and discussion took place. These revealed that whilst there was some acceptance of certain classification of taxa and names there were instances of disagreement with others. It was suggested that perhaps the members of the TSG should produce a list of what the group perceived to be an acceptable classification of the plants we study. It was recognised that there will be differences between members. A group of people contributed to the New Cactus Lexicon and there was not unanimous agreement between them. Not all the members of the TSG will be able to totally agree on a list. However, if any one has any ideas on how to develop this suggestion please do send them in. Meanwhile it is hoped that discussion will continue through these pages on what individuals accept or otherwise.

Although we moved our meeting place from Slimbridge because we lost the use of the Church hall the hope was expressed that the move could be used to have a more central location which would attract more members. The total people present were sixteen. There were a variety of reasons why some people could not attend. Some discussion took place on how to increase attendance. It was pointed out that we do not restrict attendance only to members. Therefore the event could be promoted by members at local BCSS branches etc. Please will members do this in future? It is hoped to hold the event next year at the same location. To avoid the meeting being held on the day before the May Bank Holiday Monday it is planned to hold it a week later than usual on Sunday 11th May.

I wish to thank Alan James for all the work he did in preparation for the meeting and on the day, his wife for providing an excellent buffet at the venue, the Speakers for informative and interesting presentations and those members who attended the event. I also thank the Officers of the TSG for the work they have done for the group over the year and thank all the members who have contributed to the Journal. All the Officers were re-elected. **Alan Hill. Chairman**

TO CHANGE OR NOT TO CHANGE LABELS.

These days I am not at all keen to reach for the pen, because I feel that there are far more competent and knowledgeable collectors out there than me, but Elton Robert has provoked me to agree with him on many of the points he has made. I rather think he should not change his labels and amalgamate all his *Cumulopuntia kuehnrichiana* and *C. sphaerica* into one, particularly if they come from a known source with collectors' numbers, because some very important information will be lost. Every one who has grown all the different forms of this type will know just how different they can be. If we all were to change our labels to suit every new name coming out we would lose a lot of valuable plants with collection data and collectors numbers.

The New Cactus Lexicon is a valuable work and I will treasure it along with all my other good book. The photographs are excellent and it will serve as another reference source, but when I first received my copy I felt a little annoyed at the lumping. It was rather cleverly done because no new names were created but when perhaps not enough information was available about a certain plant it was subsumed into the best suited group, as for instance *Tunilla hintonii/corrugate*. All changes were made in such a way that no-one person had to put his name to any of the changes, because everything was decided by committee. It would be interesting to know if some of the changes are based on any scientific basis.

I am afraid I will not change my labels for any reason; particularly if it bears a collection number and habitat data I have recorded. I am sure any name of a plant is admissible, provided the plant was originally validly described under that name and the plant name is followed by the authority. No doubt there will be many more changes in the future as in the past and it is up to us collectors to use the name with which we are happy. We should not get rattled by any changes that sound a little odd, there will be many more.

On the Continent collectors are much more reserved and until fairly recently most of them have followed Curt Backeberg. More recently perhaps they tended to follow Urs Eggli but I know the New Cactus Lexicon has also raised a lot of interest.

Rene Geissler. Slimbridge.

SYNOPSIS OF A TALK GIVEN BY GRAHAM CHARLES TO THE TSG MEETING IN BIRMINGHAM ON 6TH MAY 2007

Maihueniopsis Spegazzini

A genus of the subfamily *Opuntioideae* consisting of about ten species of mainly cushion-forming plants with thickened roots from Argentina, Chile and Bolivia. Originally erected by Spegazzini in 1925, *Maihueniopsis* is now taken to include the genus *Puna* Kiesling but not *P. bonnieae* which, because of its seeds, is a *Tephrocactus*. *Maihueniopsis* differs from the similar *Cumulopuntia* by its areoles which are distributed over the whole of the segments rather than concentrated at the top, juicy fruits with pulp (dry in *Puna*) and its lenticular seeds.

***M. archiconoidea* Ritter**
This has very small segments and a large tuberous root. Few collections are known to have been made since Ritter's discovery. Similar to *M. conoidea.*
Type Locality: El Transito, CL
Illn. PM241 El Transito Valley. Fig. 1

***M. clavarioides* (Pfeiffer) Anderson**
The type of the genus *Puna*. The small branches lack glochids. Large tuberous root. It has a restricted distribution north of the town of Uspallatain flat desert pavement. Plants in habitat have few segments which are variously-shaped similar to cultivated examples.
Neotype (RK): Paramillo de Uspallata, Mendoza AR (Type locality originally 'Chile')
Illn: FK93-219-628. Fig. 2

***M. conoidea* Ritter**
Invalidly described by Backeberg who thought it was the plant to which Ritter later gave the name '*M. archiconoidea*'. It has been thought to only come a limited area to the north of San Pedro de Atacama in Chile but Graham Hole recently reported finding it to the west of Fiambala in Argentina growing with *M. minuta*.
Type Locality: Baños de Puritana, CL where it grows with the local form of *M. glomerata*.
Illn. RMF14 Cuesta de Diablo, CL Fig. 3

***M. darwinii* (Henslow) Ritter**
(syn. *O. hickenii, O. platyacantha*)
This is the most southerly species and has the largest joints. On young segments the spines stand erect, but in age they lie horizonatally like a 'cap' on top of the segment. It sometimes grows near to *M. glomerata* from which it differs by its larger segments, spine structure and larger flowers. Originally described from the eastern coast, its habitat range extends to the Andean foothills in the southern part of Menzoza province. The spination is variable leading to some authorities to accept the listed synonyms as good taxa.
Type Locality: Puerto Deseado, Santa Cruz, Argentina
Illn: GC223.03 East of Las Lenas, Mendoza, AR Fig. 4.

***M. glomerata* (Haworth) Kiesling**
(syn. *M. atacamensis, M. camachoi, M. colorea, M. crassispina, M domeykoensis, M. grandiflora, M. leoncito, M. neuquensis, M. ovallei, M. rahmeri, M. tarapacana, M. wagenknechtii*)
This is the first species to be described and said by Haworth to come from Brazil. It was probably collected by Gillies in Mendoza and is the most widespread species in western Argentina and Chile. Many names have been created for regional forms of this plant, particularly in Chile where the local climatic conditions can give this species a different appearance. The number and length of spines is variable so adding to the confusion.

Regrettably Kiesling designated a neotype from Jujuy which is not this species but *M. hypogaea*.
Illn. GC227.01 West of Villavicencio, Mendoza, AR Fig. 5

***M. hypogaea* (Werdermann) Ritter**
(syn. *M. leptoclada*)
This northern species is often considered a synonym of *M. glomerata* but differs by its smaller segments with fewer spines, smaller flowers and its smaller, flatter growth habit. It can be found in northern Argentina and into southern Bolivia. There is a pronounced gap between the distribution of this and *M. glomerata*. The earliest name for this taxon at species rank could well be *M. molfinoi* Speg., the type of the genus *Maihueniopsis*.
Type Locality: Los Andes, AR
Illn. GC177.09 East of Yavi, Jujuy, AR Fig. 6.

***M. mandragora* (Backbg.) Ritter**
Often considered a synonym of the poorly understood *M. minuta* which could be true. It has small segments with sunken areoles bearing few spines. It also has a large tuberous root which does not form when segments are rooted.
Type Locality: 'Northern Argentina' but currently known only from near Puerta Tastil, Salta in the dry upper reaches of the Quebrada del Toro.
Illn. GC445.09 North of Puerta Tastil, Salta, AR Fig. 8.

***M. minuta* (Backbg.) Kiesling**
Definitive application of this name to recent collections of possible candidates is difficult partly because of the lack of an original illustration. Plants found recently by Graham Hole in the mountains west of Fiambala match the description and also bear a great resemblance to *M. mandragora.*
Type Locality: Los Andes, AR but the neotype (RK) is from East of Humahuaca, Jujuy.
Illn: Plant collected by Graham Hole in the mountains west of Fiambala, Catamarca, AR (Photo: Martin Lowry). Fig. 9.

***M. ovata* (Pfeiffer) Ritter**
(syn. *O. russellii*)
A small-segmented species probably described from a collection by Gillies which grows close to the typical *M. glomerata* in Mendoza where it makes smaller, loose clusters of stems. The flowers are large for such a small plant.
Type Locality: Mendoza
Illn. GC192.06 Villavicencio, Mendoza, AR Fig. 7.

***M. subterranea* (Fries) Anderson**
Largely subterranean in habitat, this species makes small clusters, sometimes as the result of being eaten by Guanacos. The typical form occurs in northern Argentinia where the plants have pale pink flowers. An isolated northern population near Culpina in Bolivia makes larger clusters and has red flowers and has recently been published as subsp.

Fig. 1 *Maihueniopsis archiconoidea* Ritter. PM241 El Transito Valley. CL.
Fig. 2. Maihueniopsis clavarioides. FK93-219-628.

***Fig 3 Maihueniopsis conoidea* Ritter. RMF14 Cuesta de Diablo. CL.**

Fig. 4. Maihueniopsis darwinii (Henslow) Ritter. GC223.03 East of Las Lenas, Mendoz, AR. Photograph by M. Lowry.
Fig. 5. Maihueniopsis glomerata (Haworth) Kiesling. GC227.01 West of Villavicencio, Mendoza, AR.

Fig. 6. Maihueniopsis hypogaea (Werdermann) Ritter. GC177.09 East of Yavi, Jujuy, AR.

Fig. 7. Maihueniopsis ovata (Pfeiffer) Ritter. GC192.06 Villavicenio, Mendoza. AR.

Fig. 8. Maihueniopsis mandragora (Backbg) Ritter. GC445.09 North of Puerto Tastil, Salta, AR..

Fig. 9. Maihueniopsis minuta (Backbg) Kiesling. Collected by Graham Hole in mountains west of Fiambala, Catamarca, AR. Photograph by M. Lowry.

Photographs Figs 1 - 3 & 5 - 8 by G. Charles.

***pulcherrima*. *M. subterranea* has the ability to initiate flowers from subterranean areoles so that when the bud emerges above ground it is a short distance away from the body. It was formerly included in the genus *Puna*.**
Type Locality: S. of El Moreno, Jujuy, AR
Illn: GC179.02 Pumahuasi, Jujuy, AR. Front Cover.

Graham Charles
May 2007

COMMENTS ON TSG ISSUE VOL 13, NO. 1, MARCH 2007.

In the pentlandii/boliviana article I was surprised to see that the N.C.L. gives both names the reference (S.D.) Ritt. 1980/KSA. This is because my understanding has been that Ritter got things wrong by equating the accepted *boliviana* as his *pentlandii* and the *chichensis/ferocior* as his *boliviana*. (Note 1). Moving on to the final comment, because both descriptions are only a page apart, I believe that they were written at the same time so that no real precedence exists. What is important is that the first description of *boliviana* (as translated by Iliff) is clearly recognisable to plants I saw in habitat in 1978 and since then, as well as plants in cultivation. The much shorter *pentlandii* first description is not as clearly recognisable but most probably refers to a poorly spined specimen, variety or form of *boliviana*. (Note 2).
Also my understanding has been that *chichensis* and *ferocior* were descriptions of the same plant by two different authors at roughly the same time. *Chichensis* taking precedence by just a few months due to being the first name published as stated in TSG Vol. 12, No 4 Dec. 2006. I always think of this as unfortunate as *ferocior* best describes such a ferociously spined plant at its best as seen in Figs 5 & 6 of the latest journal. However, in Martin Lowry's article it appears that he wants to separate them and make *ferocior* a strongly spined *boliviana* form. Surely this is against the rules. His Fig. 8 *ferocior* is much less ferociously spined than those in Figs 4, 5 & 6 but otherwise belongs to them.
I would go along with Martin's comparison table of *boliviana* against *chichensis* although I feel a better description of the spines would be acicular, ascending divergent clusters for boliviana and stout, straight or twisted, upright or spreading randomly for *chichensis.*
The *C. sphaerica* Figs. 13, 14, 15, 17 & 18, which illustrate the Elton Roberts article, are similar to plants I have seen at Chosica, Santa Eulalia and the Tinajas Canyon, the habitats above Lima from where *kuehnrichiana* was described. However, they are also similar to plants I saw at Yura (Arequipa), Chivay (Calca Canyon) and Torata (Moquegue). The rather spinier version of Fig.10 I saw at Puente Uchumayo (Arequipa). I see them all as forms of *C. sphaerica* with some more desirable, or not, dependent on the eye of the beholder.

Royston Hughes. Liverpool.

Note 1. The attribution *Cumulopuntia boliviana* (S.D.) Ritter indicates that Salm-Dyck erected the specific name and Ritter transferred it into the new sub genus Cumulopuntia. Please see P3 in the last TSG issue. Thus the

attribution in The New Cactus Lexicon is correct. If Ritter did muddle his identification of the species, as Royston indicates, they are all in Cumulopuntia and therefore presumably such an error does not invalidate the new classification that is correctly worded for the transfer.

Note 2. I thank Royston for commenting on my article. Despite my hopes for a wider response he is the only one to have written in about it. I agree with Royston that it is important that the description of *boliviana* is clearly recognisable to plants that can be seen in habitat. It is unfortunate that Salm-Dyck's good description of *boliviana* is preceded by the poor description of *pentlandii*. However, in my article I did advance two reasons why "*pentlandii*" has precedence over *boliviana*. There has been some discussion over the years as to what constitutes *pentlandii*. If plants which merit the separate name *pentlandii* can be identified then there is no problem over priority as long as the two names of of *pentlandii* and *boliviana* are used for two separate species. If the original description of *pentlandii* is insufficient to enable a clear identification of the intended taxon then the name *pentlandi*" can be placed amongst similar names vaguely described in the past and now ignored as impossible to identify. Thus consideration of *pentlandii* and priority could cease. The problem arises when synonymy is used and *pentlandii* is asserted to be be a weak spined *boliviana*. The query then must be raised as to whether the correction assertion should really be that *boliviana* is a strongly spined *pentlandi*i.

Ed.

A REPORT ON THE PROGRESS OF PLANTS IN MY COLLECTION.

I hardly visited the greenhouse over winter being occupied with other things. However, on April 24th I went into the greenhouse and was surprised to see a Bolivicereus and a Cleistocactus each with an open flower. Since then we have had the hot Easter week and no rain for the garden. There was a need to start spraying and watering as some plants ere starting to bud-up. Before the rain towards end of April I managed to remove and photograph last year's Tephro groups' crop of fruit and seeds.

The *M. glomerata* (Abra Pampa plant) produced one good fruit containing 141 seeds. Another hardly developed fruit nevertheless produced 10 seeds. It was cross fertilised with my M. glomerata BLM114 (237) Potosi plant which produced two good fruits that contained 87 and 89 seeds. There was also a third undeveloped fruit with 4 seeds inside it.

My *C. hypogaea* (FK 91-16-247) 1 Km from Tres Cruces produced two fruits containing 95 seeds and 100 seeds. Its cross-pollinator, *C. hypogaea* (GC 177-09) from East of Yavi, however, did not produce any viable fruits.

My *T. geometricus* (Fiambala/Chile road), a single segment, rooted the first year I had it, flowered in the second year and again last year. This was almost in time with my *T. geometricus* (West of Tinogasta) plant's four flowers. It produced a fruit which seemed a little on the small side but actually contained 63 seeds. On the larger plant two flowers did not become fruits, however, the other two did so although somewhat on the small side. Inside they contained 11 seeds and 14 seeds, which could be

seen as the outer skin had started to disintegrate around the middle of the fruit before it was removed from the plant.
I also had seed off my *M. ovata/russellii* plants and *M. minuta* plants as usual but less than in previous years as the flowering did not quite match up.
I have the same looking plants, with segments halfway in size between *M. minuta* and *M. ovata*, that came with three different names from three different sources i.e. *atroglobosa/* KG1738 *ovata/* WG90 (M.K. 174). I flowered two of them together but on the 1st august 2006 when I took off the fruit it had only 3 seeds. It is possible that they are all the same clone rather than the timing of the pollination being out. As this year the largest plant had seven buds and the other two one each I hope for better luck. It is a great pity that we do not have a name for this distinct species, or habitat details, unless someone knows otherwise.
My *M. darwinii* type with numerous white spines from south of Mendoza had three flowers last year. The unpollinated fruits have not dried up but remain like extra segments. Of this year's three flower buds two are developing from these segment-like non-fruits. My normal *M. darwinii* (green body, fewer brownish spines), from Cuevos de los Manos, has two buds for the first time. From the Perito Moreno area this is the most southerly collection of which I know.
Three of my British Standard *glomeratas* appear to have buds developing so if they time their flowering right one hopes that they are not a single clone. Royston Hughes. Liverpool. 25th April 2007.

I would be very pleased to receive similar reports from other members on the progress of plants in their collection. There must be many observations by our members which could be passed on and prove of interest to other members. Ed.

CUMULOPUNTIA BOLIVIANA/PENTLANDII COMPLEX.

I was very interested in the article about these plants in Vol. 12. No. 4 P.53 Dec. 2006 and Vol. 13, No. 1, P. 5-10, March 2007 issues of the TSG magazine.
After growing several clones of both *boliviana* and *pentlandii* for a few years now, I am tending towards the view that we are dealing with just one rather variable species. Certainly in my collection there are more differences between the various specimens of each taxon than between the two species themselves.
I do not have a decent "*chichensis*" so cannot comment on this form, but I do have several specimens of "*ferocior*".
I have specimens of both plants illustrated on P56 Vol. 12. No. 4 Dec. 06. My GC 64-04, is a Z* plant i.e. from habitat seed) with the information on the label that it is *ferocior* from Humahuaca, Jujuy, Argentina and which I accept to be a well-spined form of *C. boliviano/pentlandii*, and not "*ferocior*" as I understand it. (Fig. 10.) Note the round woolly areoles on the plant with their prominent tufts of yellow glochids and they are not sunken. The spines are more numerous than the other plant depicted and

stand out from the plant body, some radiating outwards, but mostly having a "brush-like configuration. My other eight specimens of "*ferocior*" are remarkably uniform. I obtained these under various names, such as "*blancii*", "*bulbispina*" as well as "f*erocior*" but they are all instantly recognisable as very distinct entities within Cumulopuntia.

All share the same dark dull bluish green joints, which have a strange, almost glaucus look. Under a lens the epidermis is covered with lighter coloured "spots" - almost like pores, which are quite distinctive. The joints are very tuberculate at first, pointed egg-shaped, becoming smoother and rounder (more "squat") with age.

Spines only occur on the top two or three areoles, which are more elongated and sunken, with creamy-white woolly felt. Glochids are quite inconspicuous and whitish - soon falling.

The spines are fairly stout, and start off as few (one or two) and fairly short, becoming slowly more numerous and longer, to about six centimetres, some straight or nearly so, others quite curved, creamy white at first, with brownish bases, fading to grey. For a good illustration of this plant see pp. 70-71 in Michael Kiessling's book "Tephrocactus und andere Feigenkakteen". This plant, as well as mine, also agrees with Backeberg's description on P479 of his "Cactus Lexicon", 1976 edition.

I do have one habitat plant from Uyuni ex. Cardenas (Fig. 11) labelled "*ferocior*", which agrees with all my plants and the plant in Kiessling's book. Now when we consider that the author of *C. chichensis* (as Tephrocactus) was Cardenas, it seems to me to be hardly likely that he would confuse one of Backeberg's "discoveries" with one of his own! Anderson (The Cactus Family P199) follows Hunt in assigning *C. ferocior* to *C. chichensis*, which leads me to wonder if either of the above has seen the species *ferocior* sensu Backeberg, and as depicted by M. Kiessling. All the photographs I have seen of *chichensis* bear no resemblance whatsoever to my *C. ferocior* M.C. Uyuni.

The plants illustrated on P. 9, Figs 7 & 8, in the last TSG magazine both seem to be plants of the *C. boliviana/pentlandii* complex. Neither is *C. ferocior* as I understand it and Fig. 4 on P. 7 is most definitely not *C. ferocior*. Do any other members grow my version of *C. ferocior* and are there other similar collected habitat plants in cultivation?

Wilf Phillips. Blackburn.

If any member of the TSG has documented material of *C. chichensis*, or other small Opuntia documented material to spare, Wilf will be happy to purchase any available or swop with his documented material. Please contact him at 2, Goodshaw Close, Pleckgate, Blackburn, Lancashire, BB1 8PG.

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.

BLMT FIELD NUMBERS

063.09	**Tunilla sp.**	**Yuquina**	**3127**
064.05	**Cumulopuntia boliviana**	**La Cueva**	**3202**
064.06	**Austrocylindropuntia verschaffeltii**	**La Cueva**	**3202**
065.05	**Cumulopuntia chichensis**	**Salitre**	**3090**
066.04	**Cumulopuntia rossiana**	**Salitre**	**3044**
066.05	**Maihueniopsis subterranea**	**Salitre**	**3044**
067.06	**Maihueniopsis subterranea**	**Charcas**	**3022**
069.01	**Cumulopuntia rossiana**	**Culpina**	**2995**
069.02	**M.subterranea ssp. pulcherrima**	**Culpina**	**2995**
069.05	**Opuntia sulphurea**	**Culpina**	**2995**
070.05	**Opuntia sulphurea**	**Culpina**	**3160**
071.07	**Austrocylindropuntia shaferi**	**Culpina**	**3108**
072A.06	**Opuntia sulphurea**	**Cienaguillas**	
072A.07	**Tunilla sp.**	**Cienaguillas**	
072A.08	**Cumulopuntia chichensis**	**Cienaguillas**	
073.05	**Tunilla sp.**	**Cienaguillas**	**3478**
073.06	**Cumulopuntia boliviana**	**Cienaguillas**	**3478**
073.07	**Cumulopuntia chichensis**	**Cienaguillas**	**3478**
074.05	**Cumulopuntia rossiana**	**Iscayachi**	**3409**
074.06	**Austrocylindropuntia verschaffeltii**	**Iscayachi**	**3409**
074.07	**Cumulopuntia boliviana**	**Iscayachi**	**3409**
074.08	**Tunilla sp.**	**Iscayachi**	**3409**
078.05	**Austrocylindropuntia verschaffeltii**	**Jucanas**	**2438**
082.06	**Opuntia salmiana**	**La Angostura**	
083.03	**Austrocylindropuntia verschaffeltii**	**Iscayachi**	**3580**
084.04	**Cumulopuntia boliviana**	**Yunchara**	**3960**
085.03	**Opuntia sulphurea**	**Yunchara**	
085.04	**Cumulopuntia chichensis**	**Yunchara**	
086.03	**Opuntia sulphurea**	**Tojo**	**2745**
087A.07	**Opuntia sulphurea**	**Tupiza**	**3260**
087A.08	**Cumulopuntia chichensis**	**Tupiza**	**3260**
088.02	**Opuntia sulphurea**	**Tupiza**	**3538**
088.03	**Cumulopuntia chichensis**	**Tupiza**	**3538**
088.04	**Cumulopuntia rossiana**	**Tupiza**	**3538**
089.05	**Cumulopuntia boliviana**	**Tupiza**	**3460**
089.06	**Opuntia sulphurea**	**Tupiza**	**3460**
089.08	**Cumulopuntia rossiana**	**Tupiza**	**3460**
090.04	**Cumulopuntia chichensis**	**Tupiza**	**3340**

Fig 10. *Cumulopuntia boliviana/pentlandii* GC64-04

Fig 11. *Cumulopuntia ferocior*, Collected by MC at Uyuni.
Both photographs by W. Phillips

TEPHROCACTUS

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

Cylindropuntia xkelvinensis (Grnt+Grnt) Heath.
Photograph by John Betteley.

STUDY GROUP

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SECRETARY'S PAGE.

All articles and comments should be sent to the Editor.

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OPUNTIA - FISSION OR FUSION? PART III -CHECKLIST OF NAMES.

By Gordon Rowley.

Following on from his previous articles Gordon has provided the third part for publication. To provide the complete Checklist as one article there is to be a special extra TSG issue which will be free to members. Gordon has very kindly made a very substantial donation towards the cost.

We thank Gordon for his support of the TSG and following from the discussion at the May meeting I have had the pleasure to inform him that he is now a Life Member of the TSG. He has asked me to thank the members for the honour. A. Hill. TSG Chairman

WHERE HAVE ALL THE PUNAS GONE?

When Curt Backeberg first published his Kakteenlexikon in 1965 he assigned *Opuntia subterranea* to the genus *Tephrocactus* and *Opuntia clavario*ides to *Austrocylindropuntia*, while *Puna bonnieae* had not yet been discovered.

In 1982 Roberto Kiesling erected the genus *Puna* for plants distinguished by their characteristic growth form; immersed areoles and unique seed structure. Here he assigned *O. subterranea* and *O. clavarioides* and later added *O. bonnieae* which he and other botanists discovered in 1994.

In the late 1990s, following work by Wolfgang Stuppy on seed morphology, the three species were moved again and the genus *Puna* rendered superfluous. *O. clavarioides* and *O. subterranea* have now been transferred to *Maihueniopsis*, while *O. bonnieae* falls under the *Tephrocactus* umbrella.

Maihueniopsis clavarioides **(Fig. 1) is an Argentinean plant found in the Mendoza region. On its own roots it branches slowly from a tuberous rootstock with obconocal segments which are brown in colour. The areoles are small and crowded towards the upper part of the segment which has a concave face at the apex. In cultivation segments are very slow to root down and need several years to develop a tuber before showing signs of growth. TSG member John Arnold prunes the top growth each year - a practice which some growers use with *Pterocacti*. Large panfulls of this species seen in collections and at shows are invariably grafted.**

Maihueniopsis subterranea **(Fig. 2) occurs in Argentina (Jujuy) and Bolivia (Potosi). Like an iceberg, there is more underground than above, with a broad and deep tuber needing a deep pot in cultivation. This species is variable as can be seen from the illustrations. Small and slow in habitat this plant rewards growers by freely offsetting to form a clump up to 20 cm or more in cultivation. It is fairly free-flowering with petals varying between light brown, rose-pink and pale yellow. There is also a form (*M. pulcherrima*) with crimson flowers recently introduced to cultivation.**

Tephrocactus bonnieae **(Figs 7 & 8) occurs in a number of regions of Argentina. The rounded segments are smaller than the preceding two species but are again variable both in the segment size and the length of pectinate spination on different plants.This species has a mound forming habit of grey-green through to mid-brown segments. The flowers, which are freely produced, vary between pink and white.**

To root down a segment it is advisable to almost bury it as, like many *Tephrocacti*, it roots from the areoles. It can be acquired as a grafted plant and is more amenable to cultivation grafted onto *Opuntia subulata* rather than *Trichocereus* or *Echinopsis*. John Betteley. Newark.

CHICHENSIS / FEROCIOR / BOLIVIANA

To try to help the ongoing discussion it is hoped the information that follows will be useful. The following extract from the 1952 NCSS Journal is the original description of *T. chichensis* in English by Cardenas following his Latin description. It is interesting to note that immediately following this he described *v. colchanus*. Backeberg first mentions *T. ferocior* as n. spec. in a list of *Tephrocacti* dated August 1953 and published in Cactus (Paris) 8(38); 250 1953. These plants were in the garden at Les Cedres. The four and a half lines of Latin description are very terse and give the origin of the taxon as Bolivia. However, in Die Cactaceae 1958 Backeberg expanded, in German, on the description and therefore a translation by Rene Geissler appears below. It is noteworthy that Backeberg, the arch-splitter, mentions the variability of the taxon and the impossibility for him to make a division. The published description expansion in 1958 would suggest that more information came to hand after he saw the taxon at Les Cedres in 1953. Please will someone inform us as to the dates when Backeberg was in South America?

The map on p.10 of Vol.13 March 2007 gives some relevant places and their position. Further information could be useful. Following a line from the south east to north west Tres Palcas is about forty km from Tupiza (Backeberg's area) and about eighteen km from Escoriani (Cardenas' area). Uyuni is about another hundred km from Escoriani. Colchas is about 70 km north of Uyuni. Apparently GC64-04 comes from Humuaco, Jujuy, Argentina. This is about 243 km south east of Tres Palcas and therefore about 363 km south east from Uyuni. Ed.

TEPHROCACTUS CHICHENSIS Cardenas, nov. sp.

Forming clumps of about 60 cm high and I m. wide. Old joints, buried, ellipsoidal, II x 6 cm; young ones erect, spreading, ellipsoid, slightly tapering, 7.5-9.5 x 4-4.5 cm, broadly tuberculate, light green to greyish coloured and minutely white spotted. Areoles in about four spiral rows, I.3-2.2 cm apart, elliptic, prominent, 3 mm diam., cream felted and provided with short yellowish glochids, not surpassing the felt when young, grey felted in old state. Spines not differentiated into radials and centrals, acicular, flexible, pungent, interlaced, spreading or slightly curved. Old joints with 12-16 spines, the shortest being I cm long, the medium 3 cm long, and the longest ones 4.5 cm, spines on the young joints 12-16, the shortest ones being very thin, about 7 mm long, medium ones 2 cm long and the longest ones 5 cm long. All spines white coloured except a few of them which are brown tipped. Fruits globose-elliptic, 5 x 4 cm, tuberculate about the margin of the umbilicus and with few areoles towards the middle length and the base. Umbilicus about 1 cm. deep and 2 cm wide. Upper areoles 2 mm diam., cream felted, with about 12 very thin white hyaline spines 0.5-1.5 cm long. Though the fruits are fleshy, there is no pulp around the seeds. Seeds 5 mm long, light brown, with four tortuous crests.

Bolivia Province of Nor Chichas. Department of Potosi, between the railway stations of Tres Palcas and Escoriani, 3,800 m. March 1952, M. Cardenas No. 4989 (Type, in Herbarium Cardenasianum).

This new Tephrocactus is easily distinguished by its large ellipsoid, green greyish joints and the numerous interlaced white, flexible spines.

TEPHROCACTUS CHICHENSIS Cardenas, var. COLCHANUS Cardenas, nov. var.

Forming mounds, about 40 cm. high and 70 cm. broad. Branches articulate; joints ovoid, when young some-what elongate, 4-7 x 2-3.5 cm, light green coloured, tuberculate. Areoles 1-1.5 cm. apart; young joints areole 2 mm. diam. with 3 mm. long yellowish glochids; old ones 3 mm. diam., with 6 mm. long whitish glochids; Spines about II, white, shortest ones 1.4 cm. long, longest ones 3.5 cm. long; top spines, brownish and thicker than the ordinary ones which are acicular; old areoles with 8-12 spines, the shortest, bristle-like, 7 mm. long and the longest ones, 3.8-6.2 cm., all top spines, horizontal, some slightly undulate. Flowers not seen. Fruits 3-3.5 cm. long, ovoid, light green, tuberculate only above; umbilicus I.5 Cm. wide, 5 mm. deep; fruit areoles around umbilicus 3 mm. diam., whitish felted and provided with yellowish glochids; spines on fruit areoles, about 7, bristle-like, white, brown tipped 0.3-4 cm. long, straight or undulate; pulp of the fruit scarce, green. Seeds orange-brown coloured, 4 mm. long, tortuose.

South-Western Bolivia, Province Nor Lipez, Department Potosi, above Colcha K, 3,900 M. March 1952, M. Cardenas No. 4990.

This new variety differs from the type species by its shorter, spreading and tapering joints.

M. Cardenas in NCSS Journal 7(4): P75-76 1952.

TEPHROCACTUS FEROCIOR.

Rauh & Backeberg – Desc.Cat. Nov.9.1956

Mounds; Joints tightly upright and forming larger groups; Single joints to 8 cm long and 5.6 cm thick, green; protruding humps, 2cm long and 1.5 cm thick; Leaves reddish ; Areoles later with 1cm long bushels of glochids; spines very variable in length, Thickness and colour, sometimes knotted, pointing down or sideward, whitish to brown, partially thick, spines mostly 5 lower in various length, bent or adpressed, very thin to stiff, sometimes outward pointing pointing,1.2-6cm long, also 1-3 more central spines, more or less upright,, often brown at the base, all variable in colour, through white to yellow and brownish either at the base or tips, to 6 cm long, sometimes missing spines in cultivation, or only 1-2, later they form more; habitat plants often form very stiff spines (see illustration 335); Flowers are also variable (acc. To Wilke), of pale yellow to almost orange-yellow; fruit about 3.5-4.5 cm big, fleshy and edible, without spines, a little felty in somewhat depressed areoles; seed rather large, almost square, with a broader ring. In habitat there were up to 20 seeds noticed, some of them with bristles, but stiff, 3-7 mm long, others curved and packed tight, and 5 stronger, partly with sharp edges and some furrow, horn-coloured, the younger still reddish-yellow.- Bolivia (near Tres Palcas, on the high pampas towards Tupiza).

Perhaps one of the most variable of all the Tephrocactus, with regard to spination, but fluid over its territory, so that no division was possible.- (ill. 332, cultivated plant almost without spines; ill. 333, cultivated plant with increasing spination, but not very strong; ill. 334, joints with various, already stronger spination; ill. 335 strongly spined habitat piece…

C. Backeberg in Die Cactaceae P. 328-331.

Just looking back through issue 13/2 I see my article created a couple of comments. The first from Royston who somehow thinks I'm breaking a rule. I do not really know what he means, there are no rules to break, that is why we are in such a mess. They are independent names and anyone is allowed to interpret their descriptions as they see fit. I interpret the description of *T. ferocior* by Backeberg as *C. boliviana*. From what Royston says about my illustrations (last sentence his paragraph 2) he considers my *ferocior* to be the same as my *boliviana*. I guess the difference between us is that he does not believe my *ferocior* is the same as Backeberg's *T. ferocior*. I hope that's reasonably clear. The second comments from Wilf quite clearly support my view of *T. ferocior*. I think the most misleading issue here is the plant in cultivation as "*T. ferocior* collected by MC at Uyuni" which is illustrated in Fig. 11, p30, in the last issue. Quite honestly the illustrations I've seen (I don't grow it but perhaps I should) don't look like my interpretation of either *chichensis* or *ferocior.* To me the plant looks to have affinities with *rossianus*! For instance the spine configuration and disposition are not *boliviana* like nor are they numerous or strong enough for *chichensis*. How's that for a spanner in the works? Martin Lowry. Hull.

Graham Hole recently visited me. He expressed the opinion that *chichensis* and *ferocior* are different. With the statement in Vol.12. No.4. Page 53 that *ferocior* was erected in 1953 from Potosi following that of *chichensis* in 1952 from the same province it means they could be the same taxon. Whilst this is so, I've read or heard that the most ferocious plants come from the Argentinean side of the border, with segments to 4" long and stout spines of a similar length. Now we have Wilf Phillips making the same case about the very same thing. As he says *ferocior* only has spines on the top two or three areoles I did a quick check of plants to find significant spines occur on eleven to twelve areoles of each segment. As you would expect spines are much shorter and fewer on the lower areoles of the segment than at the top but they are clearly to be seen. Even my Harry Middleditch plant of this type with poor spination has spines on the six upper areoles of each segment.
Photographs of segments can be quite deceptive if there is no information as to whether it is from a mature plant, in habitat or cultivation, and there is no marker to indicate height or length.
Graham Hole gave me a segment of his plant of GC64-04 (Fig 10 in the last TSG issue). It has the expected spines of *C. chichensis* but not the large chunky segments. This is maybe a reason why Wilf Phillips wants to consider it as *C. boliviana*.
A year or so ago Graham Hole drew my attention to the fact that the plants of the Tephrocactus group collected in Chile with strongly coloured spines, when grown in England could only produce white spines very much weaker than in habitat. Therefore to study them one needs to know how they perform in habitat alongside how they perform in cultivation. This difference may be so great as to make them unrecognisable as the same species without such knowledge. To this end he brought plant material, bearing about 5" long spines, from the road of Calama to San Pedro in northern Chile. He had to use three film containers to wrap up the segments without shortening the spines in order to bring it home. Grown on, the new growth has much

Fig. 1. *Maihueniopsis clavarioides* (Pf) Anderson
Fig. 2. *Maihueniopsis subterranea* ((Fries) Anderson.

Both photographs by John Betteley

Fig. 4.
***Cumulopuntia ferocior / chichensis*?**
B/K 13a/1 South of Cieneguillas, Bolivia.

Plant in 3½ inch pot.

All photographs by S. Hill

Fig. 5. *Cumulopuntia ferocior/chichensis?*

Fig. 6. *Cumulopuntia ferocior/chichensis?*

Figs 5 - 7 all in 2¾ inch pots

Fig. 7. Same clone but deheaded and then better cared for.

.

Figs. 7. & 8. *Tephrocactus bonnieae* (Ferg+Kies) Stuppy.
Both photographs by John Betteley.

shorter, less robust spines, which I can easily recognise as *M. camachoi* as it is similar to the growth on my other plants of that species.
In a similar way the *C. ferocior* I collected have never grown as well as those seen in habitat. Although my best *C. ferocior* (an ex. Jeff Bagnall plant) looks good, its growth in habitat is probably much better.

Royston Hughes, Liverpool.

The Opuntia Index in Bradleya 15/1997 p99 by Crook and Mottram states that Hunt (1992: 104, 135) synonymised *ferocior* with *chichensis*. I assume that this refers to "The CITES Cactaceae Checklist" first edition. I only have the second edition 1999 where the two are synonymised under *chichensis* (P103). Due to the format of the listing no reasons are given. However, Iliff on p195 in Studies in the Opuntioideae (Cactaceae), Eds Hunt & Taylor 2002, upholds this synonymy and gives reasons in that the descriptions are similar. He also says that the illustrations in Die Cactaceae suggest that Backeberg's concept of the species "may have encompassed mixed material". Writing on *chichensis v. colchanus* Iliff says that it "would appear to differ decidedly" from the species and needs further study. Perhaps the TSG group can help in this. Whoever MC is/was we have the plant available from Uyuni.
The 1989 B/K expedition and the 1996 BLMT expedition both examined plants near Cienaguillas, Bolivia. The B/K list uses the name *T. ferocior*. The BLMT list uses the name *T. chichensis*. Neither uses both names. My B/K 13a plant Fig. 4 (originally listed as T. sp. whilst 13b was listed as *T. ferocio*r)) came directly from Brian Bates in 1994 as *T. ferocior*.
The Fig. 5 plant showing long and twisted spines came from Abbey Brook nursery as a cutting from a plant labeled T. "oenanthum".
Fig. 6 shows a plant I have seen with various incorrect names (e.g. "*viridflorus*", "*bulbispina*") and once the information that it came from Bolivia. I feature it because it does have similarities with MC from Uyuni and the Michael Kiessling illustrated plant as mentioned by Wilf Phillips on P28 of the last TSG issue. Wilf's general description of his ferociors also applies to my taxon. It is just possible in the photograph to see the white dots under the outside layer of the epidermis. Figs. 6 and 7 show that the appearance of a plant is not only based on habitat/in-cultivation growth but also bad cultivation/slightly-better. Fig. 6 shows a rather smooth surfaced plant with a few weak spines. However, with some better treatment Fig. 7 shows the plant to be more tuberculate and the spination is obviously stronger. The taxon in my greenhouses soon show marks and are liable to black mould. Wilf Phillips, in his original letter, commented that a notable feature of the epidermis of his plants was the tendency to "mark" with whitish streaks, which he put down to his low temperature greenhouse conditions. The marking was definitely not due to scale insect. He drew attention to the skin markings on Kiessling's plant illustrated on p20 of his book, which shows that it is not only in Wilf's greenhouse that it occurs, Incidentaly Kiessling lists his plant as Cumulopuntia boliviana 'ferocior' i.e. as a cultivar, not a species.
Cardenas provided two photographs with his original description of *chichensis*. Backeberg did not do so but provided several in Die Cactaceae. Some of these are reproduced on p 41. A. Hill. Sheffield

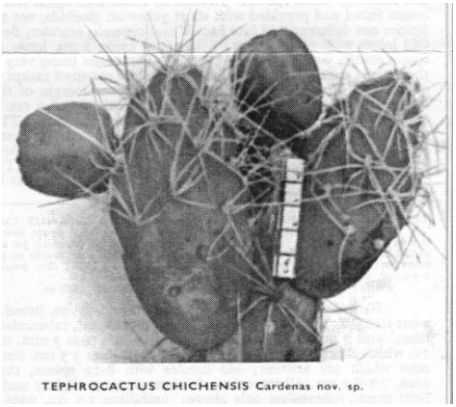
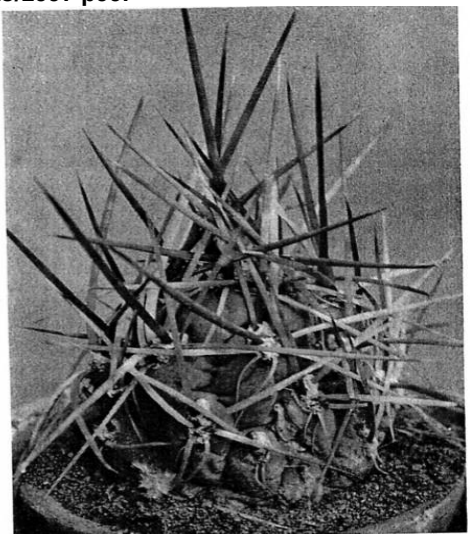
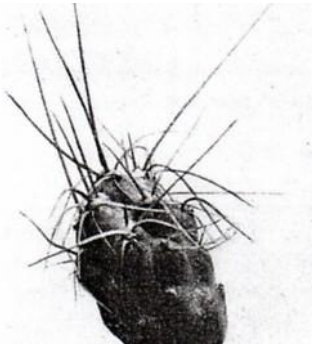


Fig. A. *T. chichensis*. Cardenas photo.
Fig. B. *T. Ferocior*. Strongly spined habitat piece. Designated as neotype by Crook & Mottram, Opuntia Index. Bradleya 15/1997 p99.

Fig. C. Weak spined cultivated T. *ferocior.*
Fig. D. Joint of stronger spined cultivated *T. ferocior*. (Note twisted spines. Ed.)





Figs B, C, & D from Die Cactaceae. Backeberg.

THOUGHTS AFTER THE BIMINGHAM MEETING

I am very pleased that I went to the meeting at Birmingham although I don't like the long motorway drive. I think most members would agree with Graham Charles' overall concept of Maihueniopsis but with a few notable exceptions. I would expect most people to separate *M. darwinii* from *M. platyacantha* with ease. *M. platyacantha* comes in many forms that initially have tuberculate segments and three spines per areole. The spines are usually , flattened and broad at the base and deflect back across the segment. Often spines

appear to have a mid rib and striations across their width. Some clones seem to be able to produce an extra spine per areole. One clone I posses managed three extra spines on some areoles. The P.W. plants from Las Lenas have rather short spines that are not so broad but are in threes similar to the M. Lowry picture for *M. darwinii* in the last TSG issue p.22 Fig 4. I see that J. Iliff considers *M. hickenii* to be a rediscovery of *M. platyacantha*.

There is a group of plants that seem to lie between those that I consider *M. darwinii* and *M. platyacantha*. They have the smoother segment skin of *M. darwini*i but spines similar to *M. platyacantha*, although much narrower and more numerous, that are divergent from the areole not deflexed back. My Hoffmann 90-283-943 from South of Mendoza is an example of such a plant, as is, to a lesser extent P102 from Choele Choele. It would be convenient if these come under the name *M. hickenii*, as some people consider them to be, rather than the lumpers' choice of calling them all *M. darwinii*.

I don't consider it a good idea to list a large number of Chilean species names under the Argentinean *M. glomerata*. Many of these species' names from Chile are just that - names given to material that has not come through to our collections for study. One species that has become known through collecting, mainly seed, in recent years is *M. camachoi.* Recognisably different from the Argentinean forms of *M. glomerata* it may well be the *glomerata* equivalent from the Pacific side of the continental divide. My plants of *M. colorea* do look rather similar to those of *M. camachoi*. I'm sure if Graham had acquired the other nine named synonyms and grown them all side by side with *M. glomerata* and *M. camachoi* for some years he would have used the results to back up his lumping.

I see an obvious problem with *M. ovata* as the plant that Graham had collected and was illustrated GC192.06 (P 23 Fig 7 in the last TSG issue) is similar to one I refer to as being midway in size between *M. minuta* and *M. ovata* and has single, needle like spines from the areoles. My plants of *M. ovata* have larger segments and tufts of divergent spines from the areoles. Graham says he found his plant at the correct habitat and the difference is explained by it being a variable species. I don't agree and say my plants match the neotype of ovata and holotype of *russelli*i illustrated by Iliff in "Studies in the Opuntioideae" p215 where spines per areole are quoted as three to eight in number. Graham collected from Villavicencio, Mendoza, Argentina, one of Ritter's four collection places, while the neotype came from Quebrada del Toro, Las Heras Dept, Mendoza province, in 1948. Iliff equates the early Sonzin illustration shown as Fig. 60, p36 in "The Subgenus Tephrocactus" by Leighton-Boyce and Iliff with the neotype (p78). It is looking as if people have been accepting Ritter's view of *ovata* rather than the neotype. Ritter's collection from that place seems to be his new form "calva". His Latin and German descriptions are very brief so a translation may not clarify what he says. M. perrita (little bitch in English) is a Chilean name for the plant that Ritter called "form sterilis", because its fruits had few or no seeds inside, and it conforms with the neotype plant.

Although *M. hypogaea* is usually seen with a single spine coming from the top two to five areoles of each segment I also have a clone that is spineless. A Chris Hall plant is one that has the longest spines for me but it has never attained the near five inches length that he claimed was possible.

Graham Hole gave me a segment of *C. recurvata* saying it is only a special form of *C. rossiana*, and one sees his point, removing a segment leaves a scar almost the diameter of the segment. I have said before that I believe *C. rossiana* has a number of subgenera, varieties or forms, whatever you wish to call them, that go beyond the accepted small spherical segmented plants with a few dagger-like spines for protection.

Although Ritter created many of the new names or new combinations in the Tephrocactus group of plants based on the plants he collected, it seems to be very rare to find plant material with any F.R. numbers. Obviously if this material were available we would know what he was talking about and could decide whether his separations should stand or not.

Whilst visiting Brendan Burke, before he went off to Newport, he showed me his copy of Englera, by U. Eggli et al, "Cactaceae of South America: the Ritter Collections". This lists all Ritter's collections in great detail. As it has so much detail, compared with Ritter's brief quotes of the F.R. numbers in "Kakteen in Sudamerika", it would seem anyone wishing to agree or disagree with his classifications needs to consult it. Royston Hughes. Liverpool.

Continued in the next TSG issue. Ed.

THREE MANAGEABLE CYLINDROPUNTIAS.

The genus Cylindropuntia is exclusively North American and includes about thirty species with cylindrical stems of indeterminate growth and having the diagnostic feature of a sheathed spine (which does not exist on the South American equivalent Austrocylindropuntia). Many of the Cylindropuntias become unmanageable in a small or medium sized collection, but three species which are slower and will not outgrow a 20cm pot, yet are attractive, are *C. ramossisima, C. tesajo* and the somewhat obscure *C. kelvinensis.*

***C. ramosissima* (Fig. 10) is the pencil thick diamond cholla - so called because of the diamond patterning of the stem tubercles. Occurring in gravely soils in Mexico, Arizona, California and Nevada it remains rare in cultivation and is difficult to propagate. The plant has a woody stem and quickly dries out before it can root down. After several failures I scrounged a 2cm long segment from TSG member David Rushforth and immediately and successfully tip-grafted it onto *Pereskiopsis velutina*. Even the growth of a grafted plant remains slow. Over the years I have seen only a few examples of the plant, the best of which was in the private collection of Roy Mottram (Whitestone Gardens) in the 1980s.**

***C. tesajo* (Fig. 9) has similar pencil-thick stems but is lively green colour and lacks the tuberculate markings of the preceding species. Its endearing features include oblong areoles filled with coffee-coloured glochids and the occasional erect brown spine. It is almost equally as woody as *C. ramossima* but slightly easier to root down; it is also slow in cultivation. In habitat it occurs in Mexico and Baja California.**

***C. kelvinensis* (Front cover) is not a true species but has now been accepted as a naturally occurring hybrid between *C. fulgida* and *C. spinosior*; it has more of the characteristics of the latter parent. I first encountered this plant on Whitestone's list in the 1980s when it was simply described as "being likened to a Xmas tree".**

It is easier and quicker than the two afore mentioned species and freely grows and offsets to form a small dense clump. In habitat it occurs in Arizona. John Betteley. Newark.

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.

091.01	**Opuntia sulphurea**	**Cotagaita**	**2844**
093.02	**Opuntia sulphurea**	**Cotagaita**	**3058**
093.04	**Cumulopuntia boliviana**	**Cotagaita**	**3058**
094.04	**Opuntia sulphurea**	**Cotagaita**	**3225**
095.04	**Cumulopuntia rossiana**	**Cuchu Ingenio**	**3368**
095.05	**Cumulopuntia chichensis**	**Cuchu Ingenio**	**3368**
095.06	**Opuntia sulphurea**	**Cuchu Ingenio**	**3368**
096.04	**Opuntia sulphurea**	**Cuchu Ingenio**	**3653**
096.05	**Cumulopuntia boliviana**	**Cuchu Ingenio**	**3653**
096.08	**Cumulopuntia chichensis**	**Cuchu Ingenio**	**3653**
097.04	**Cumulopuntia boliviana**	**Cuchu Ingenio**	**3713**
097.05	**Opuntia sulphurea**	**Cuchu Ingenio**	**3713**
098.03	**Tunilla sp.**	**Potosi**	**3605**
098.04	**Cumulopuntia boliviana**	**Potosi**	**3605**
098.07	**Austrocylindropuntia shaferi**	**Potosi**	**3605**
098.09	**Cumulopuntia chichensis**	**Potosi**	**3605**
099.01	**Cumulopuntia boliviana**	**Challapata**	**3940**
100.02	**Cumulopuntia boliviana**	**Challapata**	**3821**
102.03	**Cumulopuntia boliviana**	**Pazna**	**3688**
102.04	**Tunilla sp.**	**Pazna**	**3688**
103.05	**Cumulopuntia boliviana**	**Oruro**	**3700**
103.06	**Tunilla sp.**	**Oruro**	**3700**
103.07	**Opuntia sulphurea**	**Oruro**	**3700**
104.02	**Austrocylindropuntia verschaffeltii**	**La Joya**	**3697**
104.03	**Opuntia sulphurea**	**La Joya**	**3697**
104.05	**Cumulopuntia boliviana**	**La Joya**	**3697**
105.03	**Austrocylindropuntia floccosa**	**Achacachi**	**3893**
108.02	**Cumulopuntia boliviana**	**Panduro**	**3857**
108.05	**Tunilla sp.**	**Panduro**	**3857**
108.06	**Austrocylindropuntia verschaffeltii**	**Panduro**	**3857**
109.03	**Opuntia sulphurea**	**La Joya**	**3792**
110.01	**Cumulopuntia boliviana**	**Oruro**	**3934**
11.04	**Tunilla sp.**	**Corviri**	**3745**

Fig. 9. *Cylindropuntia tesajo* (Cltr.) Knuth

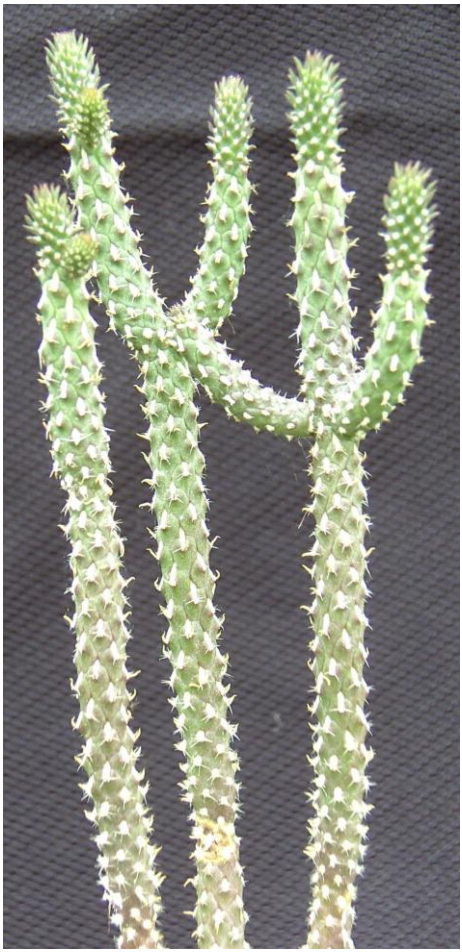


Fig. 10. *Cylindropuntia ramosissima* (Eng.) Knuth

Photographs by John Betteley.

TEPHROCACTUS

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

Austrocylindropuntia sphaerica 'Kuehnrichiana'
Chosica, Peru.
Photograph by Roger Moreton.

STUDY GROUP

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SPECIAL EDITION ON CULTIVARS.

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All articles and comments should be sent to the Editor.

Subscriptions for 2007 were due on the 1st January 2007

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OPUNTIA - FISSION OR FUSION ?
PART III - CHECKLIST OF NAMES

By Gordon Rowley.

Having offered a middle-of-the-road classification in Parts I and II (Rowley 2004, 2006), it remains to provide a list of names to fit into the boxes - three of them, at any rate: *Austrocylindropuntia, Grusonia* and *Tephrocactus*. In doing so I pursue a policy explained in more detail elsewhere (Rowley 2007) treating as cultivars many plants in cultivation liable to lose their identities under the broad-based species concepts of many who have studied variation in the wild. This is entirely permissible under the ICNCP and brings with it many advantages.

In brief, look at the list of 10 names under *Tephrocactus articulatus* (p 50). These have been variously bandied around as species, subspecies, varieties and forms, but it all comes down in cultivation to a band of slightly different clones passed from collector to collector and expressing the variation potential within a single species. By treating them as cultivars all are equal: there is no fussing with long polynomials, ranks or authors' names, and epithets can be dropped if their usefulness ends, or new ones published if and when occasion demands. In many cases one can effect the change on a label by going from lower case italics to Roman type with an initial capital and single quotes: the approved means of distinguishing a cultivar from botanical names. And if it bothers you that so many are in Latin form, there is the excellent dictionary of Eggli & Newton (2004) to explain such terms, many of which describe distinctive features of the plant. Nurserymen, too, should benefit as sales catalogues would become easier to compile and consult.

Saving discredited but familiar names of cacti by treating them as cultivars is no novelty. David Hunt and Roy Mottram were among pioneers in this, and Harry Mak does good work among the other succulents. But such scattered examples need to be co-cordinated, and this register of three genera could serve as a prototype for many other large genera long favoured in captivity but cluttered with a huge synonymy.

SOURCES

The New Cactus Lexicon (Hunt 2006) is the obvious starting point, providing the most up-to-date and best researched treatment of names of species and subspecies, while acknowledging that finality is still a dream of the future. James Iliff (2002) revised what he calls the Andean

Opuntias (non-platyopuntioid opuntias) - that is, the sort of plants most favoured in cultivation and in the TSG offerings. "Tephrocactus und andere Feigenkakteen" by Kiessling & Pőschl (2000), in English as well as German, is pictorially splendid and well compiled; it features a few cultivars. Finally basionyms and background data for the names are ideally set out in Crook & Mottram's indispensable Opuntia Index of 1995-2005, so there is no point in repeating them all here. The Opuntia Index includes many names not traceable in the previously mentioned titles.

FORMAT

Approved names of species in bold type are followed by the abbreviation of the favoured generic name and then other generic names likely to be encountered in literature. Synonyms in italics, with generic names applied in the past, are followed by the recommended cultivar name where applicable. When this is not a direct transplant of the botanical epithet, a new name may have had to be invented to avoid duplication. It is not permissible to have two cultivars of the same name in the same genus, unless you are an orchid, which is apparently privileged to make up its own rules (ICNCP Art.5.1 & 2). Thus we have *A.sphaerica* 'Bigshot' instead of 'Major' to avoid duplicating *A.vestita* 'Major'. *Grusonia* 'Major' and T*ephrocactus* 'Major' would require renaming if classified as O*puntia*.

Note that although precedence is given to genera as classified in my Part II previous article, the index is equally consultable if you regard all the species as belonging to *Opuntia*, or recognise all the segregated small genera.

EXCLUDED GENERA OF OPUNTIOIDEAE

Brasiliopuntia	*Maihuenia*	*Opuntia*	*Tacinga*
Consolea	*Nopalea*	*Pterocactus*	

EDITOR'S NOTE. To many people a cultivar is a plant specially developed in horticulture. In response to my query as to what is actually meant by the term "cultivar" Gordon replied as follows.

CULTIVARS: There is and can only ever be one definition of the term, which is that in the official Code and that takes four pages. All the others are attempts, more or less futile, to shorten it. The great point for our purposes is that a cultivar can be a wild species, subspecies, variety or form without causing confusion or conflict: the two systems of nomenclature are independent. The botanists are not challenged, and the hobbyists and plantsmen have a simpler and more user-friendly system with which to cope.

ABBREVIATIONS OF GENERIC/SUBGENERIC NAMES

A	*Austrocylindropuntia*	Mr	*Marenopuntia*
Ai	*Airampoa*	O	*Opuntia*
C	*Cylindropuntia*	P	*Platyopuntia*
Co	*Corynopuntia*	Pe	*Pereskiopsis*
Cu	*Cumulopuntia*	Pu	*Puna*
G	*Grusonia*	Q	*Quiabentia*
Mh	*Maihueniopsis*	T	*Tephrocactus*
Mi	*Micropuntia*	Tu	*Tunilla*
Mq	*Miqueliopuntia*		

abyssi, G. (C, O)
acanthocarpa, G. (C, O)
CULTIVARS
'Coloradoensis' 'Major' 'Ramosa'
'Ganderi' 'Thornberi'
aggeria, G, (Co, O)
agglomerata, Co/O = **G.grahamii** 'Agglomerata'
alamosensis, C/O,= **G.thurberi** 'Alamosensis'
albisaetacens, Ai/O/P/Tu = **T.corrugatus** 'Albisaetacens'
albiscoparius, T.= **A.pentlandii** 'Albiscoparia'
alboareolata, Cu/T = **A.sphaerica** 'Alboareolata'
albomarginata, Mh = **T.glomeratus** 'Albomarginatus'
alcahes, G. (C, O)
CULTIVARS
'Brevispina' 'Burrageana'
alcerrecensis, P. (NON O) = **T.soehrensii** 'Chilensis'
alexanderi, T. (O)
CULTIVARS
'Brachyacanthus' 'Flexuosus' 'Microsphaericus'
'Bruchii' 'Geometricus' 'Riojanus'
'Fiambalensis' 'Halophilus' 'Subsphaericus'
'Macracanthus'
andicola, O/T = **T.glomeratus** 'Andicola'
angustispinus, *T.platyacanthus* var. = **T.glomeratus** 'Angustispinus'
anteojoensis, G (C, O)
aoracanthus, T. (O)
CULTIVARS
'Pediophilus'
applanata, *O.kuehnrichiana* var. (T) = **A.sphaerica** 'Applanata'

aquosa, G. (O, Pe)
arborescens, C/O = **G.imbricata** 'Arborescens'
arbuscula, G. (C. O)
archiconoideus, T. (Mh, O)
argentea, C/O = **G.imbricata** 'Argentea'
aricensis, C.tunicata var. = **G.tunicata** 'Aricensis'
armata, Ai/O = **T.corrugatus** 'Armatus'
articulatus, T. (C, O)

CULTIVARS

'Calvus'	'Oligacanthus'	'Strobiliformis'
'Diadematus'	'Papyracanthus'	'Syringacanthus'
'Inermis'	'Polyacanthus'	'Turpinii'
	'Polymorphus'	

asplundii, O/T = **A. pentlandii** 'Asplundii'
atacamensis, Mh/O = **T.glomeratus** 'Atacamensis'
atratospinus, T. = **T.glomeratus** 'Atratospinus'
atroglobosus, O/P/T = **T.nigrispinus** 'Atroglobosus'
atroviridis, O/T = **A.floccosa** 'Atroviridis'
aulacothele, O. = **T.weberi** 'Aulacothele'
aurantiaciflora, O.corotilla var. (T) = **A.sphaerica** 'Aurantiaciflora'
aureo-penicillata, T.lagopus var. (O) = **A.lagopus** 'Aureo-penicillata'
aurescens, T.floccosus subv. (O) = **A.floccosa** 'Aurescens'
aureus, T.lagopus var. (O) = **A.lagopus** 'Aurea'
ayrampo, Ai = **T.corrugatus**

backebergii, O. = **A.pentlandii** 'Minor'
badia, O.leptocaulis var. (C) = **G.leptocaulis** 'Badia'
barkleyana, Mi/O = **G.pulchella** 'Barkleyana'
berteri, Cu (NON alia) = **A.sphaerica** 'Berteri'
bicolor, O/T = **A.sphaerica** 'Bicolor'
bigelowii, G. (C, O)

CULTIVARS

'Ciribe'

'Bigshot', A. = **A.sphaerica** 'Bigshot': a renaming of *C.unguispina* var. *major* to avoid duplication of **A.vestita** 'Major'
blakeana G. (O, Pe,)
blancii O/T = **A. floccosa** 'Blancii'
boliviana A. (Cu, Mh, O, T.) = **A.pentlandii** 'Boliviana'
boliviensis, Ai/O = **T.soehrensii** 'Boliviensis'

***bonniae,* T.** (Mh, O, Pu)
brachyacantha, O.alexanderi f. (T) = **T.alexanderi** 'Brachyacanthus'
brachycarpus, T.lagopus svar. (O) = **A.lagopus** 'Brachycarpa'
brachyrhopalica, Mi/O = **G.pulchella** 'Brachyrhopalica'
bradtiana, *G*. (O)
brevispina, C/O = **G. alcahes** 'Brevispina'
brevispina, O.*longispina* var. (NON O.b.) = **T.corrugatus** 'Brevispinus'
brittonii,.C. = **G.leptocaulis** 'Brittonii'
bruchii, 0/T = **T.alexanderi** 'Bruchii'
bulbispina, *G*. (C, Co, O)
burrageana, C/O = **G.alcahes** 'Burrageana'

calantha, O/T = **T.corrugatus** 'Calanthus'
californica, *G.* (C, O)
CULTIVARS
'Delgadilloana' 'Parryi' 'Rosarica'
'Parkeri'
calmalliana, C/O = **G.molesta** 'Calmalliana'
calva, O/T = **T.articulatus** 'Calvus'
camachoi, Mh/O/T = **T.glomeratus** 'Camachoi'
campestris, O/T = **A.sphaerica** 'Campestris'
canispinus, T.floccosus var. (O) = **A.floccosa** 'Canispina'
cardenasii, O. = **A.lagopus** 'Cardenasii'
cardenche, C/O = **G.imbricata** 'Cardenche'
c**aribaea, G**. (C, O)
CULTIVARS
'Metuenda'
c*atacanthus,* T. (NON O) = **T.glomeratus** 'Catacanthus'
cedergreniana, Ai/O = **T.soehrensii** 'Cedergrenianus'
chacoensis, Q = **G.verticillata** 'Chacoensis'
chapistle, Pe = **G.rotundifolia** 'Chapistle'
chichensis, A. (Cu, O, T)
CULTIVARS
'Ferocior'
chilensis, Ai/O/T = **T.soehrensii** 'Chilensis'
chilensis, O.tunicata var. (C) = **G.tunicata** 'Chilensis'
cholla, G. (C, O)
chuquisacana, A/O = **A.vestita** 'Chuquisacana'
ciribe, C/O = **G.bigelowii** 'Ciribe'

clavarioides, T. (A, C, Mh, O, Pu)
CULTIVARS
'Cristata' 'Ruiz-lealii'
clavata, G. (C, Co, O)
clavellina, C/O = **G.molesta** 'Clavellina'
coloradoensis, C. = **G.acanthocarpa** 'Coloradoensis'
coloreus, Mh/O/T = **T.glomeratus** 'Coloreus'
x congesta, G. (C, O)
conoideus, T. (Mh, O)
corotilla, Cu/O/T = **A.sphaerica** 'Corotilla'
corrugatus, T. (Ai, O, P, Tu)
CULTIVARS
'Albisaetacens' 'Eburneus' 'Microdiscus'
'Armatus' 'Hintonii' 'Monvillei'
'Brevispinus' 'Laetevirens' 'Retrospinosus'
'Calanthus' 'Robustior'
crassicylindrica, Cu/O/T = **A.sphaerica** 'Crassicylindrica'
crassior, *T.floccosus* var. (O) = **A.floccosa** 'Crassior'
crassispina, Mh = **T.glomeratus** 'Crassispinus'
crispicrinita, O/T = **A.floccosa** 'Crispicrinita'
cristata, *O.clavarioides* var. (Pu) = **T.clavarioides** 'Cristatus'
cristata, O.*kleiniae* var. = **G.kleiniae** 'Cristata'
curvispinus, *T/Cu* = **A.pentlandii** 'Curvispina'
cylindrarticulata, O/T = **A. pentlandii** 'Cylindrarticulata'
cylindrica, A. (C, Mh, O)
CULTIVARS
'Intermedia'
cylindrolanata, O/T = **A.floccosa** 'Cylindrolanata'

dactylifera, Cu/O/T = **A. pentlandii** 'Dactylifera'
darwinii, T. (Mh, O)
davisii, G. (C, O)
deflexispina, *O.platyacantha* var. = **T.glomeratus** 'Deflexispinus'
delgadilloana, C. = **G.californica** 'Delgadilloana'
deminutus, *T.weberi* var. (O) = **T.weberi** 'Deminutus'
densispina, C/O = **G.schottii** 'Densispina'
denudata, *O.floccosa* var. (T) = **A.floccosa** 'Denudata'
x deserta, G. (O)
diademata O/T = **T.articulatus** 'Diadematus'

digitalis, O. = **A.verschaffeltii** 'Digitalis'
diguetii, G. (O, Pe)
CULTIVARS
'Spathulata'
dimorpha, O/T = **A.sphaerica** 'Dimorpha'
dispar, T.weberi var. (O) = **T.weberi** 'Dispar'
domeykoensis, Mh/O = **T.glomeratus** 'Domeykoensis'

eburnea O/T = **T.corrugatus** 'Eburneus'
echinacea, Cu/O/T = **A. pentlandii** 'Echinacea'
echinocarpa, G. (C, O)
CULTIVARS
'Nuda' 'Wigginsii'
elongata, O.andicola var. = **T.glomeratus** 'Elongatus'
emoryi, G. (O)
CULTIVARS
'Peeblesiana' 'Stanlyi'
enodis, O.whipplei var. (C) = **G.whipplei** 'Enodis'
erectocladus, T. (Ai, O. Tu)
CULTIVARS
'Ianthinanthus' 'Picardoi'
exaltata, A/C/Mh/O = **A.subulata** 'Exaltata'

famatimensis, Cu = **A. pentlandii** 'Famatimensis'
'Fatroot', **T.glomeratus**. See mandragora, Mh/O/T.
ferocior, O/T = **A.chichensis** 'Ferocior'
fiambalensis, T. = **T.alexanderi** 'Fiambalensis'
flexispinus T. (NON O) = **A. pentlandii** 'Flexispina'
flexuosus, O/T = **T.alexanderi** 'Flexuosus'
floccosa, A. (Mh,O, T)
CULTIVARS
'Atroviridis' 'Denudata' 'Paucispina'
'Aurescens' 'Hirschii' 'Pseudo-udonis'
'Blancii' 'Longicylindrica' 'Punta-caillan'
'Canispina' 'Machacana' 'Tephrocactoides'
'Crassior' 'Ovoides' 'Udonis'
'Crispicrinita' 'Parviflora' 'Verticosa'
'Cylindrolanata' 'Yanganucensis'
floribunda, O.verschaffeltii var. = **A.verschaffeltii** 'Floribunda'

x fosbergii, G. (O)
frigida, Cu = **A. pentlandii** 'Frigida'
fuauxiana, O/T = **A.rossiana** 'Fuauxiana'
fulgida, G. (C, O)
CULTIVARS
'Mamillata' 'Monstrosa'
'Fuchs', T. = **T.tilcarensis** 'Fuchs'
fulvicoma, Cu/O/T = **A. pentlandii** 'Fulvicoma'
fulvispina, *O.andicola* var. = **T.glomeratus** 'Fulvispinus'

galerasensis, Cu/O = **A. pentlandii** 'Galerasensis'
ganderi, G/O = **G.acanthocarpa** 'Ganderi'
gatesii, Pe = **G.porteri** 'Gatesii'
geometrica, O/T = **T.alexanderi** 'Geometricus'
glauca, *C.leptocaulis* var. = **G.leptocaulis** 'Glauca'
glaucinus, *T. sphaericus* var. = **A.sphaerica** 'Glaucina'
glomeratus, T.(Mh, O NON Br.& R., Speg.)
CULTIVARS

'Albomarginatus'	'Fulvispinus'	'Monticola'
'Andicola'	'Gnom'	'Monvillei'
'Angustispinus'	'Grandiflorus'	'Neoplatyacanthus'
'Atacamensis'	'Gratus'	'Neuquensis'
'Atratospinus'	'Hickenii'	'Ovallei'
'Camachoi'	'Hypogaeus'	'Ovatus'
'Catacanthus'	'Leoncito'	'Platyacanthus'
'Coloreus'	'Leoninus'	'Rahmeri'
'Crassispinus'	'Leptocladus'	'Reichianus'
'Deflexispinus'	'llanos-de-Huanta'	'Russellii'
'Domeykoensis'	'Longispinus'	'Tarapacanus'
'Elongatus'	'Major'	'Wagenknechtii'
'Fatroot'	'Minutus'	'Wetmorei'
	'Molfinoi'	

'Gnom', T. = **T.glomeratus** 'Gnom'
gracilicylindrica, Mi/O = **G.pulchella** 'Gracilicylindrica'
grahamii, G. (Co, O)
CULTIVARS
'Agglomerata' 'Reflexispina'
'Planibulbispina' 'Violett'
grandiflora, Mh (NON O) = **T.glomeratus** 'Llanos-de-Huanta'

grandiflora, O.soehrensii var. (P) = **T.soehrensii** 'Grandiflorus'
grata, O/T = **T.glomeratus** 'Gratus'
greggii, O.schottii var. = **G.schottii** 'Greggii'
guatinensis, Cu/O/T = **A. pentlandii** 'Tortispina'

haematacantha, A/C/O = **A.verschaffeltii** 'Haematacantha'
halophila, O/T = **T.alexanderi** 'Halophilus'
hamiltoniae, C/G/O = **G.** 'Hamiltoniae'
heteromorpha, O/T = **A.vestita** 'Heteromorpha'
hickenii, Mh/O/T = **T.glomeratus** 'Hickenii'
'Hildegunde', A. = **A.shaferi** 'Hildegunde', renamed after Hildegunde Stein to avoid duplication of **A**. **pentlandii** 'Steiniana'
hintonii, O = **T.corrugatus** 'Hintonii'
hirschii, A/O/T = **A.floccosa** 'Hirschii'
hoffmannii, O.bigelowii var. (NON O.h.) = **G. x fosbergii**
hossei, O/T = **T**.'Hossei' (intermediate between **T.aoracanthus** and **T.articulatus**)
hualpaensis, C/O = **G.whipplei** 'Hualpaensis'
humahuacana, A/C/O = **A.shaferi** 'Humahuacana'
hypogaea, Mh/O/T = **T.glomeratus** 'Hypogaeus'
hypsophila, A/C/O = **A.verschaffeltii** 'Hypsophila'
hystrix, Cu (NON O) = **A. pentlandii** 'Sanctae-Barbarae'
hystrix, G. (C, O)

ianthinantha, Ai/O/P/Tu = **T.erectocladus** 'Ianthinanthus'
ignescens, Cu/O/T = **A. pentlandii** 'Ignescens'
ignota, Cu/O/T = **A.sphaerica** 'Ignota'
imbricata, G. (C, O)

CULTIVARS

'Arborescens'	'Cardenche'	'Vexans'
'Argentea'	'Lloydii'	'White Tower'

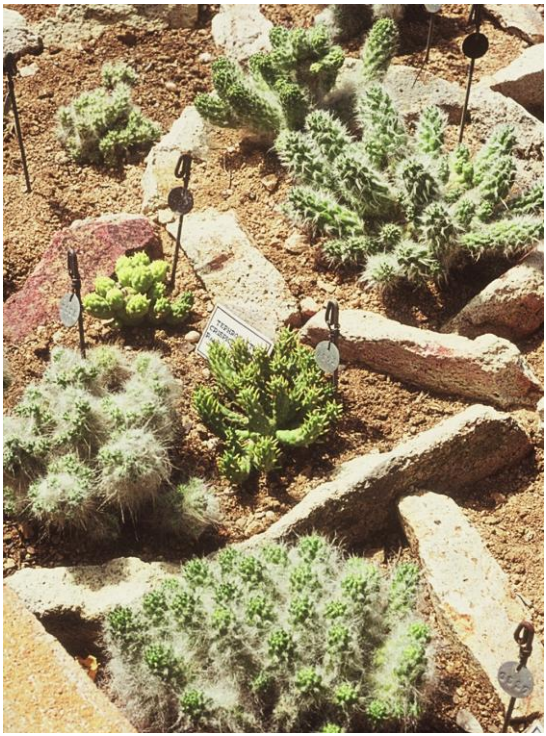
inarmata, A. = **A.verschaffeltii** 'Inarmata'
inermis, T. (NON O.) = **T.articulatus** 'Inermis'
intermedia, A. (C, NON O.) = **A,cylindrica** 'Intermedia'
intermedia, A.vestita var. (O) = **A.vestita** 'Middleman'
invicta, G. (Co, O)

jilesii, A.miquelii var. = **A.miquelii** 'Jilesii'

Fig 1 Tephrocactus aoracanthus 'Pediophilus'
Fig 2 Tephrocactus articulatus 'Syringacanthus'
Both photographs by Gordon Rowley of plants in his collection.

Fig. 3. Tephrocactus erectocladus 'Picardoi'

Fig. 4. Austrocylindropuntia floccosa cultivars at Pinya da Rosa.



Riviere de Caralt's collection in Spain, August 1964.

Both photographs by Gordon Rowley. Fig.3 a plant in G. Rowley's collection.

Fig. 5. Tephrocactus glomeratus 'Camachoi'. Calama to San Pedro Rd, Chile. Pot size 2¾ inch Photograph by S. Hill

Fig. 6. Tephrocactus glomeratus 'Fatroot'. Photograph by Rene Geissler.

Fig. 7. Tephrocactus glomeratus 'Hickenii'
Photograph by Gordon Rowley of a plant in his collection

Fig. 8. Tephrocactus glomeratus 'Hypogaeus'

Photograph by Royston Hughes of a plant in a 4½ inch pot.

Figs. 9. Austrocylindropuntia pentlandii 'Curvispina'. Photograph by Elton Roberts of a plant in his collection
Fig. 10 Austrocylindropuntia lagopus 'Cardenasii' in Warner Rauh's collection at Heidelberg 1970. Photograph by Gordon Rowley.

Figs. 11. Austrocylindropuntia rossiana 'Fuauxiana'
Photograph by John Betteley of David Parker's plant.
Fig. 12 Grusonia tunicata cultivars at Pinya da Rosa, Spain 1964
Photograph by Gordon Rowley.

kellermannii, G. (Pe)
CULTIVARS
'Scandens'
x kelvinensis, G. (O)
kleiniae, G. (C, O)
CULTIVARS
'Cristata' 'Recondita'
kuehnrichiana, Cu/O/T = **A.sphaerica** 'Kuehnrichiana'
kunzei, G. (O)
CULTIVARS
'Wrightiana'

laetevirens, O. = **T.corrugatus** 'Laetevirens'
laevior, O.tunicata var. = **G.tunicata** 'Furiosa'. Adoption of Wendland's synonymous *O.furiosa* avoids duplicating **G.** 'Laevior'
laevior, O.whipplei var. = **G.whipplei** 'Laevior'
lagopus, A. (Mh, O, T)
CULTIVARS
'Aurea' 'Cardenasii' 'Malyana'
'Aurea-penicillata' 'Leucolagopus' 'Pachyclada'
'Brachycarpa' 'Rauhii'
lauliacoana, A. = **A**.'Lauliacoana' (referable to **A.floccosa** or **A.lagopus**)
leoncito, Mh/O/T = **T.glomeratus** 'Leoncito'
leonina, O/T = **T.glomeratus** 'Leoninus'
leptocaulis, G. (C, O)
CULTIVARS
'Badia' 'Glauca' 'Tenuispina'
'Brittonii' 'Pluriseta' 'Vaginata'
'Robustior'
leptoclada, Mh = **T.glomeratus** 'Leptocladus'
'Leuchtfeuer', A. Origin undisclosed
leucolagopus, *T.lagopus* var. (O) = **A.lagopus** 'Leucolagopus'
leucoluteus, T.pyrrhacanthus var. = **A. pentlandii** 'Leucolutea'
leucophaea, O. = **A.sphaerica** 'Leucophaea'
lindsayi, G. (C, O)
llanos-de-huanta, O. = **T.glomeratus** 'Llanos-de-huanta'
lloydii, C/O = **G.imbricata** 'Lloydii'
longiarticulatus, T. = **A.sphaerica** 'Longiarticulata'
longicylindrica, O..atroviridis f. (T) = **A.floccosa** 'Longicylindrica'

longispina, A.verschaffeltii var. (C/O NON *O.1.*) =**A.verschaffeltii** 'Longispina'
longispinus, T.glomeratus var. (NON *O.1.*) = **T.glomeratus** 'Longispinus'

machacana, A. = **A.floccosa** 'Machacana'
macracantha, O.bruchii var. (T) = **T.alexanderi** 'Macracanthus'
'Magenta', O. = **T.weberi** 'Magenta'
major, *C.acanthocarpa* var. (O) = **G.acanthocarpa** 'Major'
major, *C.unguispina* var. = **A.sphaerica** 'Bigshot'
major, *A.vestita* var. C/O = **A.vestita** 'Major'
major, *O.andicola* var. = **T.glomeratus** 'Major'
malyana, A. (T) = **A.lagopus** 'Malyana'
mamillata, C/O = **G.fulgida** 'Mamillata'
mandragora, Mh/O/T = **T.glomeratus** 'Fatroot'. *Mandragora* being the botanial name of the mandrake genus is not eligible as a cultivar name.
marenae, G. (Mr, O, Pt)
melanacanthus, T. = **A. pentlandii** 'Melanacantha'
metuenda, C/O = **G.caribaea** 'Metuenda'
microclados, T. = **A.rossiana** 'Microclados'
microdisca, Ai/O/P/T/Tu = **T.corrugatus** 'Microdiscus'
microsphaericus, T. = **T.alexanderi** 'Microsphaericus'
'Middleman', **A.** = **A.vestita** 'Middleman': a renaming of *A.vestita var. intermedia* to avoid duplication of **A.cylindrica** 'Intermedia'
minor, T. = **A. pentlandii** 'Minor'
minuscula, Ai/O/T/Tu = **T.soehrensii** 'Minusculus'
minuta, Mh/O/T = **T.glomeratus** 'Minutus'
miquelii, A. (C, Mh, Mq, O)
CULTIVARS
'Jilesii'
mira, O/T = **A.sphaerica** 'Mira'
mistiensis, Cu/O/T = **A. pentlandii** 'Mistiensis'
moelleri, G. (C, Co, O)
molesta, G. (C, O.)
CULTIVARS
'Calmalliana' 'Clavellina'
molfinoi, Mh/O/T = **T.glomeratus** 'Molfinoi'

molinensis, T. (Mh, O)
monstrosa, O.fulgida f. = **G.fulgida** 'Monstrosa'
monticola, O. = **T.glomeratus** 'Monticola'
monvillei, O.platyacantha var. = **T.glomeratus** 'Monvillei'
muelleriana, O/T = **A.sphaerica** 'Muelleriana'
multiareolata, Cu/T NON O = **A.sphaerica** 'multiareolata'
multiareolata, O. = **T.soehrensii** 'Multiareolatus'
munzii, G. (C, O)

x neoarbuscula, G. (C, O)
neomexicana, O.spinosior var. = **G.spinosior** 'Neomexicana'
neoplatyacantha, O.platyacantha var. = **T.glomeratus** 'Neoplatyacanthus'
neuquensis, Mh/O/T = **T.glomeratus** 'Neuquensis'
nigrispinus, T. (Mh, O, P)
CULTIVARS
'Atroglobosus' 'Purpureus'
noodtiae, O/T = **A. pentlandii** 'Noodtiae'
nuda, O.echinocarpa var. = **G.echinocarpa** 'Nuda'

obliqua, O. = **T.soehrensii** 'Obliquus'
oligacantha, O/T = **T.articulatus** 'Oligacanthus'
orurensis, Ai/O/P/Tu = **T**.'Orurensis', aff. **T.soehrensii**
ovallei, Mh/O = **T.glomeratus** 'Ovallei'
ovata, Mh/O/T = **T.glomeratus** 'Ovatus'
ovoides, O.floccosa var. (T) = **A.floccosa** 'Ovoides'

pachycladus, T.lagopus var. (O) = **A.lagopus** 'Pachyclada'
pachypus, A. (C/Mh/O)
paediophila, See *pediophila,* O/T
pampana, Cu/O/T = **A. pentlandii** 'Pampana'
panellana, Ai/O = **T**.'Panellanus' (aff *T.corrugatus*)
papyracantha, O/T = **T.articulatus** 'Papyracanthus'
parishii, G. (C, O)
parishiorum, G/O See **parishii, G.**
parkeri, C/O = **G.californica** 'Parkeri'
parryi, C/O = **G.californica** 'Parryi'

parviflora, O.atroviridis f. (T) = **A.floccosa** 'Parviflora'
paucispina, O.atroviridis var. = **A.floccosa** 'Paucispina'
pediophila, O/T = **T.aoracanthus** 'Pediophilus'
peeblesiana, O.stanlyi var. = **G.emoryi** 'Peeblesiana'
pentlandii, A. (Cu/Mh/O/T)

CULTIVARS

'Albiscoparia'	'Frigida'	'Pyrrhacantha'
'Asplundii'	'Fulvicoma'	'Rarissima'
'Boliviana'	'Galerasensis'	'Recurvata'
'Curvispina'	'Ignescens'	'Sanctae-Barbarae'
'Cylindrarticulata'	'Leucolutea'	'Steiniana'
'Dactylifera'	'Melanacantha'	'Subinermis'
'Echinacea'	'Minor'	'Ticnamarensis'
'Famatimensis'	'Mistiensis'	'Tortispina'
'Flexispina'	'Noodtiae'	'Wilkeana'
	'Pampana'	

picardoi, Ai/O/T/Tu = **T.erectocladus** 'Picardoi'
'Pinsel', **T.** Origin undisclosed
planibulbispina, Co = **G.grahamii** 'Planibulbispina'
platyacantha, O/T = **T.glomeratus** 'Platyacanthus'
pluriseta, C/O = **G.leptocaulis** 'Pluriseta'
poecilacantha, O. = **T.**'Poecilacanthus', aff. **T.corrugatus** and **T.soehrensii**
polyacantha, O.diademata var. (T NON O.p.) = **T.articulatus** 'Polyacanthus'
polymorpha, O. = **T.articulatus** 'Polymorphus'
porteri, G. (O, Pe)

CULTIVARS

'Gatesii'

posnanskyana, O. = **A.verschaffeltii** 'Posnanskyana'
prolifera, G. (C, O)
pseudorauppiana, O/T = **A.sphaerica** 'Pseudorauppiana'
pseudo-udonis, O/T = **A.floccosa** 'Pseudo-udonis'
pulchella, G. (Co, Mi, O)

CUL'TIVARS

'Barkleyana'	'Gracilicylindrica'	'Tuberculosirhopalica'
'Brachyrhopalica'	'Pygmaea'	'Wiegandii'

pulcherrima Mh/T = **T.subterraneus** 'Pulcherrimus'
punta-caillan , A/O/T = **A.floccosa** 'Punta-caillan'

purpurea, O. = **T.nigrispinus** 'Purpureus'
pygmaea, Mi/O = **G.pulchella** 'Pygmaea'
pyrrhacantha, Cu/O/T = **A. pentlandii** 'Pyrrhacantha'

rahmeri, Mh/O = **T.glomeratus** 'Rahmeri'
ramosa, *O.acanthocarpa* var. (C) = **G.acanthocarpa** 'Ramosa'
ramosissima, G. (C, O)
rarissima, O/T = **A. pentlandii** 'Rarissima'
rauhii, O/T = **A.lagopus** 'Rauhii'
rauppiana, Cu/O/T = **A.sphaerica** 'Rauppiana'
recondita, C/O = **G.kleiniae** 'Recondita'
recurvata, Cu = **A. pentlandii** 'Recurvata'
reflexispina, Co/G/O = **G.grahamii** 'Reflexispina'
reicheana, O/T = **T.glomeratus** 'Reicheanus'
retrospinosa, O/T = **T.corrugatus** 'Retrospinosus'
Misspelt "retrorspina" in Kiessling & Pŏschl
riojana, O/T = **T.alexanderi** 'Riojanus'
robustior, *O. corrugata* var. = **T.corrugatus** 'Robustior'
robustior, *O.leptocaulis* var. (C) = **G.leptocaulis** 'Robustior'
rosarica, C/G/O = **G.californica** 'Rosarica'
rosea, G. (C, O)
rossiana, A. (Cu, O, T)
CULTIVARS
'Fuauxiana' 'Microclados'
rotundifolia, G. (O, Pe)
CULTIVARS
'Chapistle'
rubellispina, *O.tilcarensis* var. = **T.tilcarensis** 'Rubellispinus'
rubriflora, *O.verschaffeltii* var. = **A.verschaffeltii** 'Rubriflora'
ruiz-lealii, A/O = **T.clavarioides** 'Ruiz-lealii'
russellii, O/T = **T.glomeratus** 'Russellii'

sanctae-barbarae, C,Cu,O = **A.pentlandii** 'Sanctae-Barbarae'
sanfelipensis, G. (C, O)
santamaria, **G**. (C, O)
scandens, Pe = **G.kellermannii** 'Scandens'
schottii, G. (Co, O)
CULTIVARS
'Densispina' 'Greggii'

setigera, O/T = **T.weberi** 'Setiger'
shaferi, A. (C, Mh, O)
CULTIVARS
'Humahuacana' 'Hildegunde' 'Weingartiana'
silvestris, Ai/O/T/Tu = **T.soehrensii** 'Silvestris'
soehrensii, T. (O, P, Tu)
CULTIVARS
'Boliviensis' 'Grandiflorus' 'Obliquus'
'Cedergrenianus' 'Minusculus' 'Silvestris'
'Chilensis' 'Multiareolatus' 'Transiens'
spathulata, Pe = **G.diguetii** 'Spathulata'
sphaerica, A. (Cu, O, T)
CULTIVARS
'Alboareolata' 'Dimorpha' 'Muelleriana'
'Aurantiaciflora' 'Glaucina' 'Multiareolata'
'Berteri' 'Ignota' 'Pseudrauppiana'
'Bicolor' 'Kuehnrichiana' 'Rauppiana'
'Bigshot' 'Leucophaea' 'Tubercularis'
'Campestris' 'Longiarticulata' 'Tumida'
'Corotilla' 'Mira' 'Unguispina'
'Crassicylindrica' 'Zehnderi'
spinosior, G. (C, O)
CULTIVARS
'Neomexicana'
stanlyi, Co/G/O **= G.emoryi** 'Stanlyi'
steiniana, A/O = **A.shaferi** 'Hildegunde'
steiniana, O.ignescens var. T, NON O.s. = **A. pentlandii** 'Steiniana'
strobiliformis, O/T = **T.articulatus** 'Strobiliformis'
subinermis, A/O/T = **A. pentlandii** 'Subinermis'
subsphaerica, O/T = **T.alexanderi** 'Subsphaericus'
subterraneus, T. (Cu, Mh, O, Pu)
CULTIVARS
'Pulcherrimus' 'Variflorus '
subulata, A. (C, Mh, O)
CULTIVARS
'Exaltata'
syringacantha, O/T = **T.articulatus** 'Syringacanthus'

tarapacana, Mh/O/T = **T.glomeratus** 'Tarapacanus'
tenuispina, *C.leptocaulis* var. (NON O) = **G.leptocaulis** 'Tenuispina'
tephrocactoides, A/C/O = **A.floccosa** 'Tephrocactoides'
teres, A/C/O = **A.vestita** 'Teres'
tesajo, G. (C, O)
x tetracantha, G. (C, O)
thornberi, *G.acanthocarpa* var. (C/O) = **G.acanthocarpa** 'Thornberi'
thurberi, G. (C, O)
CULTIVARS
'Alamosensis'
ticnamarensis, Cu/O = **A. pentlandii** 'Ticnamarensis'
tilcarensis, T. (Ai, Tu)
CULTIVARS
'Fuchs' 'Rubellispinus'
'Tomate', **T.** Origin undisclosed
tortispina, Cu/T NON O = **A. pentlandii** 'Tortispina'
transiens, *O.soehrensii* var. (P) = **T.soehrensii** 'Transiens'
tubercularis, Cu = **A.sphaerica** 'Tubercularis'
tuberculosirhopalica, Mi/O = **G.pulchella** 'Tuberculosirhopalica'
tumida, Cu/O = **A.sphaerica** 'Tumida'
tunicata, G. (C, O)
CULTIVARS
'Aricensis' 'Chilensis' 'Furiosa'
turpinii, O/T = **T.articulatus** 'Turpinii'

udonis, O/T = **A.floccosa** 'Udonis'
unguispina, Cu/O/T = **A.sphaerica** 'Unguispina'

vaginata, C/O = **G.leptocaulis** 'Vaginata'
variflorus, T. = **T.subterraneus** 'Variflorus'
verschaffeltii, A. (C, Mh, O)
CULTIVARS
'Digitalis' 'Hypsophila' 'Longispina'
'Floribunda' 'Inarmata' 'Posnanskyana'
'Haematacantha' 'Rubriflora'
versicolor, G. (C, O)

verticillata, G. (Q)
CULTIVARS
'Chacoensis'
verticosa, O/T = **A.floccosa** 'Verticosa'
vestita, A. (C, Mh, O)
CULTIVARS
'Chuquisacana' 'Major' 'Middleman'
'Heteromorpha' 'Teres'
vexans, *O.imbricata* var. (G) = **G.imbricata** 'Vexans'
vilis, G. (Co, O)
'Violett', G. = **G.grahamii** 'Violett'
x viridiflora, G. (C, O)
x vivipara, G. (C, O)

wagenknechtii, Mh/O = **T.glomeratus** 'Wagenknechtii'
walterspielii, Mh = **T.glomeratus** 'Walterspielii'
weberi, T. (O)
CULTIVARS
'Aulacothele' 'Dispar' 'Magenta'
'Deminutus' 'Setiger'
weingartiana, A/C/O = **A.shaferi** 'Weingartiana'
wetmorei, O = **T.glomeratus** 'Wetmorei'
whipplei,G. (C, O)
CULTIVARS
'Enodis' 'Hualpayensis' 'Laevior'
'White Tower' O = **G.imbricata** 'White Tower',
wiegandii, Mi/O = **G.pulchella** 'Wiegandii'
wigginsii, C/O = **G.echinocarpa** 'Wigginsii'
wilkeana, O/T **A. pentlandii** 'Wilkeana'
wolfii, G.(C, O)
wrightiana, Co/G/O = **G.kunzei** 'Wrightiana'

yanganucensis, A/O/T = **A.floccosa** 'Yanganucensis'

zehnderi, Cu/O/T = **A.sphaerica** Zehnderi'
zehntneri, G. (Q)

EPILOGUE

I emphasize that the above index is primarily aimed at horticulturists of all sorts and is in no way a challenge to or substitute for the formal botanical classification and ranking, which remains the province of botanists. With cultivars there is only one rank, all are equal, and the regulations governing cultivar names are less strict and more user-friendly to non-botanists. Further you have the choice of abbreviating, say, *T.alexanderi* 'Geometricus' to *T.*'Geometricus' if you wish, either for brevity or if you disagree with associating it with *T.alexanderi*.

Finally, a word of caution in case you feel the urge to rush out and throw away all your plant labels and replace them by new. On no account discard collectors' field numbers or habitat data: names change but these do not. In the interests of conservation it is imperative to preserve such documentation.

So now ... who is going to be the first to claim that he or she has all 40 cultivars of *Tephrocactus glomeratus?*

ACKNOWLEDGEMENT.

I especially thank Alan Hill for creative editing and correcting of my undigitised typescript, and for making it presentable as a publication.

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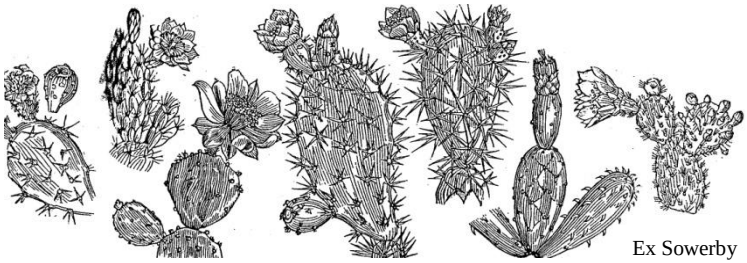
GLOSSARY.

For good or ill, it was decided to make the two Codes as different as possible by using different terms for key features. The definitions given here are simplifications, and no substitute for consulting the original codes for the full story.

	BOTANICAL CODE. (ICBN)	DEFINITION	HORTICULTURAL CODE (ICNCP)
1.	**Validation**	Publication in full accordance with the Code.	**Establishment**
2.	**Protologue**	Everything associated with the name when first published.	***Foundation**
3.	**Diagnosis**	Statement distinguishing a taxon/culton from all others.	**Diagnosis**
4.	**Basionym**	The original first published name on which a later name is based.	***Anchor Name**
5.	**Type**	The preserved specimen or equivalent to which the name is permanently attached.	**Standard**
6.	**Epitype**	A specimen or illustration selected to help identification when existing materials are inadequate.	***Passport**

Terms marked with an asterisk * are not in the Codes, but suggested here to fill an obvious need. On this basis the **type** of a species becomes the **standard** when it is named as a cultivar; the **protologue** becomes the **foundation,** and together they constitute the **anchor name** (ex - **basionym**) for a new transfer. To aid the identification a **passport** can be designated, as are **epitypes** for species.



Ex Sowerby

Fig. 13 Austrocylindropuntia sphaerica ' Mira'
Pot size 3½ inch. Photograph by A. Hill.

Fig. 14 Tephrocactus articulatus ' Strobiliformis'
Photograph by Ray Weeks

TEPHROCACTUS

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

Corynopuntia parishii **(Orc.) Knuth.**
Photograph by Elton Roberts.

STUDY GROUP

Vol. 13

No. 4 December 2007

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All articles and comments should be sent to the Editor.

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TSG DISPLAY AT THE BCSS NATIONAL SHOW 2008

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.

THE 2008 TSG MEETING.

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. The room will be available from 10.15 and a buffet lunch costing £5 will be provided. More details of the meeting and precise information of how to travel to the venue will be in the TSG March 2008 issue. 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 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 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 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.

At the meeting last year some discussion took place on how to increase the free attendance. It was pointed out that we do not restrict attendance only to members. Therefore the event could be promoted by TSG members at local BCSS branches etc. Please will members do this? A. Hill.

PENTLANDII AND BOLIVIANA.

In the March issue of the TSG Vol. 13 No 1 2007 P.2-5 I wrote an article arising from the fact that the New Cactus Lexicon recognises *Cumulopuntia boliviana* (S.D.) Ritter as a valid species but lists *C. pentlandii* (S.D.) Ritter as a possible synonym of *C. boliviana* (S.D.) Ritter. The intention of the article was to outline the history of the relationship of the two names but not to examine the morphological differences/similarities that have been discussed about the two taxa. My conclusion was that the name *pentlandii* has precedence over *boliviana* on the grounds that although the two names first appeared in the same publication in 1845 *pentlandii* was described on an earlier page than *boliviana*. Also Roy Mottram, in Bradleya 19/2001 p26, drew attention to the fact that Britton & Rose in 1919 had placed *boliviana* as a synonym under *pentlandii* which therefore created precedence. James Iliff originally followed this approach by initially referring to the *pentlandii* group in his joint 1973 publication but in his 2002 article referred to the *boliviana* group in which he included *pentlandii*. The CITES Cactaceae Checklists followed the latter synonymy. Referring to my article Royston Hughes made a comment on p. 25 of the TSG 2007 June issue where he made the valid

point that what was important was that the description of *boliviana* is clearly applicable to plants he has seen in habitat and in collections. However, if one is to synonymise the two names then the issue of precedence needs to be addressed. I have had one verbal communication on this point. To summarise the comments, I was told that I was correct but to not pursue the matter because it would only cause problems over accepted usage.

The question of precedence did arise with the preparation of the Vol. 13 No. 3a Oct. 2007 TSG special issue on cultivars. I have Gordon Rowley's permission to quote what he said to me on the matter. "Roy Mottram is perfectly correct that, where two new names appear simultaneously in one publication, what counts under the Code is not the page order, but who first decided to put them together. I made a search of the 19th century literature and could not find any earlier author who had so treated these two." Thus in the special issue on cultivars the correct procedure is carried out and *pentlandii* is given precedence over *boliviana*.

For full details of the literature quoted please see pages 2 to 5 of the 2007 TSG March issue. Alan Hill, Sheffield.

WANTED

Does any member of the TSG with Pterocactus araucanus have about four heads going spare? I am willing to pay.

Please contact me on edwin.newman@ntlworld.com

FOUR PLANTS FOUND BY GRAHAM HOLE.

In 1998 Graham visited Argentina. Travelling west in Catamarca, from Fiambala to Chaschuil he found three plants that he thought were the same species. On the same road he also found plants he identified as conoidea. On his return to the U.K. cultivation of the former plants (i.e. giving them water etc) caused the plants to reveal their true morphology and showed identifiable differences between them. The plants are not all the same species but are definitely two and possibly three different taxa. Graham has distributed cuttings off the plants so several growers are cultivating them. The three original plants are still alive and the photographs in Figs. 3 to 5 are of the originals. These are the "mystery" plants referred to below by Royston. The initial interest has been to what species do the plants belong? The second interest is that if *conoidea/archiconoidea* is identified then a new locality for growth has been found. The two latter names are associated with localities in Chile on the other side of the Andes from Catamarca.

Comments on the plants will be very welcome to add to discussion in the next TSG issue. Fig. 6 shows one of the separate plants, not from the three "mystery" plants, identified as *Maihuenia conoidea* on the same road.

Ed.

THOUGHTS AFTER THE BIRMINGHAM MEETING continued.

My two clones of *M. minuta* (Ex Dogdyke & KG1712) with small green segments, one darker than the other, appear to conform to what one would

expect of such a species name. The KG1712 comes from Sierra Pie de Polo, San Juan, Argentina. A more recent plant came as Ex Kiesling from N.W. of Calingasta, San Juan, and has similar sized segments of a grey-green colour tinted with purple in places. The weak spination is a little more obvious than on the above two clones and it hasn't yet flowered. A fourth plant that would appear to belong here is one of the three mystery plants (Fig. 3) that Graham Hole bought back from the Fiambala to Chaschuil road, Catamarca, mistaking them at the time as being a single species. Similar in looks to the above third plant its older segments are light green and the new growth purple in colour.

M. mandragora **has similarities to** ***M. minuta*** **but is expected to have much larger segments. Unfortunately plants of this species in my cultivation seem to have been shrinking rather than attaining their true larger sized segments. The second (Fig. 4) of Graham Holes' mystery plants certainly looks like** ***M. mandragora*** **so far.**

M. archiconoidea **is little known due to its few collections and mine is R.M.F.356 from Conay, Atacama, Chile. However the third of Graham Hole's mystery plants (Fig. 5) looks just like it. From the illustration in the TSG June issue I see there is a P.M.241 about as well from the El Transito Valley, Chile.**

With a fair number of cactophiles visiting the Calama to San Pedro de Atacama area, Chile, ***M. conoidea*** **has started to become better known. Added to this Graham Hole has also found it (Fig. 6) in the same area as his three mystery plants in Argentina. Royston Hughes. Liverpool.**

CORYNOPUNTIA BULBISPINA **(Eng) Knuth.**

Corynopuntia is so named for the bulb like swelling at the base of the spines. The spine base is somewhat like a hatpin not like a straight pin with the nail like head but more like a hatpin. On a grand scale you can imagine a daffodil bulb with a long sharp stem coming out of it. In the most part, other than being an Opuntia, the plant looks like it has nothing going for it. It will make clumps of dense stems and looks like a pile of spines on a green mound. These mounds can be over 30 cm across and about as high. The stems are club shaped thus the name "coryne = club". As there are quite a few of the plants with these short club shaped stems they have been put under Corynopuntia. They are referred to as the "club Opuntias" or the "club chollas".

I had been growing the plant in the photographs (Figs 1 & 2) for about ten years when I figured it needed repotting. That is when I discovered that the plant has some really fantastic looking roots. As I was changing the types of soil I cleaned the soil from around the roots. On repotting the plants I raised the roots. Over the last ten or twelve years I have raised it to its present height. I guess that it has had its roots raised maybe five or six times. From the soil level to the top of the root is 13 cm for the left hand root and 15 cm for the right hand root. This is all one plant, the roots split apart several years ago making it look like it is two plants with entwined roots. That makes for a quite interesting sight. Several times a year I trim the stems from blocking the view of the roots and also trim the stems on

the top of the plant. I kind of give it a flat top. This way I keep it under control and it makes for a wonderful show plant.
For the ten or so years before raising the roots the plant grew in my regular soil mix and was out side in all kinds of weather. Whatever Mother Nature threw our way the plant took it and showed no adverse reactions to any of it. I have several trays of the plants growing outside just doing their own thing. In the summer I water them and in the winter they take what ever comes along. For those of you who are Anderson fans I do not know where he gained the idea that the plants have purple flowers. Just another mistake in the Anderson book! At least the NCL did not follow his lead on the flower colour. The plant will bloom several times a year and the stems can be almost hidden under all the flowers. The flowers open to about 5 cm in diameter. As you can see they are a brilliant yellow (Fig. 7). If you have about twenty flowers open at one time on a plant it sure makes for a bright spot in the greenhouse. As I use this plant as a show plant it resides inside. After blooming I will trim the plant and it will throw new joints and bloom again. The stems have to be cut with a cutting tool. They do not just fall off like the joints on *Corynopuntia grahamii* (Eng.) Knuth.

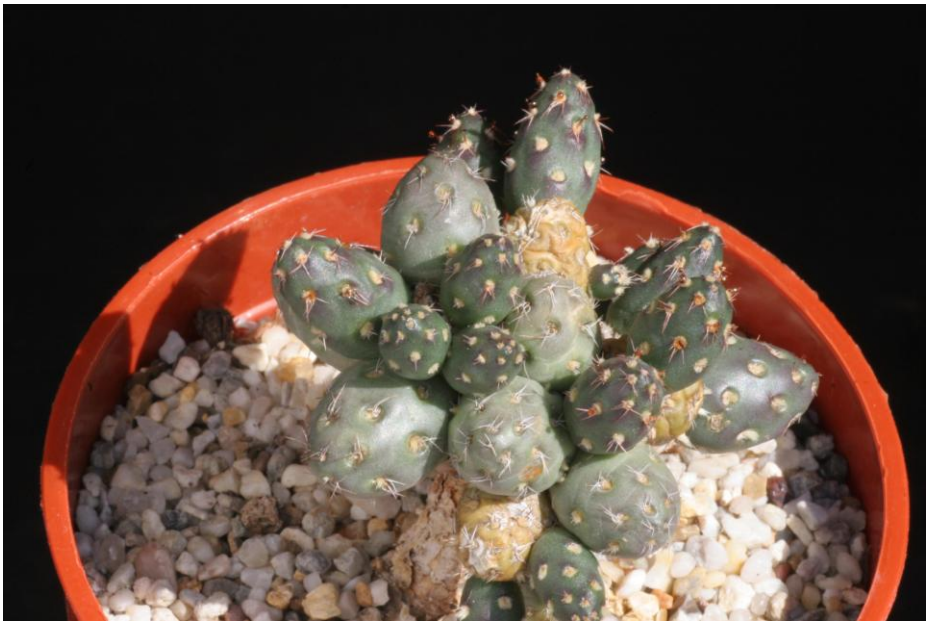
Elton Roberts. California

This is a Mexican species, being found in Coahuila, Durango, Nuevo Leon and Zatecas. In 1856 Englemann provided the original description;
"Stems low, forming wide-spreading clumps 6 to 12 dm.* Broad; joints ovoid in outline, 2 to 2.5 cm long by 10 to 12 mm. In diameter; tubercles prominent, 6 to 8 mm. long; radial spines 8 to 12, acicular, 3 to 6 mm. long; central spines 4, much stouter than the radials, 8 to 12 mm. long, bulbose at base."
***1 dm = 10 cm. Ed.**

***CORYNOPUNTIA EMORYI* (Eng.) P.Griffith.**

Figs 8 to 10 illustrate another of the loved Opuntia family, *Corynopuntia emoryi*. You can tell that it is a favourite of many people as they have given it such pet names as; Cursed cholla and Devil cholla. With such descriptive names you can tell that people have to love the plant. It has taken me years to find the correct name for the plant, as when I obtained it there was no name that came with it. I had seen photos of *Opuntia stanlyi* but they looked different from my plant. I think that in the past some photos of different plants were switched and photos I saw of *O. parishii* were captioned as *O. stanlyi*. The name of Opuntia *stanlyi* was not validly published so it was thrown out as being the name of the plants and so the official name for years was *O. emoryi*. A few years ago when the people who like to lump names together decided that the Opuntia family was too large they broke the family into many smaller ones. It was at that time that the name was changed to *Corynopuntia emoryi*. For you fans of the Anderson book you will find the name under *Grusonia emoryi*.
The plant is considered a pest plant in areas where people come in contact with it or have to deal with it. It can make what is described as thickets of stems to over 6 metres in diameter. The stems are only to about 30 cm tall. The stems creep along the ground, at first up right and as they get longer

Fig. 1.
***Corynopuntia bulbispina* (Eng.) Knuth.**
Photographs by Elton Roberts.
Fig. 2



Figs. 3 & 4.Two Plants found by Graham Hole. Photographs by G. Charles.

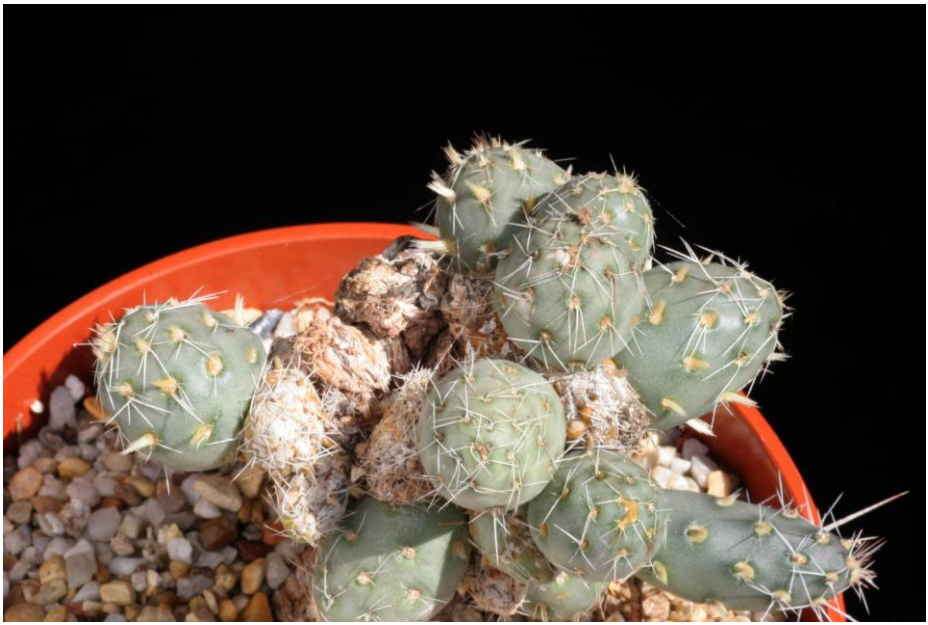


Fig. 5. A third plant found by Graham Hole. Photograph by G. Charles.
Fig. 6. *Maihueniopsis conoidea* Ritter. Found by G. Hole between Fiambala to Chaschuil, Catamarca, Arg. Photograph by S. Hill. Figs 3 -5 also on same road.

Fig. 7 *Corynopuntia bulbispina*

Fig. 8 *Corynopuntia emoryi.*

Figs 9 & 10 *Corynopuntia emoryi* (Eng.) P.Griffiths.
All photographs by Elton Rberts.

they lay down from the weight of the lengthening stems. The stem joints are to 18 cm long and to 5 cm in diameter. The joints look to me like a weak form of C. invicta. In the photo of the plant you can see how the plant grows. That plant is now about 75 cm across and in need of trimming again. To trim the plant you need a good set of shears or good wire cutters. Try cutting it with a knife and you are liable to get fouled up with the plant. The flowers are to 6.5 to 7 cm across, note that the stigma lobes are white (Fig. 8). That should help you to know if you have this plant or a weak spined *invicta*.
If you think you have peeping Toms, you plant one of the Corynopuntia or any of the other nice spined Opuntia under your window and you will have no more problems. The plants are from Arizona, New Mexico, Texas and Chihuahua and Sonora in Mexico. As such they can take quite cool temperatures. My plants lived through the big freeze with out losing a spine. In the most part I keep the plants dry over the winter. That is because I am too lazy to water them as they are scattered among the collection. Elton Roberts. California.

The name *Opuntia emoryi* Englemann appeared in 1856 but Britton & Rose in 1919 (The Cactaceae) placed the name as a synonym under *Opuntia stanlyi* Englemann. This usage continued until 1992 (CITES Cactaceae Checklist) when Hunt, referred *stanlyi* to *emoryi*. The NCL continues this reversed synonymy.
In 1848 Englemann provided the original description of *Opuntia stanlyi* Englemann:
"Stems low, usually less than 3dm. high, much branched, creeping, forming broad, impenetrable masses 2 to 3 meters in diameter; joints 10 to 15 cm. long, clavate, more or less curved, strongly tubercular; tubercles 3 to 4 cm. long, flattened laterally, 4 to 6 cm. apart; spines numerous, stout, elongated, somewhat roughened, reddish brown, the larger ones strongly flattened, 3.5 to 6 cm. long; flowers yellow, 5 to 6 cm. broad; fruit ovate, clavate at base, yellow, 5 to 6 cm. long, very spiny, with a depressed umbilicus; seed flattened, 4.5 to 6.5 mm. in diameter." Ed.

***CORYNOPUNTIA PARISHII* (Orc) Knuth.**

What a gorgeous flower this plant produces!!! (Front cover) This, on a plant (Fig. 11) that most people love to hate, as it is on an Opuntia. [That was its name before all the lumpers came along and decided to split the family into sections, as it was too large. While doing that they made a mega family out of Echinopsis, they are just nuts!!] I have to think that the flower on this plant is one of the really pretty flowers of the small Opuntia. *Corynopuntia parishii* started out as *Opuntia parishii* Orcutt back in 1896. In 1935 it was moved to Corynopuntia. In Backeberg's Lexicon it is listed as *Corynopuntia stanlyi v. parishii* (Orc*)* Backeberg. If you are a fan of Anderson's book you will have to look under Grusonia to find the plant. In the NCL it is back in Corynopuntia and as just *C. parishii* (Orc) Knuth. Many years ago while wandering around the southern California desert I kept seeing what looked to be patches of dark rock or sand some distance off the road. Finally there were a couple of dark areas by the road and I

could see they were caused by cactus plants. When I saw that they were cactus plants I thought that maybe it was the *Opuntia stanlyi v. parishii* cactus I had read about. As I did not have that plant and it looked so wicked I had to have a joint. The first few clumps stayed in all one clump. I do not remember now how I finally got a joint or two off one of the clumps but I did. Those stems were as though held together with steel cable and I could not take off any stems. It seems like I had to find a rock or two and use a rock on a rock to cut the joints off.

In habitat the plants are more or less ground huggers. There may be a few joints that are standing upright. As the plant grows these joints will also lay on the ground. It is usually the joints toward the tip of the stems that are upright. The largest clumps that I saw were close to two metres across. You would not want to make your camp bed in the dark of night on those plants. I remember as a kid my Granddad took us to the desert and we started to lay out the tarp to put the beds on when we discovered it was right in a patch of goat-heads. You may know them as puncture vines. Some of the lower stems in *Corynopuntia parishii* are up to twelve cm long and about five cm in diameter. The flowers are 4.5 to 5 cm in diameter. I fail to see where Anderson gained the idea that the flowers have a reddish midrib to the petals. I have never seen a plant with red mid strips up the flower petals. One of the nicer names I have heard the plant called is "sand cholla". That fits the plant quite well. In the photos I have included one of the seedpod with the spine clusters on it (Fig. 13). They are like star bursts and so quite pretty. However, I still would not want to cosy up to one, much less a whole bunch of them. The photograph of the stem (Fig. 12) shows the dagger like spines. All and all it all makes a very handsome plant. I give the plants my regular soil mix. I have had the plants out in the cold and rain for years. They have taken all Mother Nature has thrown at them here. They are given no special care except for acidic water now. That has made them health up quite well. Elton Roberts. California

This taxa can be found in Arizona, California and Nevada. A quick survey of the literature reveals connections between the names of Opuntia parryii, parishii and parishiorum.

In 1856 Englemann examined some material from Bigelow and, although expressing some doubt as to it being *Opuntia parryi,* he then described the material under the name *Opuntia parryi*. The material was recollected much later by people with the name of Parish. Orcutt realised the material was not *Opuntia parryi* and in 1896 used Engelmann's 1856 description when erecting a new name. In 1919 Britton & Rose used the name *Opuntia parishii* Orcutt for this new species. Crook and Mottram in their Index record Orcutt's new name for the taxa as *parishiorum* with *parishii* in quotation marks. However, in 1935 (Cactus ABC) when listing the species included under his new name of Corynopuntia, Knuth listed *parishii* with no mention of *parishiorum* and the name *parishii* was carried forward by Backeberg, Anderson and Hunt. Orcutt used Engelmann's description as the official description for *parishii* as follows;

"Stems low, creeping, rooting along the under surface and forming dense, broad clusters; terminal joints short, clavate, ascending but almost hidden

under the dense armament; tubercles prominent but short, 5 to 7 mm. long; spines at first reddish but soon greyish and finally nearly white; radial spines numerous, slender; central spines about 4, strongly angled and more or less flattened, 2 to 4 cm long; glochids numerous; flowers not known; fruit 5 cm. long, the numerous large areoles bearing many long yellow glochids and short spines forming a radiating band about the margin; seeds dark, 4mm broad." Ed

FLORAL UPDATE

My *M. conoidea* had three flowers for the first time whilst my Graham Hole plant, which has flowered twice before, did not perform this year.

The plant which appears to be between *minuta* and *ovata* was pollinated but produced no viable fruits.

My three British Standard *glomeratas* were cross-pollinated: there being six flowers on the largest plant two on the medium plant and one on the smallest plant. Now all I can do is wait to see if any fruits develop and have seed within.

My *M. Darwinii* produced one flower of a similar orange colour to those on my Hoffmann 90-283-943 South of Mendoza plant and my *M. platyacantha* Ex. Harry Middleditch with its upright spines.

My *M. hypogaea* (Ex. Jim Bolton clone) seemed to be the only one to produce a bud that has taken ages to develop. Then a short time ago I spotted an old ex. Dave Whiteley clone had a few buds coming. Looking further, I then found buds on the long spined ex. Chris Hall plant as well.

While still with the *Maihueniopsis* Graham says they have juicy fruits. The *russellii* GR and *ovata* (Chris Hall), that I have cross-pollinated a number of times over the years, have been very consistent in the fruits they have produced. The *russellii* fruits, having fully developed, soon dry out on the plant well before the end of the year. However the fruit on the *ovata*, when left on the plant well into the next year for it to ripen, has never gone beyond turning yellow before I have felt the need to remove it from the plant. These *ovata* seeds have always been in a very sticky pulp that was difficult to remove. The *ovata* seeds were always found to be a quarter to half the number of seeds found in the *russellii* fruits.

My *C. rossiana* plants have been flowering over a long period, some for the first time. Of most interest were two seeds grown on BK41 from Yamparaez, Chuquisaca, Bolivia. The smaller plant in a 3½ inch square pot had a single deep buttercup yellow coloured flower. The larger plant in a 4½ inch square pot had two orange coloured flowers. Admittedly when they opened fully in strong sunshine the latter almost paled to yellow but side by side the colour difference was marked. I mention this as all my other rossiana plants have flowered yellow, even one supposedly reddish/orange. The one I collected as red show no signs of flowering so far.

My *C. boliviana* (ex. Chris Hall) surprised me by once again producing a flower. Another *C. boliviana* (G.N.482-154), with small segments and a few wispy spines from the top areoles of a segment, also managed to produce a flower for the first time.

I have three *T. bonnieae* all on their own roots and one in a 2 inch square pot producing a flower a while ago. The largest one, in a 2¾ inch square pot, more recently had two flowers side by side. There are a number of buds developing on my two flowering clones of *T. articulatus* but whether they can time the opening to allow cross-pollination I shall have to wait and see. It has not happened so far.
My *A. shaferi* from bought seed, that has flowered before, managed two flowers this year but as usual neither opened up fully.

Royston Hughes. Liverpool.17/7/2007

Some time ago I received a comment from Bill Jackson that over the years he had many flowers on his plants but few fruits. Royston managed to have many fruits so how did he manage it? I have put the question to Royston as to his pollination methods. His answer is that the use of a small brush is not satisfactory because it has to be cleaned after use to avoid undesirable cross pollination from residue pollen. To avoid contamination his method is to use paper folded to form a point. He then transfers pollen from one flower to another and does this several times with the same two flowers. He then disposes of the paper and folds another piece. Perhaps the success of the technique in producing fruit is the multiple application of the pollen between the same two flowers. However, the use of the folded paper to form a point might have an effect by facilitating the correct positioning of the pollen on to the stigma lobes. Ed.

TUNILLA PICARDOI

In TSG issue Vol. 12. No. 4 Dec. 2006 an article by Elton Roberts appeared about this taxa and one of Elton's photographs of the taxa is on the front cover. The name *Airampoa picardoi* (Marn-Lap) Dowd nom. invalid appeared under the photograph. In Haseltonia 12:13 - 14 2006 an article by Alessandro Guiggi validated the name *Tunilla picardoi* (Marn-Lap) Guiggi & Delanoy. Plants bearing the name "*picardoi*" are relatively common now in collections. I have obtained plants of the taxa with that name followed by "Picardoi Gardens". I have interpreted the latter information to mean that the plant is directly traceable to the original collection. However, the named location is incorrect as the taxa discovered by M. Picardoi in Salta, Argentina in 1954, was sent to Marnier-Lapostelle who placed it in his collection in his garden at Les Cedres. It would appear that the label should therefore read "Les Cedres Gardens".
The article in Haseltonia reveals that A. Guiggi encountered a problem in that the morphology of the existing material growing at Les Cedres was not compatible with the original description by Marnier-Lapostelle. However, G. Delanoy had material from cuttings of the original collection at Les Cedres. This material was used to validate the above new name. This information raises the query as to whether material in cultivation in our collections is from the correct taxa even if the attribute is that it can be traced to Les Cedres. The Haseltonia article gives details that confirm the segments of the plant shown on the TSG cover are the correct shape and the flower the correct colour. Elton has the correct material. Have you? A. Hill.

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.

111.05	Cumulopuntia boliviana	Corviri
112.03	Cumulopuntia boliviana	Challapata
112.04	Tunilla sp.	Challapata
113.02	Cumulopuntia boliviana	Rio Mulatos
113.03	Tunilla sp.	Rio Mulatos
114.01	Maihueniopsis hypogaea	Chita
114.02	Cumulopuntia boliviana	Chita
115.02	Cumulopuntia boliviana	Atocha
115.03	Tunilla sp.	Atocha
116.02	Cumulopuntia boliviana	Chacoya
116.03	Cumulopuntia chichensis	Chacoya
116.04	Tunilla sp.	Chacoya
117.01	Cumulopuntia boliviana ssp. ignescens	San Vincente
117.02	Cumulopuntia boliviana	San Vincente
118.01	Cumulopuntia boliviana	San Vincente
118.02	Tunilla sp.	San Vincente
119.01	Tunilla sp.	San Vincente
119.05	Cumulopuntia boliviana	San Vincente
120.03	Cumulopuntia boliviana	San Vincente
120.05	Tunilla sp.	San Vincente
121A.02	Opuntia sulphurea	Talina
122.02	Tephrocactus nigrispinus	Talina
122.04	Austrocylindropuntia shaferi	Talina
122.05	Cumulopuntia boliviana	Talina
122.08	Opuntia sulphurea	Talina
123.02	Austrocylindropuntia shaferi	Villazon
123.03	Cumulopuntia boliviana	Villazon
124.06	Cumulopuntia chichensis	Tupiza
124.07	Tunilla sp.	Tupiza
125.05	Cumulopuntia chichensis	Mal Paso
125.06	Cumulopuntia boliviana	Mal Paso
125.07	Cumulopuntia rossiana	Mal Paso
125.08	Tunilla sp.	Mal Paso
127.05	Cumulopuntia boliviana	Mal Paso
127.06	Cumulopuntia rossiana	Mal Paso
128.08	Opuntia sulphurea	Impora
129.02	Opuntia sulphurea	Impora

***CORYNOPUNTIA PARISHII* (Orc) Knuth**

Fig. 11. Plant

Fig. 12. Spines

Fig. 13. Fruit

All photographs by Elton Roberts.