The Cactus Explorer

The first free on-line Journal for Cactus and Succulent Enthusiasts

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In this Edition

The No.1 source for on-line information about cacti and succulents is http://www.cactus-mall.com

Cover Picture The recently described *Matucana rebutiiflora* flowering in habitat.
Photograph by Graham Charles

Invitation to Contributors

Please consider the Cactus Explorer as the place to publish your articles. We welcome contributions for any of the regular features or a longer article with pictures on any aspect of cacti and succulents. The editorial team is happy to help you with preparing your work. Please send your submissions as plain text in a 'Word' document together with jpeg or tiff images with the maximum resolution available.

A major advantage of this on-line format is the possibility of publishing contributions quickly and any issue is never full! We aim to publish your article within 3 months and the copy deadline is just a few days before the publication date which is planned for the 10th of February, May, August and November. Please note that **advertising and links are free** and provided for the benefit of readers. Adverts are placed at the discretion of the editorial team, based on their relevance to the readership.

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Introduction

Time to Reflect

Firstly, I apologise for the late publication of this issue because I spent most of November in Peru, my first cactus trip for some time. I will tell you about my adventure in future issues of the **Cactus Explorer**.

As another growing season comes to an end in Britain, I can reflect on a busy year. After a slow start, we had a good summer with lots of sunshine, much enjoyed by me and the plants. I attended many cactus meetings in the UK and Europe. It is striking that only a few younger people were at these gatherings which is perhaps something we just have to accept as how it will be.

We are always hearing about the relentless increase in the cost of fuel, adding to the expense of heating our glasshouses. Will this drive collectors to grow plants that are tolerant of lower temperatures? My interest in plants such as *Lobivia* and *Rebutia* has recently been revitalised and these are good genera to grow if you only keep your glasshouse frost-free.

I know from my experience selling spare plants that these genera are out of fashion. I have been offering a number of species with habitat data during the year, left over from my seed raising efforts to improve my collection, but I cannot say that they have been a popular choice for buyers! I have always had a liking for *Notocactus* but these too are out of favour and just about impossible to sell, even with good data. The new book about *Notocactus* written by Andreas Hofacker for the German Cactus Society is a timely reminder of the charms of the genus.

I am fortunate to live near Southfields Nursery, one of the best growers in the UK. Bryan Goody grows all the plants from seed for sale to visitors, at horticultural shows, and on the internet. He is a pioneer at creating hybrid cacti, bred to extend the flowering season and improve repeat flowering. This is a major consideration for the houseplant buyer

who may be put off cacti because of their ephemeral flowers.

Bryan says that his hybrids have been a major part of his business in recent years. It is perhaps surprising that hybridisation has historically mainly been associated with epicacti. Southfields' *Echinopsis* hybrids follow the success of famous series like Paramount, Schick and Abbey Brook. Bryan's *Rebutia* hybrids break new ground for floriferousness, colour and length of flowering season.

The ninth annual weekend meeting of the Cactus Explorers Club was a great success, much enjoyed by the 50+ participants. The tenth meeting will be held over the weekend of September 19th-21st 2014 at the same venue. I hope that the generosity of the many speakers in preparing and delivering their talks will continue.

Here's hoping for a mild winter and the chance to catch up on reading and, of course, writing for the **Cactus Explorer**. I welcome contributions from new and established authors.

Seasons Greetings!

Graham Charles

The next issue of the **Cactus Explorer** is planned for February 2014. If you have not already told me and would like to be advised when it is available for download, please send me your E-mail address to be added to the distribution list.

News and Events

BCSS Judges Course 2013

Those of you who attend shows will be aware that the judges need an extensive knowledge of plants to be able to determine the prize winners. Part of their training is done at the annual judges course which is also where they gain their qualification to judge at BCSS shows.

There is really no substitute for experience, but the lectures given by specialists during this weekend enable participants to extend their knowledge and perhaps acquire new interests.

I first attended in 1972 and I remember it being an eye-opener for a beginner like me. I came away from the weekend thinking that I would never know as much about the plants as those learned lecturers who endeavoured to pass on years of experience in a few short minutes. Well, the experience didn't put me off, it stimulated me to learn more, to grow a wider range of plants and to look after them better.

If you think the weekend is just about judging and it's only for 'advanced' growers, that is not the case! Anyone with an interest in the plants and an appetite to know more would thoroughly enjoy the event. You don't have to take the judging tests, but it's quite an experience if you do. Even if you fail, and many do at the first attempt, nobody gets to know except you.

The science (art?) of judging depends on experience of growing the plants. The judge needs to know how old the plants on the show bench are likely to be, how difficult they are to grow, and how well they have been grown. The objective of having a judging scheme is to encourage consistency in the assessment of exhibits between the various shows. The judges course was instigated to help prospective judges achieve this consistency as laid out in the booklet 'Handbook of Shows'. A new edition of this invaluable guide is planned for the 2014 season incorporating a number of changes to encourage the better presentation of exhibits.

During the course, the Friday evening and Saturday entertainment consists of a series of specialists talking about their favourite plants and, unlike branch talks, the presentation is usually supported by a good selection of real live plants. The emphasis is on cultivation and it would probably be true to say that the talks give you a deeper understanding than branch talks can.

Talks aren't the only attraction of the weekend. The car boot sale of plants on the car park has become a popular place for attendees to sell their spare plants, a chance to pick up species rarely offered by nurseries and dispose of plants you can't fit in the glasshouse.

Then there is the social side, such as a chat over dinner, or in the bar often accompanied by an informal slide show. The weekend has a relaxed, friendly atmosphere. Moulton Agricultural College is a pleasant venue in a rural setting near Northampton. It has newly built facilities for the lectures, a restaurant, a bar and comfortable single en-suite rooms.

Readers outside the United Kingdom may be wondering what I am talking about, since competitive shows are not part of the cactus hobby in all countries. Although they are well established in the US, the criteria used for judging exhibits are different. In Europe, such

shows are only just beginning to appear.

The idea of a competitive show is to challenge the plant owner to cultivate better plants, a test of horticultural skill. Visitors to a show are able to see well-grown specimens and hopefully, stimulated by the experience to improve their own technique. The events are also social events and offer the chance to meet like-minded people, discuss the exhibits and buy more plants!

The judges course is the only annual weekend residential event organised by the BCSS, so why not book yourself into the 2014 event planned for 29-31 August? Whether or not you try the tests, you are assured of good talks, good company and plenty to eat!

GC

It is a good time to book your place at

The BCSS International Convention. 11 - 13th July 2014.

Stamford Court, University of Leicester, UK.

The venue is a new purpose-built state of the art facility adjacent to high quality single room accommodation. It is conveniently situated near to junction 21 of the M1 about 90 miles north of London and is part of the pleasantly landscaped halls of residence of Leicester University.

Speakers are *Woody Minnich* from the USA;
Dr Olwen Grace from RBGK;
Ernst Van Jaarsveld from Kirstenbosch B.G., S.A.;
Guillermo Rivera from Argentina;
and *Roger Ferryman* UK

In addition, there will be mini-talks given by Pete Arthurs, Dr Gillian Evison, Dr Olwen Grace, Dr Terry Smale & Dr Colin Walker.

The Convention will commence on Friday afternoon and conclude with afternoon tea on Sunday. All the main lectures will be held in the spacious new lecture theatre with comfortable seats, a cinema-sized screen and state of the art technology. The mini-talks will also be held in additional new facilities

There will be large sales areas where both nurserymen and amateurs can offer plants and associated items. Everyone is encouraged to participate and full-time delegates (whether residential or non-residential) can request a free sales table.

There will be a number of special exhibits and displays staged by members on various topics associated with our hobby. It is also planned to display the winners of the recent Photographic Competition organised by the Society.

On Saturday evening the charity auction of plants, books and associated items will be held in the dining room which is immediately opposite the bar. The proceeds of the sale will be used to boost the BCSS Conservation and Research Fund. Delegates are invited to donate plants or other saleable items to this worthy cause.

Full Delegate Package [£260] includes two nights in an en-suite single room, full breakfasts, buffet lunches and evening meals and refreshments during the day. It also includes use of the facilities, access to all lectures, plant sales and special exhibits.

Non-Residential Package [£160] includes buffet lunches, evening meals and refreshments during the day. It also includes use of the facilities, access to all lectures, plant sales and special exhibits.

For on-line booking, visit the website.

BCSS Zone 9 Convention

Zone 9 is holding its Annual Convention on Sunday 27th April 2014 at Hardwicke Village Hall, Hardwicke, Gloucester.

Speakers are:
Ivor Crook 'Rebutias: A personal view'
Harry Mays 'Kenya'
Tony & Suzanne Mace 'Our collection'

There will be the usual range of plant sales plus lunch and afternoon tea.

Tickets are £15 and are available from all Zone 9 Branch Secretaries or the Zone Rep.

Full details on our Zone web site at www.zone9.bcss.org.uk

Request for pictures from John Pilbeam

BAJA CALIFORNIA: as well as still looking in particular for habitat photos of autumn flowering cacti, John is also seeking less usually encountered *Dudleya* photos (species identified if possible, or precise locality), as well as flowering *Cylindropuntia* species (again identified if possible or precise locality), and any cacti or succulent island species.

OPUNTIAS (the smaller genera) John is also dipping his toe in the water with publication in mind for these plants, and would welcome either habitat or cultivated photos (in flower) of such as: *Corynopuntia*, *Cumulopuntia*, *Grusonia*, *Maihueniopsis*, *Micropuntia*, *Pterocactus*, *Tephrocactus* and *Tunilla*, also the really small species of the larger growing *Opuntia* genera.

jpilbeam@tiscali.co.uk

Jacques Lambert † 1923-2013

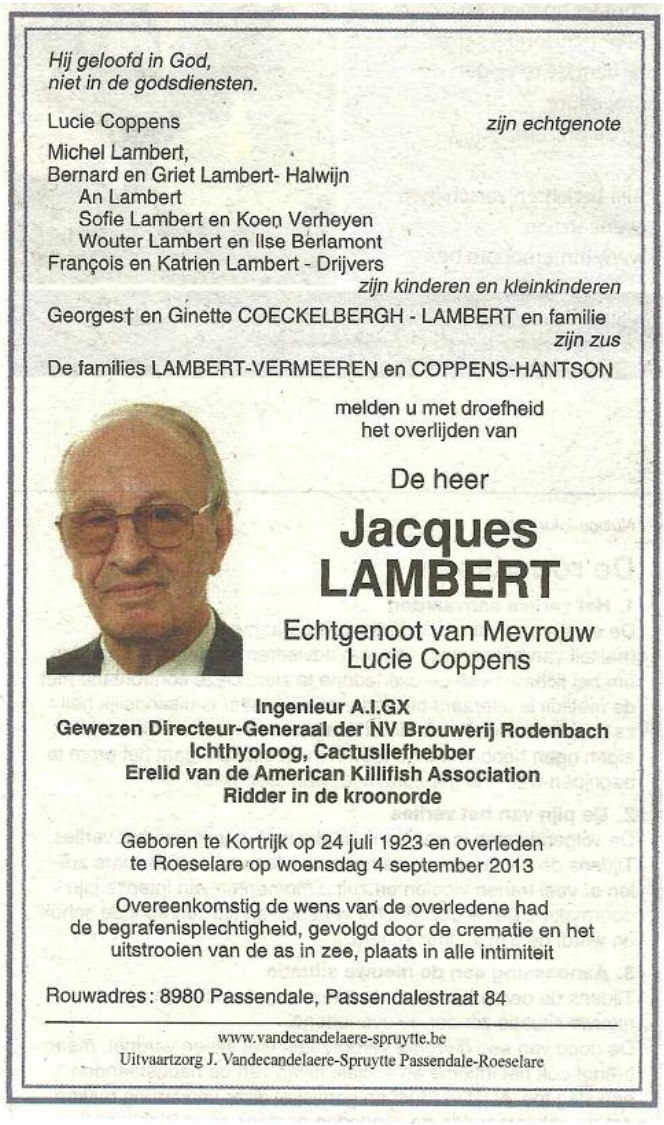
Below is an obituary for Jacques Lambert, renowned cactus lover and author of the French language book 'Cactus d'Argentine'. He was best known as a collector of the genus *Gymnocalycium*.

I am sad to hear of the news of Jacques' passing. He was very pleasant man, always helpful with information about his experiences in Argentina. He spoke good English and I met him when he visited the UK to attend a meeting of the Chileans.

The first edition of his book about the cacti of Argentina was published in 1992, followed a few years later by a second revised edition.

I shall remember him when I look at the plants in my collection grown from his JL seed.

GC



Hij geloofd in God,
niet in de godsdiensten.

Lucie Coppens — *zijn echtgenote*

Michel Lambert,
Bernard en Griet Lambert- Halwijn
An Lambert
Sofie Lambert en Koen Verheyen
Wouter Lambert en Ilse Berlamont
François en Katrien Lambert - Drijvers
zijn kinderen en kleinkinderen

Georges† en Ginette COECKELBERGH - LAMBERT en familie
zijn zus

De families LAMBERT-VERMEEREN en COPPENS-HANTSON

melden u met droefheid
het overlijden van

De heer

Jacques LAMBERT

Echtgenoot van Mevrouw
Lucie Coppens

Ingenieur A.I.GX
Gewezen Directeur-Generaal der NV Brouwerij Rodenbach
Ichthyoloog, Cactusliefhebber
Erelid van de American Killifish Association
Ridder in de kroonorde

Geboren te Kortrijk op 24 juli 1923 en overleden
te Roeselare op woensdag 4 september 2013

Overeenkomstig de wens van de overledene had
de begrafenisplechtigheid, gevolgd door de crematie en het
uitstrooien van de as in zee, plaats in alle intimiteit

Rouwadres: 8980 Passendale, Passendalestraat 84

www.vandecandelaere-spruytte.be
Uitvaartzorg J. Vandecandelaere-Spruytte Passendale-Roeselare

BCSS Zone 6 International Convention 9.30am March 22nd 2014

at Giffard Park Primary School, Broadway Avenue Giffard Park, Milton Keynes, MK14 5PY

Rikus van Veldhuisen (Netherlands) speaking for the first time in the UK will give two talks :-
1. On the Track of Succulents in Ethiopia
2. Medusoid Euphorbias

Tomas Kulhanek (Czech Republic) on only his second time in the UK will also give two talks:-
1. Gymnocalycium and 2.Argentinian Habitats

Plant Sales: Rikus van Veldhuisen; Rene Geissler; Northants & MK Branch; and Graham Charles
Pots & Sundries: Phillip Barker. **Books:** Keith Larkin.

Ticket Price £15.00 includes refreshments and lunch.

Please send your cheque payable to BCSS ZONE 6 together with your address and the names of all that you are buying tickets for to: David Kirkbright 71 Lakes Lane Newport Pagnell MK16 8HT
(treasurer@bcss.org.uk (01908 611650)
If you include your email address you will receive your tickets electronically.

The International Organization for Succulent Plant Study (IOS).

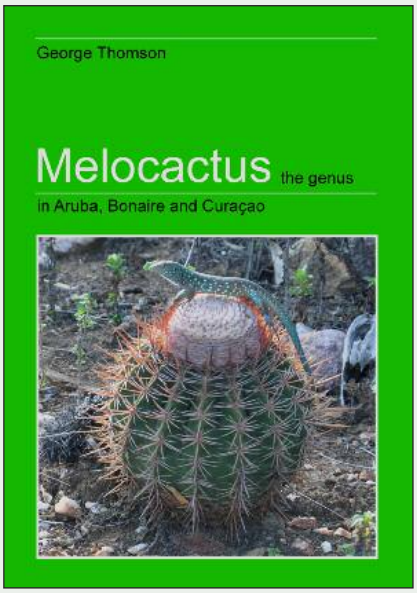
Repertorium Plantarum Succulentarum

The latest issue of RPS, number 63, compiled by Urs Eggli & Reto Nyffeler, is now freely available for download on the IOS website (iosweb.org). RPS is a useful index to new names and significant articles published for succulents and including cacti.There are 466 new names and 527 literature references in this issue, all relating to the year 2012.

33rd IOS Congress 7–12 April, 2014 at the Desert Botanical Garden, Phoenix, Arizona.

It has also been announced that the next IOS Congress will be held next year. More details are available from the IOS Secretary (David Hunt) secretary@iosweb.org

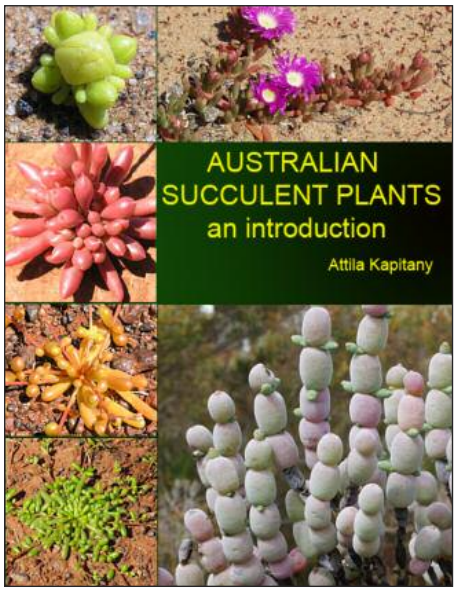
Melocactus book reprinted



In **Cactus Explorer** 9, I reviewed George Thomson's book about Melocactus of the ABC islands. Partly as a result of this review, not only did he sell lots of copies resulting in the need for a reprint, but the new edition has a bibliography that I so much wished had been in the first edition. Thank you George!

A5, 72 pages, softback, colour throughout. **£15 + £2.50** p. & p. ISBN 978 09540891 8 4 Available directly from the author: email georgethomsonbooks@gmail.com

Australian Succulent Book Project



The well known specialist in the succulents of Australia, Attila Kapitany is planning another book. He has just launched a campaign to raise the money for the project.

He says 'This book will be a guide to Australia's succulent plants. Many regard the continent's interior as a wasteland. I'd like to change this perception'.

You can read about his plans at his website where you have the chance to contribute.

GC

Gymno Day

Eugendorf Gasthof Holznerwirt, Austria

11 - 13th April 2014

Theme
Gymnocalycium bodenbenderianum
and related species

Details from Helmut Amerhauser
dha.gymno@aon.at

Note that in 'Gymnocalycium' Issue 4 (2013) the advertised date is wrong. The correct date is 11th to 13th April 2014.

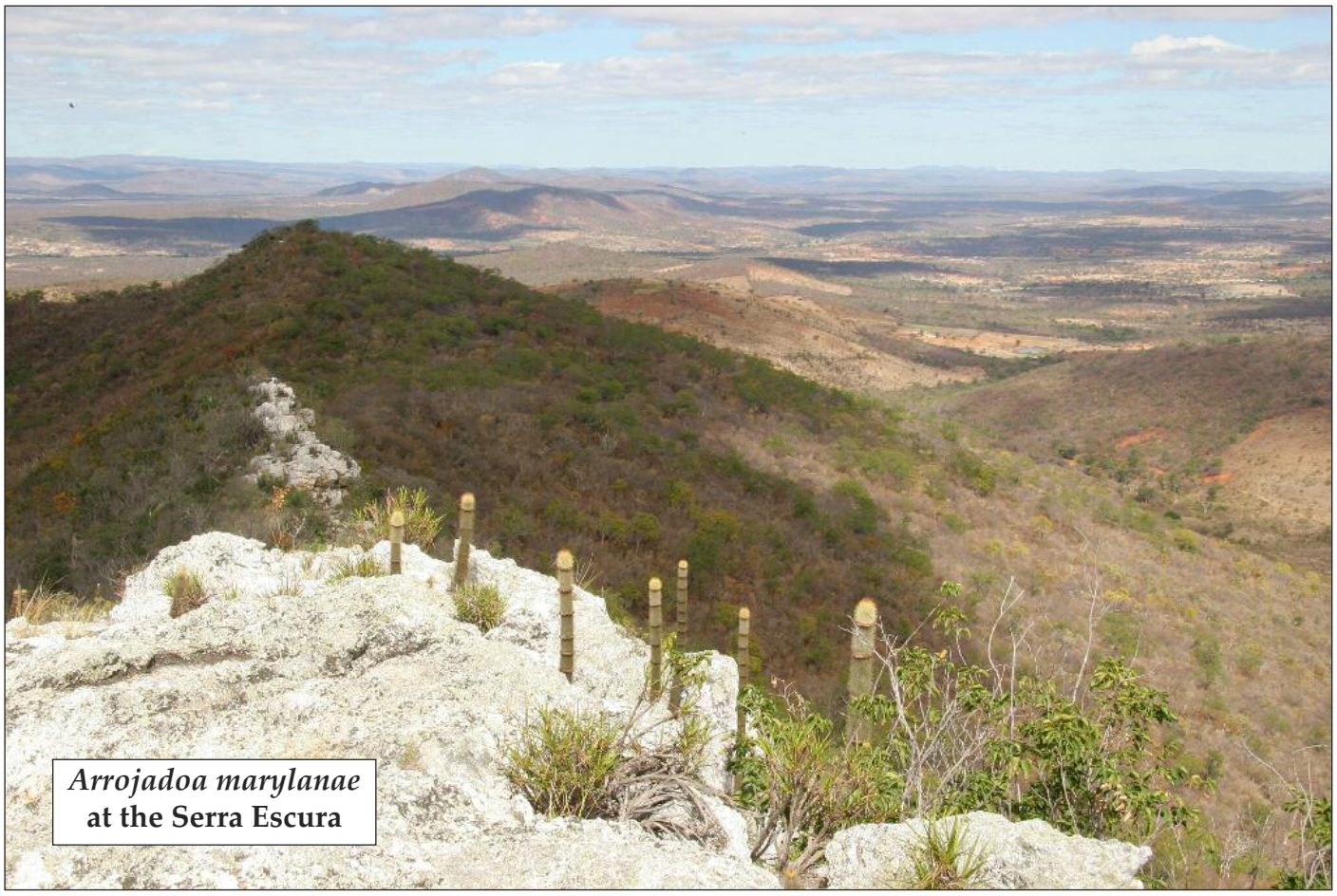


Photo: G. Charles

Arrojadoa marylanae **at the Serra Escura**

Threat to the only known habitat of *Arrojadoa marylanae*

Marlon Machado, the well known Brazilian specialist in the cacti of his country recently sent me a link to news about a plan to mine the hill where *Arrojadoa marylanae* grows. When I was last at the place in 2008, I saw some holes which suggested exploratory mining investigations. Part of the habitat had also been destroyed by fire. It would be very sad if this unique plant became extinct in the wild. The Serra Escura is also one of only a few places where *Espostoopsis dybowskii* is known to grow.

Marlon wrote 'The news link says that a deposit of high quality quartz crystals was discovered in Serra Escura, Sussuarana - Tanhaçú (the type and only known locality of *A. marylanae*), and soon they will start mining the quartz. The news says that the deposit has been discovered some years ago, but now that a railway is being built nearby, the mining operation will become feasible'.

GC

BCSS annual General Meeting

Winstanley High School and Community Centre, Braunstone, Leicester

12th April 2014

You may not think that you would enjoy the AGM but, as well as BCSS business, there are plants and books for sale.

You can also enjoy the **Hampshire/Dunn Memorial Lecture.**

This is now the only BCSS business meeting to which all the members are invited so do yourself and the Society a favour by planning to attend.

Wanted!

I would like to increase my collection of documented epiphytic cactus species, so if anyone has cuttings for sale or exchange, please contact me. ISI clones are of particular interest.

Thank you, Graham Charles

Recent New Descriptions

Graham Charles tells us about the discovery of the remarkable *Matucana rebutiiflora*, a new species he described in Bradleya 31 (2013)

Figure 1. *Matucana rebutiiflora* growing among rocks on a hill near to the type locality.

I have been fascinated by the Peruvian genus *Matucana* since I saw some actual plants for the first time in the early 1970's. Around that time, the number of species in the genus was increasing mainly due to the explorations of Friedrich Ritter.

The first species to be found, and destined to become the type species of the genus, dates back to 1850 when the name *Echinocactus Haynii* appeared in Salm-Dyck's 'Cacteae in Horto Dyckensi Cultae' with a description. Labouret (1856) tells us that the plant was found by Baron Winterfeld near Oberailo (Obrajillo), which is in the Chillon Valley, Peru at 3,500m. It was named after Dr. Friedrich Gottlieb Hayne, professor of Botany at Berlin who had died in 1832. The first appearance of the corrected spelling of *E. Haynei* I can find is in Förster-Rümpler (1886).

This white-spined species was found so long ago because its habitat includes the coastal valleys near to Lima. Britton and Rose (1922) named the genus *Matucana* after a town of that name in the Rimac Valley, inland from Lima.

Most of the new species added to the genus over the years have flowers similar to the type. They have long tubes with a more or less zygomorphic limb, said to have evolved to appeal to humming birds as pollinators. Having said that, I have never actually seen a humming bird visit a *Matucana* flower, nor indeed a picture of such an event! Zygomorphic flowers are not symmetrical, there being only one plane where the flower can be cut to produce two mirror halves.

Figure 2. *Matucana rebutiiflora* at its type locality showing its bright red actinomorphic flower, unique for the genus.

It was a surprise when Ritter found and described two species of *Matucana* with symmetrical (actinomorphic) flowers. One of them, *M. aureiflora* has a plant body that is reminiscent of an *Oroya*, flat and broad. The short-tubed yellow flowers look like those of other genera where bees are probably the main pollinator.

The other species, described in 1965, was called by Ritter *Eomatucana oreodoxa*. He placed it in a new genus because of the structure of its actinomorphic flower. It is now considered to belong in *Matucana*, but it remains a really individual plant, not just because of its flower, but also because of its geophytic habit.

Few people have been fortunate enough to see *M. oreodoxa* in habitat, perhaps because it is thought to have a specific habitat preference and has a limited distribution high in the mountains of Ancash, Peru. The plants are often under small bushes with much of their stems buried and long roots anchored in the rocky ground.

More than 40 years after Ritter's discoveries, I was travelling with friends in Depto. La Libertad, Peru, when we discovered a plant which had similar morphology to *M. oreodoxa*. Although similar, it had many distinguishing features including larger bodies, larger clumps of stems, a darker epidermis and a beautiful violet-pink flower. I named it *M. oreodoxa* ssp. *roseiflora* in the Peruvian journal *Quepo* in 2010.

During our recent visit to Peru (2013), we were able to find this lovely plant at more localities in the vicinity, proving that it is quite widespread and currently not under any immediate threat. The planting of *Eucalyptus* trees for timber in part of its habitat is not extensive enough to be a major threat to its existence at this time.

It is a wonderful plant to grow, producing its lovely violet-pink flowers in its third year from seed. To help growers obtain plants for their collections, I have supplied seeds to Aymeric de Barmon who is now offering them for sale.

Then, last year, Rob Underwood and Chris Pugh found another actinomorphic-flowered

Figure 3. *Matucana rebutiiflora* near its type locality. The flowers are visible from far away.

Matucana when they were exploring around Sihuas in Depto Ancash. Because this one is somewhat less like *M. oreodoxa,* although probably related, I described it as a separate species, *Matucana rebutiiflora*, in Bradleya 31 (2013). The name refers to the remarkable similarity of the flower to that of the genus *Rebutia*, with its short tube, wide-opening tepals and a white throat, very different from any other *Matucana*.

It was discovered by chance when Rob saw the bright red flower of a plant near the road and stopped to investigate. This population, now the type locality, is at the edge of a cultivated field where only about a dozen specimens were found. After some searching, Rob and Chris found only two more plants nearby, also on a small piece of land which had not been cultivated.

During our recent trip (2013), Chris took Paul Hoxey and me to see the place. We felt that the habitat was perhaps not the prime location for the plant so decided to search the area for a more extensive population. A rocky hill nearby appeared not to have been completely cultivated so we decided to investigate.

As we walked up the hill, we encountered some rocks and, sure enough, a few plants of *M. rebutiiflora*. Near the top of the hill, there was a steep rocky slope overlooking the valley below and here we found many more plants. Some plants had their bright red flowers open, so these were very easy to find. It was a great thrill to find so many plants in a place where they will probably remain safe.

We did not have time to explore all the similar places nearby, but it is likely that the plant will be found at more locations in the future.

This will surely be a very popular plant in cultivation so we are doing our best to make seed and seedlings available over the next couple of years.

GC

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Ritter, F. (1965) Neue Kakteen - Entdeckungen in Peru. *Matucana aureiflora* Ritter, spec. nov. & *Eomatucana oreodoxa* Ritter, spec. nov. *KuaS* 16(12): 229-230

In The Glasshouse

It is always exciting to flower a plant for the first time, especially when you don't know what the flower will look like. Graham Charles recounts the flowering of *Disocactus macranthus*, which was quite a surprise.

Photo: G. Charles

I have mentioned before that I have become more interested in epiphytic cacti so I was delighted when Paul Bond gave me some cuttings from his plants. Like me, Paul likes unusual plants and has quite a few epiphytic species in his collection. Among the cuttings was a stem of *Disocactus macranthus* which looked like a piece of *Epiphyllum*.

Imagine my surprise when the following spring it began to grow flower buds. I was even more surprised when the buds developed into relatively large, scented, yellow flowers. I had no idea if the plant was actually *Disocactus macranthus* but having refered to the *New Cactus Lexicon* Atlas picture 100.1, I was satisfied that Paul had given me correctly identified material.

So why is such a beautiful, easy to flower plant not more common in collections? I suppose most people would prefer a showy *Epiphyllum* hybrid, but I like these delicate elegant flowers.

The species was first described as *Pseudorhipsalis macrantha* by Alexander in the Cactus and Succulent Journal (US) XIV(2):19-20 (1942). The type is a collection made by T. MacDougall in 1939-40 north of Niltepec at 830m in Oaxaca state, Mexico. It is clear that the staff of New York Botanical Garden, where it bloomed in 1940 and 1941, were as surprised as me by the flower. Propagations of the type collection were distributed as ISI 400 in 1963.

GC

Growing *Austrocactus* from seed

Elisabeth and Norbert Sarnes, well known as specialists in the cacti of Patagonia, tell us about their experiences growing *Austrocactus* from seed.

Photographs by the authors

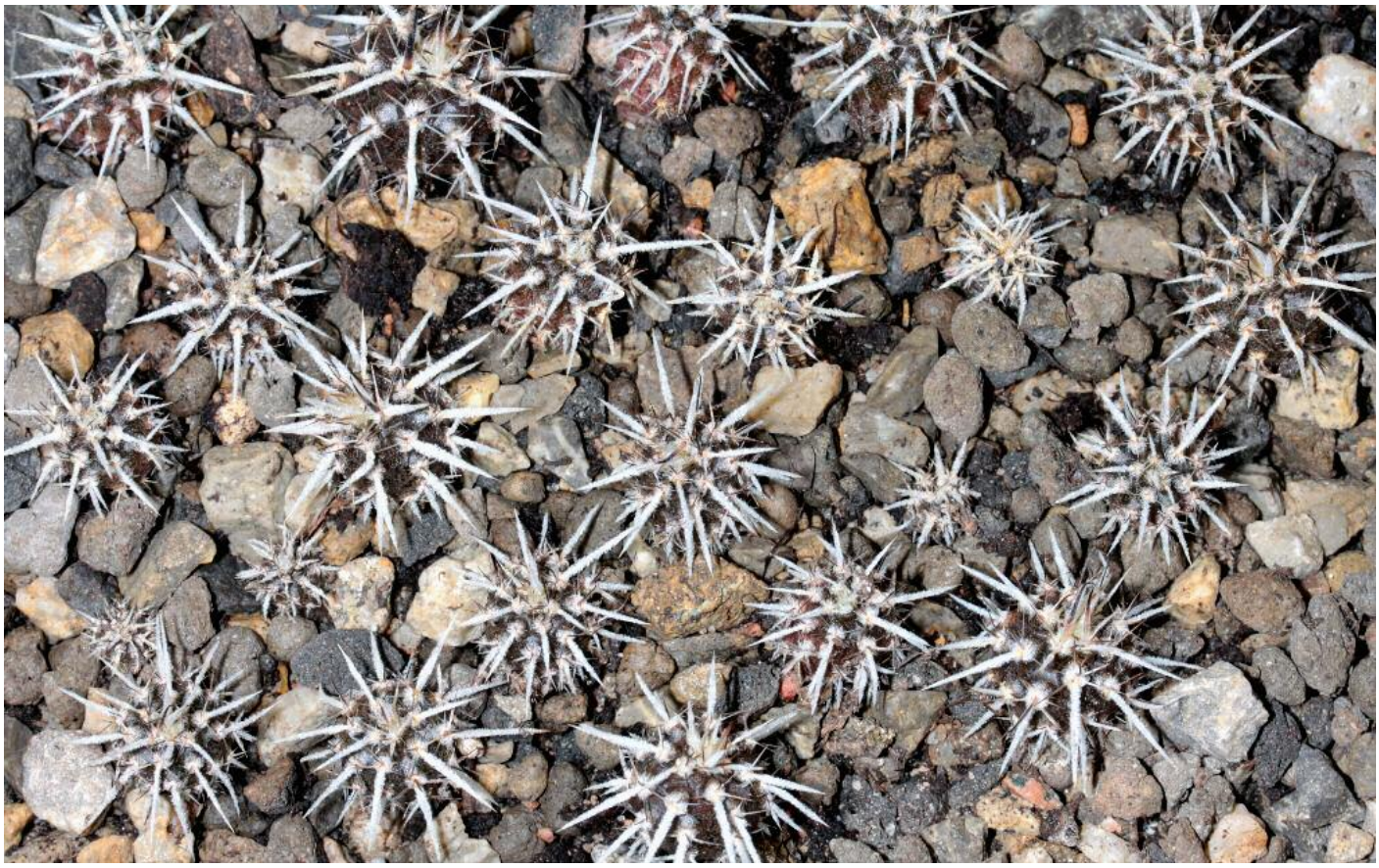


Figure 1. Seedlings of *Austrocactus bertinii* SAR 4061 from Caleta Olivia.

Growing plants from seeds helps to preserve a large variety as well as the genetic activity of plants. Unfortunately, the germination rate of some interesting plants from the northern (*Sclerocactus*) and southern (*Austrocactus*) margins of the distribution area of cacti is low. In the past there have been several articles in various journals about improving the germination rate of *Sclerocactus* by different scarification methods. However, we have never seen an article about sowing *Austrocactus*.

We have been sowing plenty of seeds of *Austrocactus* for several years and by now have grown many plants to flowering size. Before going into details of our methods, we want to share some general observations. An important point is the right timing for the seed harvest. For good germination ability, the fruits should be completely ripe and dry. Ripe fruits normally split open from the base. We always had problems with bad germination when the seeds were too fresh or collected from immature fruits. For best results, the seeds should be 1-2 years old.

Germination rates also depend on the origin of the *Austrocactus*. The creeping and clustering species (e.g. *A. coxii*) tend to germinate much better than the solitary (e.g. *A. bertinii*) species, that is the Andean species germinate better than those from the plains.

One thing that we noticed in habitat is that the soil temperature is much higher than the air temperature. The lower temperature of the air is caused by the rather strong winds that also dry the soil quickly after rain. Seeds can only germinate in spots that are protected from the wind, such as in rock crevices or under small bushes. In such places it is warmer and there is more humidity. In habitat, seeds are taken there mostly by ants that are attracted by the sweet fruits. They eat all of the fleshy substance and leave the seeds perfectly cleaned.

All these observations helped us to develop our method for sowing *Austrocactus*.

Figure 2. Young seedlings of *Austrocactus bertinii* SAR 511

Figure 3. Fruit of *A.bertinii* SAR 511

The basis of success is the quality of the seed. It must be completely clean and we remove all empty seeds (smaller and flat) as well. We only sow seeds that are older than 6 months.

We disinfect the seeds before sowing. For sowing we use a closed system - usually plastic boxes with a closely fitting lid.

We sterilize the soil mixture in the microwave oven for about 5 minutes. On top of the soil mixture we sprinkle a fine layer of diatomite - this only serves as an optical indicator of the humidity. After this we use sterilized water to wet the soil thoroughly.

We then sprinkle the seeds on the surface and close the system firmly with the lid.

We put the boxes under white fluorescent lamps and keep them at room temperature (~ 22°C).

During the following days we have a daily look. Should any sign of fungi occur we remove the infected seeds/seedlings at once and spray with chinosol.

Figure 4. A young plant of *Austrocactus bertinii* SAR 4061 from Caleta Olivia.

After about two weeks we start giving additional heat from below (~ 32°C). Usually germination starts between days 6 and 10 but, with the increased temperature, germination can be enhanced. After two more weeks we switch off the heating. Where there is no germination at all after 5-6 weeks we open such boxes and leave them to dry out completely. We will give these another try a few months later by watering and closing the box again.

There are frequent requests for *Austrocactus* plants on their own roots but we noticed that the second and third year is crucial for the development of the seedlings. Maybe this is caused by our cultivation method. Anyway, this is the period when we loose about half of our seedlings that are kept on own roots. Though adult plants of *Austrocactus* do pretty well on their own roots, we graft as many of the seedlings as possible. This also helps us to get plants of flowering size in a much shorter period of time.

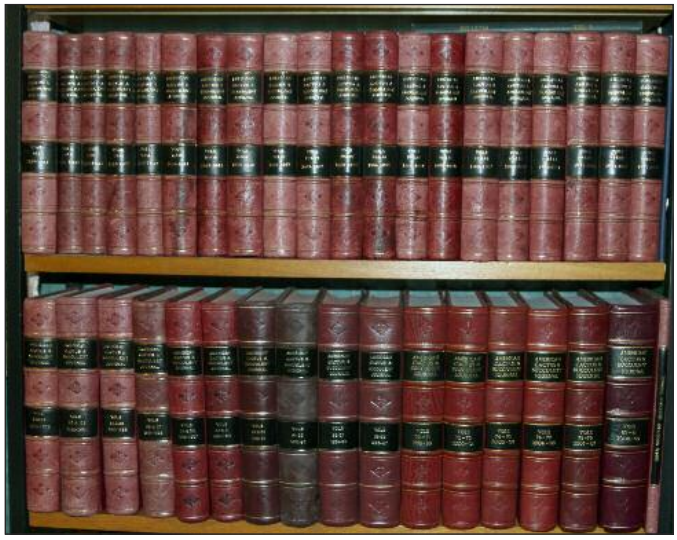
Elisabeth and Norbert Sarnes

Cactus of Patagonia
by Elisabeth and Norbert Sarnes
170 x 240mm, perfect bound with soft covers.
80 pages, 89 colour pictures, 3 plates and a map. See review in **Cactus Explorer** 6:22
Available from Keith's Plant Books for just £10.

Journal Roundup

The Journal of the CSSA

Now that volume 85 is complete, we are reminded that the journal of the American Society is one of the longest running cactus and succulent journals. The set on my shelves [pictured below] is now more than 1.6m long and is a resource I find myself refering to frequently. The earlier volumes belonged to Keith Grantham and I was fortunate to be able to buy them from his widow. Since then, I have bound subsequent volumes in maroon leather to match as closely as possible those that Keith had bound.



The latest issue maintains the high standard we have become accustomed to over the years. The first article is a welcome change to the many reports we get of plants facing extinction in the wild. Jeremy Spath tells us about his discovery of a large healthy population of *Aloe suzannae* in Madagascar. This *Aloe* is usually reported as being extremely rare and endangered in habitat, so it is a treat to read that there is at least one good population.

The next article is a review of *Pachypodium* by Dylan Burge including a molecular phylogeny of the genus with interesting distribution maps. This scholarly article finishes with an explanation of DNA and phytogenetics, including a glossary of terms. We increasingly see molecular studies being used to determine relationships and this is a real help in interpreting what we read.

The CSSA organizes field trips to enable its members to experience the thrill of seeing plants in habitat without the difficulties of organising everything themselves. The 2012 field trip was to northern Argentina, an ideal region to see a wide range of cactus species without the need for much hiking.

The previous issue of the journal had featured articles about plants the field trip group had seen but one widespread genus there was left over to this issue, namely *Tephrocactus*. Small opuntias are very popular in culture and *Tephrocactus* is high up on the list. This article takes us through all the species with good descriptions and illustrations.

An easy way to own the set of these important journals up to 2003 is to buy them on 7 DVDs, much cheaper than the cost of buying a set of the printed versions (if you can find them for sale). The DVD text is searchable and the images are high-resolution.They also take up a lot less space! You can buy them online at www.cssainc.org

GC

Succulenta

There can be little doubt that the Dutch are masters of plant cultivation under glass. I freely acknowledge that, during a number of visits to the Netherlands in the early 1970s, I learnt how to grow cacti from them. I had never seen such well-grown plants before and it was a revelation to me to see how wonderful they could look in a glasshouse.

This year, Succulenta reached volume 92, having started publication in 1919. Over the years it has been the place where so many important articles were published. For me, the descriptions of many iconic cactus species from Brazil by Albert Buining and others was a golden age of Succulenta.

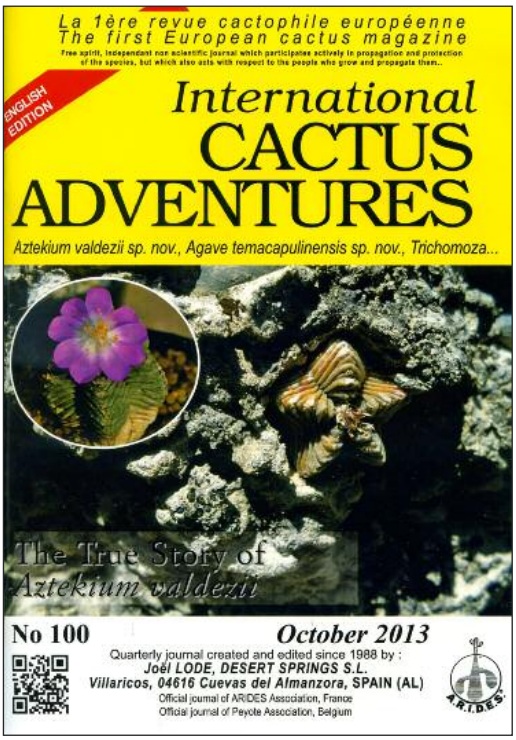
The latest issue includes articles about *Euphorbia obesa*; *Lobivia*; the botanical garden at Valencia, Spain; the genetic diversity of plants; *Echinocactus horizonthalonius*;Arches National Park; and Geert Eerkens.

The Succulenta website will tell you how to subscribe to this important journal:

http://www.cactus-mall.com/succulenta/index.html

There is also a complete index to all issues of Succulenta. I wish all journals produced a cumulative index as good as this!

GC



International Cactus Adventures

It started in 1989 and now it has reached number 100! Congratulations to Joël Lodé, its founder and tireless editor for all those years. It started out as *Cactus Aventures*, the journal of the French cactus society A.R.I.D.E.S. and initially published only in French.

The arrival of Number 29 in January 1996 saw the first English language edition and now it is available in Spanish as well. The journal has achieved a broad coverage of cacti and succulents with plenty of information about cultivation, visits to habitats and descriptions of new species. Joël's many contacts have written well-illustrated easy to read articles ideal for the hobbyist.

You can find out how to subscribe at

http://www.cactus-adventures.com

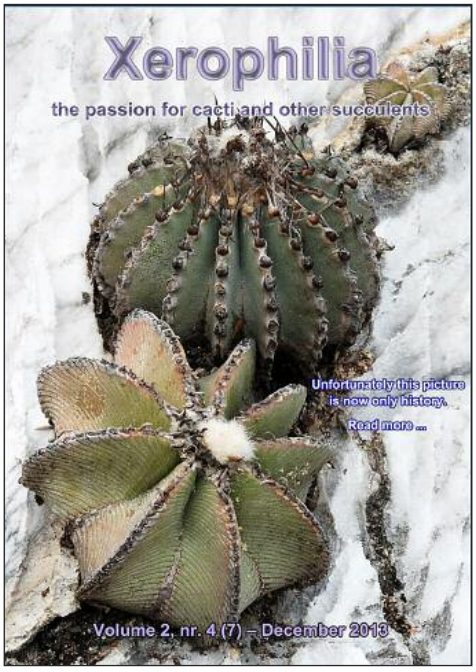
GC

Joël Lodé at Tiercé in 2013

On-line Journals

On-line Journals for you to download free

Publishing journals on the web is becoming more popular and the number is increasing. Here are some links for you to download and enjoy.



Xerophilia

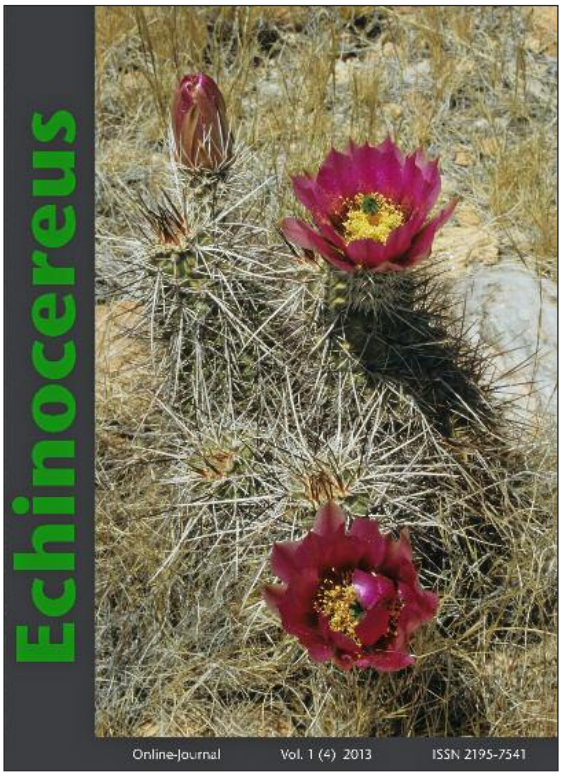
The seventh issue of Xerophilia appeared early in December 2013. It is published in Romania but most of the content is in English as well as Romanian. It is intended to focus on cultivation with articles about growing and propagating our plants.

This edition has 106 pages and includes articles about The use and abuse of Peyote; Andreas Laras 'The Aramberri enigma'; *Turbinicarpus* of Tamaulipas; *Austrocactus*,; South African bulbs; *Lophophora williamsii*; in vitro propagation of Mexican cacti; *Ortegocactus macdougalii*; *Mammillaria albiflora*; Salvacactus of Mexico; Carl Spitzweg; and *Mammillaria herrerae*.

The magazine may be downloaded as a pdf from

http://xerophilia.ro Contact: xerophilia@xerophilia.ro

ECHINOCEREUS Online-Journal



The new German language on-line journal for Echinocereus lovers.

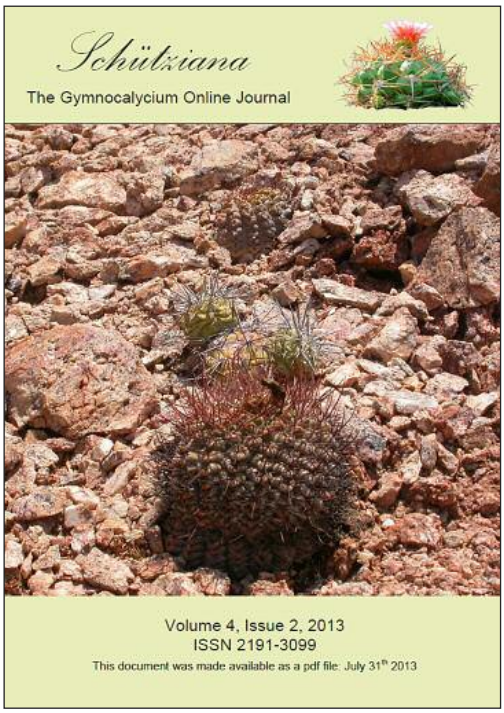
The goals of this new journal are to study the genus Echinocereus, to publish articles about the continuous research on these plants (classification, morphology, evolution) as well as to protect the genus Echinocereus by reproduction from seeds and distribution of the seedlings.

In this fourth issue there are well-illustrated articles about *E. koehresianus, E. ortegae, E. bonkerae* and *E. rectispinus.* Text in German with English summaries. There are many large pictures of good quality making this a very attractive publication.

The downloaded pdf file now allows printing, but does not permit copying of the content. This means that for those of us who do not understand German very well, it is not possible to copy and paste the text into a translation program. This is a major benefit of online journals and I think it is a pity that this is the only one I know which prevents this useful feature.

See website: www.echinocereus.eu

GC



Schützíana

The latest issue of Schützíana, the specialist on-line journal for *Gymnocalycium* enthusiasts. deals exclusively with *G. ferrarii*. The article discusses the plants near Mazan in the Argentine provinces of La Rioja and Catamarca.

The text of this valuable publication is in English and the pictures and distribution maps give a clear insight into the plants found in habitat and culture.

You can download free any of the issues from:

www.schuetziana.org

GC

Avonia-News

Free German language on-line newsletter of "Avonia", the quarterly journal of the German Society for other Succulents.

See website: www.fgas-sukkulenten.de

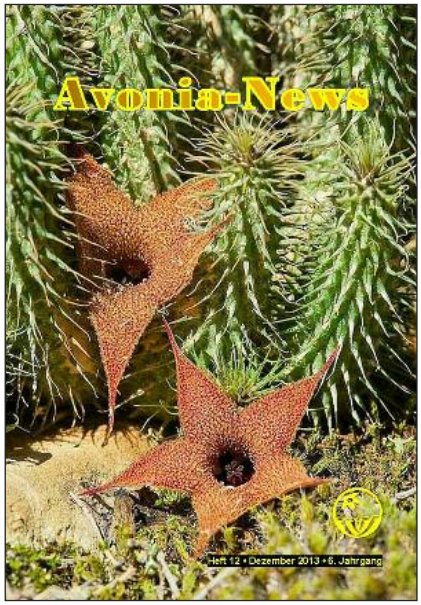
Annual seed list for members and much more.

Special interest groups for *Aloe* (incl. *Haworthia* etc.), Ascleps, *Euphorbia*, *Mesembs* and *Yucca*/winter-hardy Succulents.

For membership and further information contact:

Dr. Jörg Ettelt: Morgenstr. 72, D-59423 Unna, praesident@fgas.sukkulenten.de or

Wilfried Burwitz: Postfach 100206, D-03002 Cottbus, geschaeftsstelle@fgas.sukkulenten.de



Succulentopi@

The seventh issue of this free online journal has recently appeared. This was the first online journal published in French. The quality is excellent as you would expect from Yann Cochard and his very active team. It is available as a free PDF download from:

http://www.cactuspro.com/succulentopia

This issue includes a photo gallery; *Cerochlamys* and *Conophytum*; my article about *Echinopsis oxygona*, first published in the **Cactus Explorer** 8 and now in French; the story of pollen; *Matucana oreodoxa* (including a new combination of *M. rebutiiflora* as a ssp. of *M. oreodoxa*); *Agave utahensis*; Philately and the CactusPro Library.

All really high quality content. Well done to the team! GC

Sansevieria Online

Another new online journal for growing number of enthusiasts for this genus.

A small group of *Sansevieria* enthusiasts have published the first *Sansevieria* online journal in German. 1 or 2 issues per year are planned. They welcome contributions (systematics, morphology, physiology, evolution etc.). The main theme of the first issue deals with the rediscovery of *Sansevieria burmanica* that is said never to have been cultivated since its first description in 1915.

The publisher of this online journal have set themselves the goal of contributing more to clarify this wonderful genus . The Sansevierias still offer a lot of potential, there are very interesting taxa still waiting for their first descriptions.

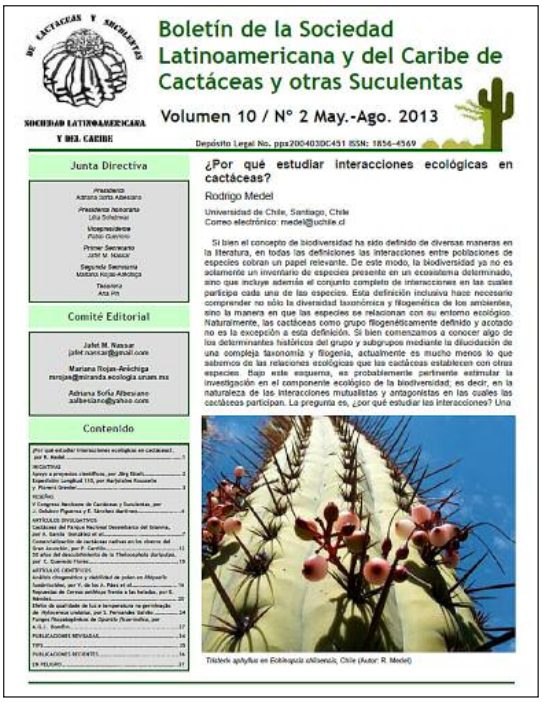
Download the PDF from www.sansevieria-online.de

Acta Succulenta

The first issue of a new online journal differing from others by its landscape format and notable for its professional page designs. This is what you would expect from Davide Donati. It is also available in Italian and French, as well as English.

In this first edition, a new species, *Nolina pollyjeaniae*, is described from Oklahoma. There is articles on *Ancistrocactus*; plants at La Quiaca; *Crithmum maritimum*; *Sempervivum calcareum*, *S. annae* and *S. dzhavachischvilii* and notes on the use of fertilisers of cacti and succulents.

Download the PDF from http://www.acta-succulenta.eu



Bulletin of S.L.C.C.

This long-running Spanish language journal is a mine of information about cacti and succulents of the Caribbean, Mexico and South America.

Each issue contains details about events taking place in the region. There are reports of meetings and field trips. Scientific papers are published and illustrated with interesting pictures, often of cacti we rarely see in print.

A very useful regular feature is the list of recent articles about succulents that have been published in scientific journals. These studies can be difficult to find out about, but this listing often reveals fascinating insights into little-known plants.

Free PDF downloads of all the issues from

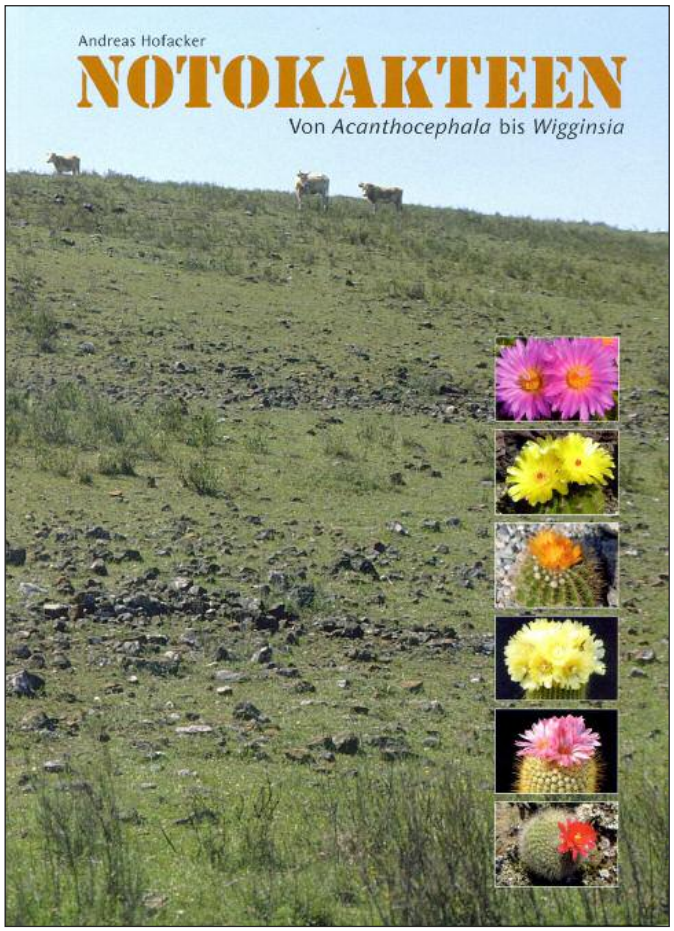
http://www.ibiologia.unam.mx/slccs/www/boletin.htm

GC

The Love of Books

News of Recent Publications. A Reminder of Old Favourites.

Many cactophiles enjoy reading about their plants, particularly in the winter when our collections are less demanding. This feature aims to provide you with inspiration.



Notokakteen

Von *Acanthocephala* bis *Wigginsia*

Andreas Hofacker

This is the latest in an impressive series of books published by the German Cactus Society (DKG) for its members. Not only are they very well produced but are also excellent value.

The subject of this book is the genus *Notocactus* whose species are now usually included in *Parodia*, but not by the band of avid collectors of these easily grown plants! However, the author, whilst only including plants historically known as *Notocactus*, has used *Parodia* as the genus name of choice.

The author, Andreas Hofacker, is the current President of the German Cactus Society. He has a particular interest in Brazilian cacti and has long been interested in *Notocactus*. I have fond memories of visiting his fine collection which he keeps outside on his roof during summer at his home near Stuttgart in southern Germany.

In the **Cactus Explorer** 8, on page 17, I reviewed all the specialist *Notocactus* literature that I knew about at the time. Now, we have another volume to add to the list and a very worthy addition it is.

The book is 170 x 240mm with144 pages, perfect bound with soft covers. There are 236 high quality colour pictures of plants in habitat and cultivation. German language.

Although *Notocactus* are not currently popular, there is no doubt that they are beautiful plants which are easy to grow and flower reliably. Most of the flowers are yellow, but there are some species with pink, orange, red and even green flowers.

There are chapters about the history, distribution, taxonomy and cultivation, but most of the book comprises descriptions and illustrations of the species arranged alphabetically and illustrated with plants in culture and habitat. There are some very impressive habitat pictures provided by Rodrigo Corrêa Pontes, such as the wonderful flowering population of *Parodia haselbergii* growing on a mossy slope, on page 45.

Only available to members of the DKG at 10€, or 12€ including postage outside Germany. See the DKG website for how to order.

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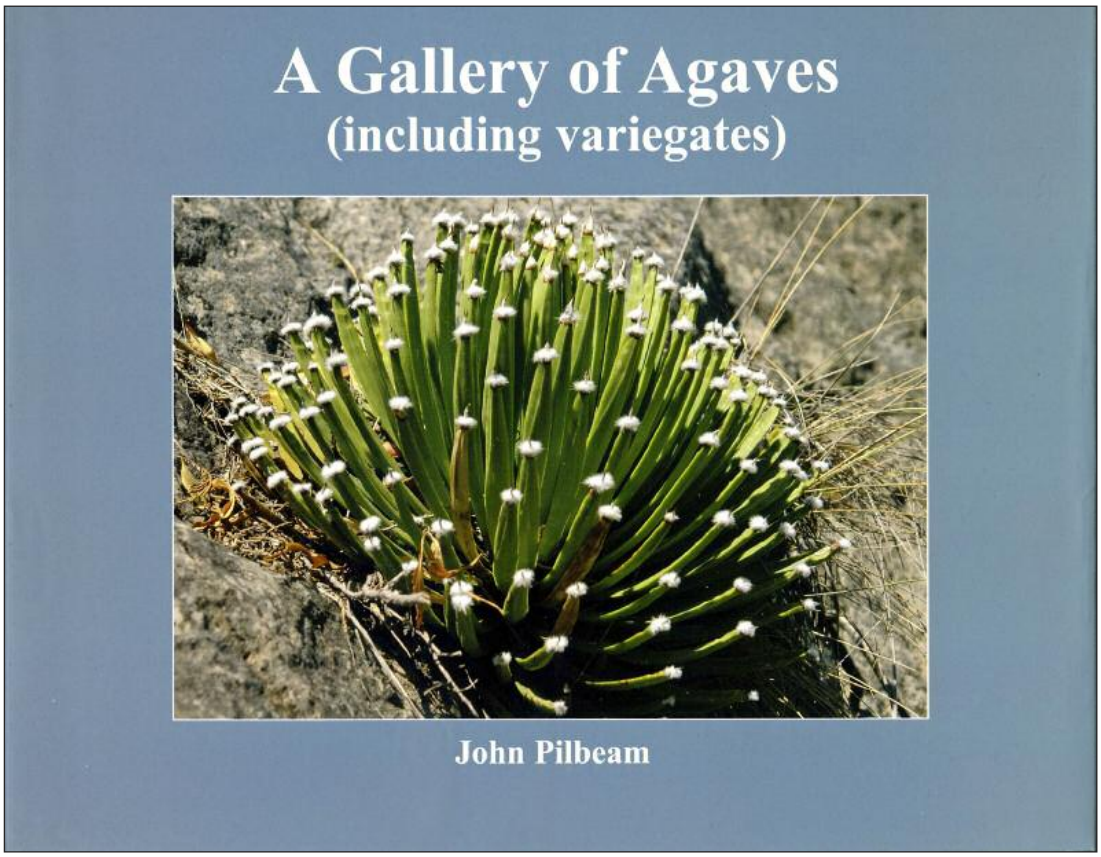

A Gallery of Agaves

(including variegates)

John Pilbeam

The latest volume from our most prolific author takes to form of a picture book of a popular genus of succulents that even ardent cactophiles like. The symmetry of Agaves is probably what endears them to those of us who mainly grow cacti.

After an introduction which includes acknowledgements to the many photographers who donated pictures for this book, there are chapters about classification and cultivation. The majority of the book is occupied by pictures of the species. John has managed to assemble an almost complete set of pictures of the genus, most of which are shown in habitat where they are able to achieve their ultimate size and beauty.

Variegated specimens are very much in fashion so the pictures of these forms at the end of the book are a useful guide to what is in cultivation.

The landscape format of the book allows the pictures to be reproduced at a good size and many are near to full page in extent. For each picture, there is a brief note that includes a reference to the author and original place of publication. There are some comments about the species illustrated and information about where the picture was taken.

The book is 215 x 280mm (landscape) comprising 317 pages, case bound with dust jacket. The 360 colour pictures are of good quality and many give a clear impression of how imposing these plants can be in habitat.

Available from Keith's Plant Books for £35.

Here is some more reading about Agaves:

Berger, A. (1915) Die Agaven.
Gentry, H.S. (1972) The Agave family in Sonora.
Gentry, H.S. (1978) The Agaves of Baja California.
Gentry, H.S. (1982). Agaves of continental North America.
Heller, T. (2003) Agaven.
Richter, I (2011) Die Gattung Agave.
Starr, G. (2012) Agaves: living sculptures for landscapes and containers.
Trelease, W. (1913) Agaves in the West Indies.
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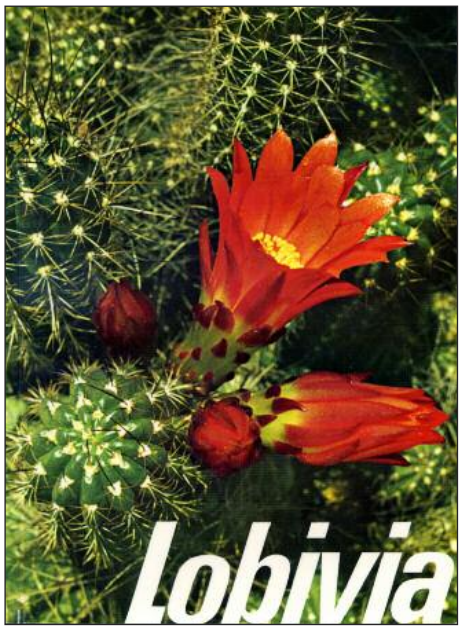
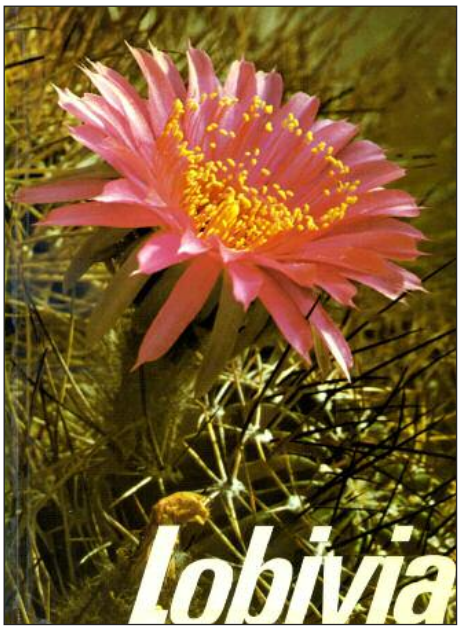
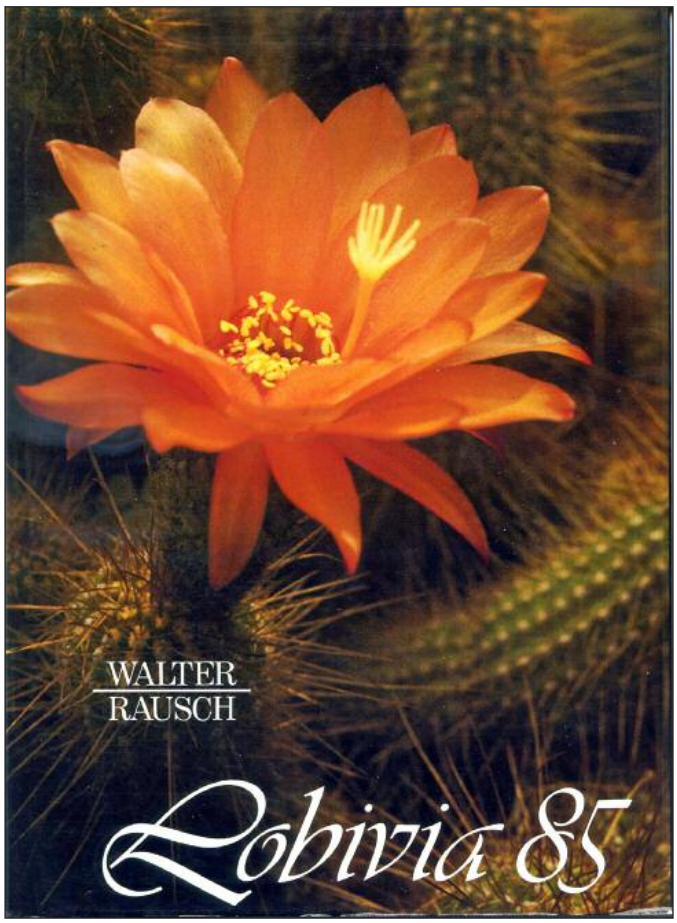




The Rausch Lobivia Books

It has been nearly 40 years since Walter Rausch published his unrivalled set of 3 books about *Lobivia*. They were, and remain, a valuable guide to the genus with good quality pictures and simplified distribution maps. The original German editions were translated by John Donald and published in English. The set is now rare and only occasionally available for sale so, when offered, it commands a high price. The softbound books have covers with a glossy plastic laminate which is very prone to peeling off. All the copies I have seen have suffered with this problem.



Ten years later, Rausch wrote an updated treatment of *Lobivia* which was published as a single hardback volume 'Lobivia 85'. It contained several 'new' taxa and Rausch also included many *Rebutia* species in his concept of *Lobivia*. These books are still my favourite place to look for information about *Lobivia*.

It is remarkable that there hasn't been another book about *Lobivia* published since. Perhaps it is because the plants are out of fashion, or maybe their placement in the genus *Echinopsis* has lowered their profile with collectors. They are easy to grow, tolerating low temperatures in winter and have wonderful flowers. Seeds of *Lobivia*, often with location data, are easily purchased from seed vendors such as Succseed, who have an extensive list.

Every time I look at the books, I am reminded about the 1970s when the seed seller Köhres offered seeds of the Rausch Lobivias. Roger Moreton, then living near to me in Birmingham, grew a lot of this seed and I had the chance to buy seedlings from him. The plants were hardly known at the time and it wasn't until I got the books that I was able appreciate what I was growing. Exciting times!

GC

Cactus People Histories

Chuck Staples continues his series about people who have made significant contributions to the study of cactus and succulent plants. This time, he tells us about Dr. Eric Werdermann, surely one of the succulent greats of the 20th century.

Figure 1. Eric Werdermann from Everson March 2012

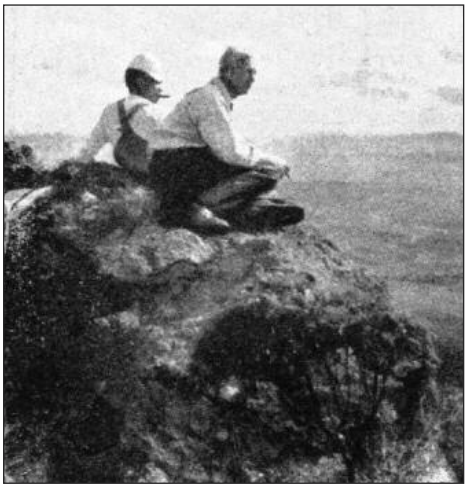


Figure 2. Eric Werdermann at the Serra do Curral from 'Brazil and Its Columnar Cacti'

Figure 3. Eric Werdermann from 'Brazil and Its Columnar Cacti' 1942

The following brief biography touches mainly on the aspects of the life and career of Erich Werdermann as they relate to his contributions to the cactus and succulent plant world. This person made wider contributions than have been included here, but I hope that for interested succulentists, this will provide a sufficient introduction to the achievements of the individual.

Dr Erich Werdermann (1892–1959) became an anatomist, plant physiologist, biologist, plant geographer, botanist and a major explorer of South American plants during his lifetime. He was born in Berlin, Germany on 2nd March 1892, the son of a landowner. His university studies began at the University of Jena, Germany, but shortly before graduation in 1914, he was enlisted in the army and only after recovering from serious wounds during World War I was he able to continue his studies and in 1918 earning his PhD degree at the University of Berlin in 1919.

Werdermann's interest by 1923 was in fungi with a four-year research trip to Chile. After he returned to Germany, he succeeded Dr Friedrich Karl Johann Vaupel (1876–1927) as curator of the Berlin Botanical Garden, taking

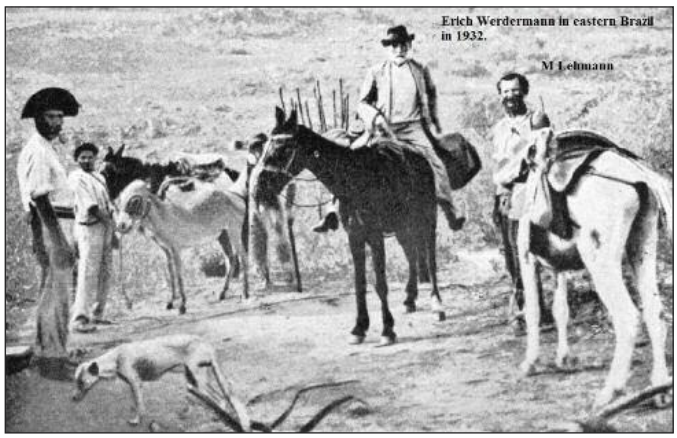


Figure 4. Eric Werdermann at the Black Mountain from 'Brazil and Its Columnar Cacti. Pictured in 1932.

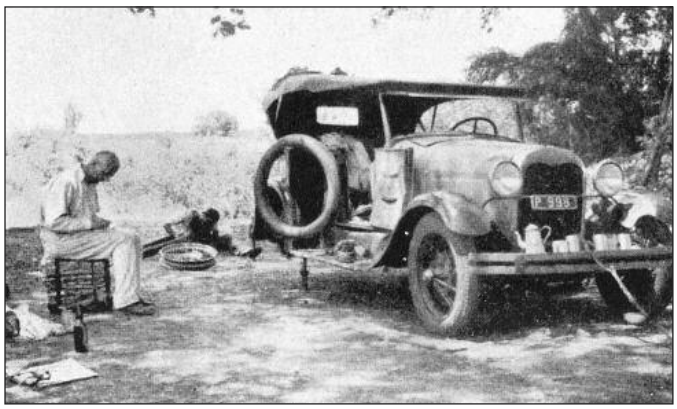


Figure 5. Eric Werdermann working with his plant press from 'Brazil and Its Columnar Cacti'

Figure 6. Eric Werdermann with his fat plant press from 'Brazil and Its Columnar Cacti'

Participants at the 1950 Inaugural Meeting of IOS in front of the Old Botanical Institute of the University of Zürich at Pelikanstrasse 40. From left to right: 1 Dr. A. Schlittler, 2 Prof Dr. J. A. Huber, 3 Prof Dr. F. Buxbaum, 4 Prof. Dr. D. Regel, 5 Dr. W. Herter, 6 Prof. Dr. A. U. Däniker, 7 Prof. Dr. E. Werdermann, 8 J. Panella, 9 A. J. A. Buining, 10 J. Janse, 11 H. M. Roan, 12 Dr. W. Cullmann, 13 H. Krainz, 14 W. Kesselring, 15 E Glauser, 16 H. Jacobsen, 17 J. Marnier, 18 E. Gerber, 19 A.J.A. Uitewaal, 20 L.F. Vatrican.

Figure 7. IOS members at the inaugural meeting of 1950 from IOS website.

Figure 8. Eric Werdermann's gravestone in Germany.

care of cacti and other succulent plants in the herbarium. He was President of the German Cactus Society from 1927 to 1934 and was also one of the founding members of the IOS (International Organization for Succulent Plant Study) in 1950.

As his interest in succulent plants grew, Werdermann returned to South America exploring and collecting in Chile and Bolivia during 1923–27, Brazil in 1932 and Mexico in 1933 (with short trips into Texas and Arizona). After retirement in 1958, he made a trip to southern Africa exploring and collecting in South Africa and Namibia.

During World War II his scientific library and collection at the Berlin Botanical Garden was destroyed in 1943. He was in charge of reconstructing the garden and greenhouses after the war and became director of the garden by 1955.

From 1931 to 1939 Werdermann published 'Blühende Kakteen und andere Sukkulente Pflanzen' in Berlin in 42 parts featuring his own 168 colour photographs. He also published 'Brasilien und seine Saulenkakteen' with 122 pages in 1933 with 89 b/w photos (translated into English by R.W.Kelly as 'Brazil and Its Columnar Cacti', published in 1942 by Scott Haselton's Abbey Garden Press in Pasadena, California.

In the succulent plant kingdom the cactus genus *Neowerdermannia* (from Peru, Bolivia, Chile, & Argentina) was named in his honour by Alberto Vojtech Fric (1882-1944) in 1930. Species of *Coryphantha*, *Notocactus* (*Parodia*), *Pachyphytum*, *Portulaca* and *Trichocereus* (*Echinopsis*) have also been named for him. Werdermann described the cactus genera *Blossfeldia* and *Weingartia* (now sometimes included in *Rebutia*) along with many cactus species and a couple of *Ceropegia*, *Huernia*, *Kalanchoe* and *Umbilicus* (*Prometheum*) species.

Dr Erich Werdermann died shortly after his return to Bremen, Germany from his southern Africa trip on 20 April 1959. He is buried near succulentophiles Heinrich Gustav Adolf Engler (1844–1930) and Friedrich Ludwig Emil Diels (1874–1945).

Chuck Staples, Des Moines, Iowa USA,

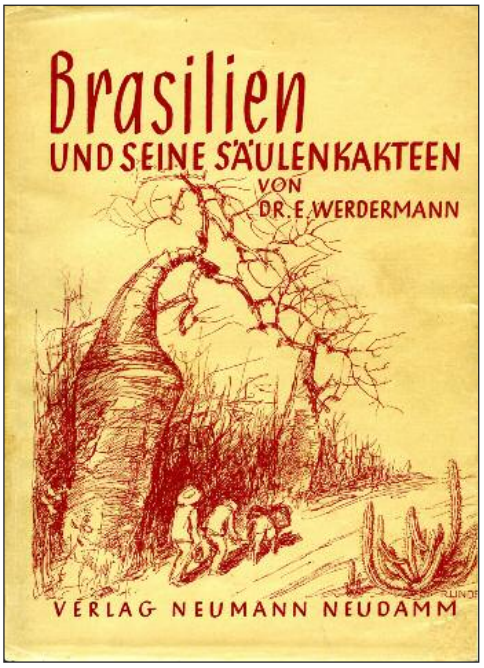


Figure 9. The first edition of Werdermann's book about the columnar cacti of Brazil (1933)

Locate the Cryptic, Hunt the Hybrid and Expect the Unexpected

The ninth Explorers Club weekend was organised by Graham Charles with his traditional quiet efficiency and supported by fifty-five enthusiasts, including guest speakers and delegates from the Czech Republic, France, Italy, Sweden and many parts of the UK. The programme listed an intriguing mix of sixteen presentations spanning origins, quests, life, fear, death and 'tres hombres'. I attempt to convey the atmosphere and some themes that emerged this year.

Text by Roland Tebbenham **Pictures by various presenters as indicated**

Photo: P. Hoxey

Fig. 1 *Neoraimondia arequipensis* PH761.01. Coast south of Atico, Arequipa, 100m

Photo: P. Hoxey

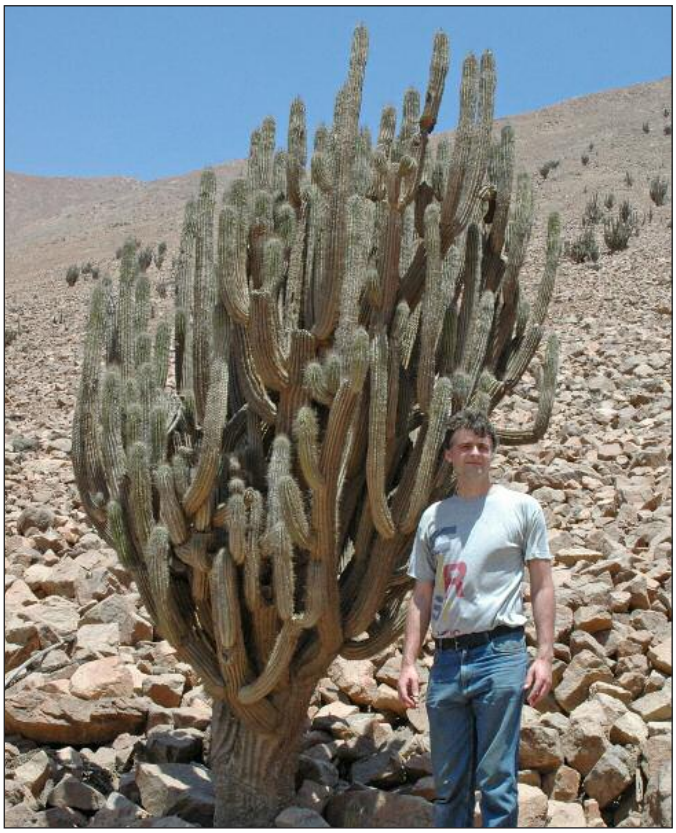


Fig. 2 Paul Hoxey with *Eulychnia ritteri* PH800.01. Lomas de Atiquipa, Arequipa, 540m

A broad selection of choice plants, books and literature sales, coupled with the promise of 'Old Speckled Hen' real ale for delegates, encouraged early arrival at Beaumont Hall, Leicester on Friday afternoon. We had registered, emptied cars and greeted old friends; then the Explorers sat down for a dinner of mushroom tart, grilled salmon, vanilla cheesecake and a cheeseboard, all lubricated with ample supplies of Chilean wine. Yes, we had started as we meant to go on, with good food and conversation.

Following dinner, the delegates gathered for the first session; Graham welcomed everyone, in particular our guest speakers Philippe Corman from France and Zlatko Janeba from the Czech Republic. He had intended to welcome the new converts to the club weekend, "Except I can't remember who they are!" So they introduced themselves, stimulating much banter as was expected.

The audience settled down to enjoy Club regular Paul Hoxey outline his investigations of the 'Lomas' habitats of coastal Peru. These are peculiar areas with scant rainfall and periodic fog to provide moisture for the plants found there. It is a desert region on the western slopes of the high Andes, which block moisture that would otherwise come from the east. The cold, northward-flowing waters of the Pacific Ocean's Humboldt Current cool the air above the ocean surface and form clouds that produce fine drizzle and fog that covers the land up to roughly 1000m altitude. Paul said that at least eighteen cactus species are found there in four groups.

[1] Opuntioideae – two *Cumulopuntia*

Photo: P. Hoxey

Fig. 3 *Eriosyce islayensis* if you follow the NCL. A splitter would use the genus *Islaya* and this plant is quite close geographically to *I. krainziana*. PH880.01. Near the city of Tacna, 900m

Photo: P. Hoxey

Fig. 4 *Borzicactus hoxeyi* with its short actinomorphic flowers, unique in the genus.

species: *C. leucophaea* & *C. sphaerica* '*tumida*'.

[2] Echinocereeae – five species. *Neoraimondia arequipensis* has adapted areoles elongating and branching with age, repeat flowering and looking very sculptural against the ocean background [Fig.1]. "I think sometimes the *Corryocactus brachypetalus* look better when they are dead; and I reckon if you tidied them up and put it in a Chelsea Flower Show garden they would be called architectural." *Corryocactus aureus* is a stoloniferous semi-prostrate species. *Browningia candelaris* trees covered with Tillandsias (rare on *Browningia*) was a surprise to find in this little-explored habitat. Paul found *Eulychnia ritteri* growing four to five metres tall in a very dry valley near Chala on barren hillsides. The juvenile plants are spiny, adults hairier, and plants with one hundred or more stems must be centuries old [Fig.2]. They have pink flowers a few centimetres in diameter with fruits shaped like large raspberries. Paul commented that they are difficult to grow in the UK and he has resorted to grafting to keep them going.

[3] Notocacteae – *Islaya* with one to fifteen species (according to the NCL or Ritter). Paul has started a project growing these from seed, then grafting them all on to similar stocks to enable comparison. We travelled with him from north to south recording ten populations including (Ritter names) *Islaya omasensis*, *I. copiapoides*, *I. brevicylindrica*, *I. grandis* (with very large black seeds in pink fruits), *I. islayensis* and *I. krainziana* [Fig.3]. The plants' appearance varies from the coast to further inland. *Islayas* have a network of fibrous roots near the surface owing to the extreme aridity of the area. John Arnold commented that the prevailing wind disperses seeds in stripes so the plants sometimes appear to have been planted in rows. These are real survivors in a desolate habitat.

[4] Trichocereeae – ten taxa, including *Trichocereus chalaensis* and *T. glaucus*, the latter growing in more favourable locations in coastal Peru across the border into Chile. *Weberbauerocereus cephalomacrostibas* a Peruvian Lomas endemic found on dry slopes above Islay; also *W. rauhii* growing on the Inca ruins in the area. *Haageocereus decumbens*, *H. australis* and *H. chalaensis* grow together, sometimes decumbent in soft sand, others more erect amongst rocks, and *H. pluriflorus* with distinctive pinkish-brown fruits. The low-growing, cryptic *Pygmaeocereus bylesianus* has distinctively scented, nocturnal flowers. The final genus is *Borzicactus* (*Loxanthocereus*), or are they humming-bird pollinated *Haageocereus*? Firstly *B. clavispinus* at Lomas de Atequipa, then *B. sextonianus* in sandy substrates with long, humming-bird pollinated flowers. Some plants were so dry and tatty they prompted Roger to remark: "Paul, please could you show us some live ones?" Finally, *Borzicactus hoxeyi* with its reddish-yellow flowers part-opening in early evening, not the 'standard' humming-bird pollinator shape and with the stigma completely hidden beneath the anthers: "This is one of those cryptic plants that would be easy to walk past." It was

Photo: M. Lowry

Fig. 5 *Yucca harrimaniae* Cohab Canyon trail, Capitol Reef NP, Utah, USA.

Photo: Clara Tan

Fig. 6 Martin Lowry in a classic exploring pose.

Photo: M. Lowry

Fig. 7 *Pediocactus despainii* near Wedge Overlook, Emory Co, Utah, USA

recently described as *Borzicactus hoxeyi* [Fig.4] in Bradleya [Ref.1].

There was generous applause for Paul and the new species named for him. Graham thanked him for "A masterful programme, a great start to the weekend." Some of the company retired to the bar, while others went to a Tephrocactus Study Group meeting in the music room!

Nine programmes were scheduled on Saturday starting with views of three US states and the origin of species before lunch. First Ivor Crook introduced the Explorer stalwart Martin Lowry – or had someone designed his doppelganger? Had the earth's magnetic poles reversed? The veteran investigator of South America was to speak for thirty minutes on a ten-day late April trip to Utah. He thanked other club members for information on plant locations and explained that there were two principal bio-geographic areas in Utah: the Great Basin Desert to the west and the Colorado Plateau to the east. Lots of *Echinocereus coccineus*, coming into flower; Martin remarked "You will get sick of these in a minute", to which a familiar voice piped up "What do you mean 'in a minute'?" Then he showed us a nice *Sclerocactus spinosior* "Now that's a real plant" commented Trevor and there were many more to see close to the road south of Richfield.

Martin had experimented with mounted exploration in Red Rock Canyon "Touring like Butch Cassidy and the Sundance Kid trying to find cacti when the thing don't want to stop." He saw a solitary *Escobaria* from horseback. Later he journeyed east on a road over 1500m (5000ft) altitude encountering hoar frost on the way to Capitol Reef. *Pediocactus simpsonii* was looking good at Teesdale Bench with many opuntias including *O. phaeacantha* and *O. engelmannii*. A neat small *Yucca harrimaniae* some 10cm (4") tall contrasted nicely with chunky rocks [Fig.5] and we enjoyed seeing *Pediocactus winkleri*, *Sclerocactus parviflorus* and *S. wrightii* with yellow or pinkish flowers.

Fig.6 shows the Explorer in a classic pose photographing *Pediocactus despainii* [Fig.7], very cryptic unless in flower. Finally he travelled east along the Colorado River and saw large plants of *Sclerocactus parviflorus*. Martin's enjoyable whirlwind tale finished early (how amazing was that?). The applause was real enough, not paranormal, so maybe the speaker wasn't a doppelganger after all.

Ivor introduced another Explorers regular, Roy Mottram, who set forth to explain how

Photo: R. Mottram

Fig. 8 *Matucana Σcelendinensis = M. aurantiaca* Σ *M. intertexta* Dept. Chachapoyas, Balsas, Peru 1500m

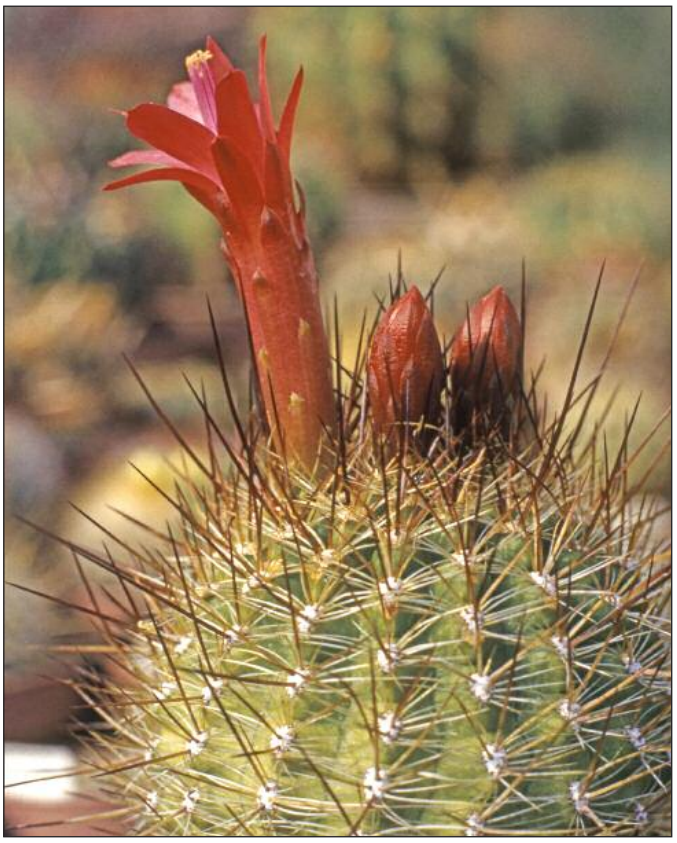


Photo: R. Mottram

Fig. 9 *Oreocana* × *rarissima* nom. nud. FR178 (Peru, Dept. Ayacucho, above Lucanas). *Matucana haynei* ssp. *hystrix* × *Oreocereus ritteri*. F2 generation, ex Winter seed c.1960 in c.1985 with flowers 7cm long.

speciation in plants takes place, with particular reference to cacti. We are familiar with the concept of natural selection, but it cannot work in the absence of diversity. How does diversity arise? Roy outlined mutation in normal growth (during mitosis), also gene rearrangement, hybridisation, polyploidy and allopolyploidy all occurring during reproduction (meiosis). Pollinators, seed dispersal vectors and environmental factors all contribute to the competition for survival of the resultant progeny; this leads to success or failure, victors or victims, winners or losers. Both hybridisation and allopolyploidy create lineages that are not necessarily part of gradual step-by-step processes and can confuse DNA-derived phylogenetic trees.

Polyploidy takes place whenever normal meiotic cell division fails to take place, and the resulting embryo contains all the genetic material from both parents. Hybridisation involves the matching of genes; hence parents have to be sufficiently compatible for this to happen. By contrast, polyploidy does not involve gene rearrangement, so compatibility is not a problem. Consequently there are no barriers to the union and completely unrelated and therefore very distant parents may be involved. The resultant larger amount of DNA induces larger cells, increased vigour, and hence greater survival chances in stressful conditions.

Allopolyploids introduce an interesting dimension: vigorous progeny showing characteristics intermediate between unrelated parents. *Pachycereus pringlei* is a tetraploid, almost certainly formed as an allopolyploid of *Carnegiea gigantea* Σ *Pachycereus pecten-aboriginum*, both diploids with distributions overlapping in Sonora. The extra vigour has enabled *P. pringlei* to spread westwards over the islands and the peninsula of Baja California. *Pachycereus pecten-aboriginum* has an armed receptacle and very spiny fruits, while *Carnegiea gigantea* has naked receptacles and fruits. *Pachycereus pringlei* is midway between and is endowed with a significantly more robust constitution, as growers will know.

The subtribe Borzicactinae of Peru is rich in both hybrid and allopolyploid taxa. Generally the species' habitats do not overlap and pollination syndromes differ, but where they

Photo: R. Ferryman

Fig. 10 A man-made habitat in Big Bend.

Photo: R. Ferryman

Fig. 11 *Echinocactus horizonthalonius*

do overlap they can exchange genes and the vigorous progeny with larger attractive flowers enhance their survival in the ever-changing microclimates of their habitats. Fig.8 shows *Matucana* Σ *celendinensis*, which is *Matucana aurantiaca* Σ *Matucana intertexta*. *Matucana* seeds generally weigh around 1g per 1000, but in this taxon they weigh 2.2g per 1000, which is a significant clue to it being an allopolyploid. Knize called it *Matucana grandiflora* nom. nud. presumably because he thought the flowers were extra-large, however, there is not much length difference from the putative parents. It does expand its petals more widely and in the plant pictured the inner petals are tipped with anthers. "This is instructive as it demonstrates the fact that the petaloid inner segments of cactus flowers are formed from modified stamens, while the outer segments are modified leaves (bracts), but they have grown alike in cacti to become almost indistinguishable." The outer segments increase in size upwards, while the inner segments decrease in size upwards; such modifications are also often an indication of allopolyploidy.

A spontaneous natural hybrid was found by Ritter above Lucanas in 1953. He thought it was a species and provisionally named it *Matucana rarissima* to reflect the few plants he found there. However, it grows in the company of both parents and the F2 generation of seed gathered from it produces a full range of forms between both parents (*Matucana haynei* ssp. *hystrix* and *Oreocereus ritteri*), so this is a normal hybrid. Ritter's sister Hildegard Winter distributed seed of the F2 generation in 1957, presumably gathered from plants growing in Ritter's garden. Fig.9 shows one that Roy grew from seed, but it looks very different from Ritter's original plant as might be expected from the F2 generation. Roy commented that "Further Peruvian explorations by Paul and Martin should reveal more interesting plants that will need DNA studies to reveal the relationships within this group of attractive cacti." More images of *Matucanas* with distribution maps, seeds, flower sections and phylogenetic trees completed this thought-provoking, educative programme.

After a coffee break the assembled company welcomed Roger Ferryman back to the UK. This renowned Explorer of South America was to regale us with his 'alternative view' of Texas "A wonderful place, a big place, with roads that last for ever." Roger started with weather: very localised rain, some hard frosts, and by contrast drought. He had stayed in La Linda where no rain fell for five years, there was just occasional fog. Then he showed us the effects of five days of -8°C (18°F) 'black frost' that had killed many plants. "The only good opuntia is a dead opuntia!" Yet four miles down the road nothing was touched. While Roger was resident in the USA he attended some meetings of the Houston Cactus Society; but 90% of members grew succulents because at 35°C (95°F) and 95%RH they cannot grow cacti from seed there. Instead the locals dig up plants, particularly when they are in flower.

He started his Texan tour in the hill country where cacti grow, including *Echinocereus*

Photo: R. Ferryman

Fig. 12 *Echinocereus dasyacanthus* growing on a rocky outcrop.

*reichenbachi*i and "an *Escobaria*, *Coryphantha* or *Mammillaria* – I struggle" (cue laughter). "I haven't got a book on *Escobaria*, John." John Pilbeam responded immediately: "And you never will either." However hill country is for hunting animals, so you trespass at your peril. Roger showed man-made habitats created by clearance of rocks to make roads and clear fields for farming [Fig.10]; here cacti are numerous. He found many *Ariocarpus*: "The first time I thought 'great', but they are everywhere; the largest plant was 14" across." *Ariocarpus* flowering is sporadic, some years were better than others.

Roger was stopped by the US customs people on private land near Marathon; so he visited the farmer (roughly fifty miles distant) to get permission to look for cacti. The owner said "Mr Ferryman, I have one-point-five million acres, anywhere in particular?" "Then he actually drove me around to a good place." We saw *Echinocereus davisii*, cryptic in grass with tiny flowers, *Escobaria*, *Coryphantha minima* and some hybrids on the limestone outcrops and an *Opuntia* in flower. "It's as well it's in flower because at least you know it's alive."

He continued with a feast of *Echinocereus* including *E. viridiflorus* looking neat with its hard spines, and nice *Echinomastus intertextus*, but he admitted a particular fondness of *Echinocactus horizonthalonius* [Fig.11]. "They were so nice, they became honorary *Pyrrhocactus*." He also got interested in *Echinomastus warnockii*: "It flowers and sets seeds quickly and seems to thrive in its habitat." "Has anyone grown *Echinomastus* successfully in the UK? When I sneeze in my greenhouse three of them die."

Roger also visited Fort Davis in the Davis Mountains State Park, a really nice place where he was talking to the Rangers about cacti and asked if they had any reference books. "They had '*Echinocereus*' and '*Ariocarpus*', both books by John Pilbeam: so I went all the way to Texas to find books by John". He brought his entertaining programme to a close with: "An *Echinocereus* growing out of solid rock with two digits showing to the world" [Fig.12]; the last images were close-ups of a rattlesnake. "When it started to shake so did I!" Predictably, the audience was most generous with applause.

The last programme before lunch was delivered by another Explorer regular, Zlatko Janeba from the Czech Republic, who completed our trio of US state tours with views of the Californian Flora. His 'tour de force' of more than four hundred images started close to cities and coastal forest regions featuring the familiar *Opuntia basilaris* and *Echinocereus engelmannii* with *Agaves* and *Yuccas*. He visited Myron Kimnach to see his collection growing in a very equable climate. Views of the Fullerton Arboretum included nice cycads and aloes, followed by the LA County Arboretum & Botanic Garden and the famous Huntington Botanical Garden.

Anzo-Borrega Desert State Park featured fine landscapes with *Fouquieria*, *Pachycormus* and Zlatko resting beside a large *Ferocactus cylindraceus* [Fig.13] along the Elephant Trees trail. 'Elephant Tree' refers to *Pachycormus discolor* (family Anacardiaceae). Then we saw Torrey Pines State Park Reserve and *Pinus torreyana* (the rarest US pine and classed as vulnerable), *Calchortus weedyi*, *Dudleya lanceolata*, *D. edulis*, *Ferocactus viridescens* and large *Agave shawii* clumps. This was followed by the Cabrillo National Monument with more fine agaves, ferocacti and dudleyas. By contrast Anacapa Island has been overrun by *Carpobrotus edulis* originally introduced to stabilise the thin soil there, but has now invaded and threatens the native dudleyas and opuntias. There is a project to eradicate it by 2016.

Photo: Z. Janeba

Fig. 13 Zlatko Janeba and a big *Ferocactus cylindraceus* along the Elephant Trees Trail in Anza-Borrego Desert State Park, California.

Photo: Z. Janeba

Fig. 15 An old clump of *Escobaria alversonii* in Big María Mts, California.

Photo: Z. Janeba

Fig. 14 Forest of *Cylindropuntia bigelovii* in Cholla Cactus Garden, Joshua Tree National Park, California.

Photo: Z. Janeba

Fig. 16 Crested *Ferocactus cylindraceus* near Teutonia Peak in Mojave National Preserve, California.

Moving further inland to Joshua Tree National Park and the mountains beyond, we saw distinctly dryer habitats with spiky stands of *Cylindropuntia bigelovii* [Fig.14] and a very beautiful old clump of the diminutive *Escobaria alversonii* [Fig.15]. Further north close to the Nevada border grew *Echinocereus engelmannii* and gnarled Great Basin Bristlecone pines (*Pinus longaeva*). Zlatko journeyed up 'Big Pine Road' to the trail crest at 4145m (13600ft); here were interesting alpine flowers and *Opuntia basilaris*, all very hardy plants growing at 2400m (7800ft).

We saw glimpses of the Talc City Hills, Darwin – a ghost town – and heavily reddish-spined *Sclerocactus polyancistrus* at Victorville. Zlatko took us to some lower, hotter climes in Mojave Desert country where there were *Opuntia chlorotica*, a cristate *Ferocactus cylindraceus* [Fig.16] and a Tortoise looking for lunch on *Opuntia basilaris*. Here also were the very scarce *Nolina parryi* with 2m (7ft) tall inflorescences, neat *Agave utahensis* and evidence of fire damage. Zlatko showed a series of terrific images of *Sclerocactus polyancistrus* in bud, flower and grafted in cultivation, set up for pollination to produce seed. Finally we visited Death Valley with echinocacti, dunes, unusual wildflowers and yes … *Opuntia basilaris* in flower again. Finally a few shots of Zlatko's plants in frames covered in snow in Prague offered a contrast to the warmer localities we had visited care of his explorations and expert camerawork.

After an excellent lunch, Paul Hoxey introduced our second invited overseas speaker, Philippe Corman from France. He took us to north-western Argentina starting in Jujuy Province near the Bolivian border. For readers unfamiliar with this region, it comprises many habitat types from high Andean 'Puna' (2000>4500m) to damp forest

Photo: P. Corman

Fig. 17 The famous forest of *Oreocereus celsianus*, East of Yavi, Jujuy, Argentina

Photo: P. Corman

Fig. 19 *Cumulopuntia boliviana* ssp. ignescens, Parque los Cardones, Salta, Argentina

Photo: P. Corman

Fig. 18 The flowers of × *Trichomoza roseiflora* (*Leucostele atacamensis* × *Denmoza rhodacantha*), Amblayo, Salta, Argentina

Photo: P. Corman

Fig. 20 *Pyrrhocactus bulbocalyx*, RFPA 302, Argentina, La Rioja, Los Colorados Rte.74. 665m

'Yungas' (<1600m); it includes 'Chaco' with less than 800mm of summer rainfall and cool, dry winters (favouring bromeliads) and 'Monte' with even less rain (<200mm) and frosty winters: the latter two habitat types are found up to roughly 1700m. Cacti are particularly abundant in 'Monte' with massive specimens of *Trichocereus atacamensis* contrasted with the tiny *Blossfeldia liliputana*. The habitat types are found in a number of Argentinian provinces: Jujuy (northernmost), Salta, Catamarca, Tucuman, La Rioja and Córdoba. The proximity to the Andes mountain rain shadow is important; this reduces rain in the west, with increasing amounts to the east.

We oohed and aahed at views of numerous beautiful *Oreocereus celsianus* on a hillside east of Yavi, Jujuy Province [Fig.17], the hybrids *Oreocereus celsianus* x *Lobivia ferox* and *Trichocereus tarijensis* x *T.* (*Leucostele*) *atacamensis* were in dry, rocky terrain as was the beautiful 'high-altitude gymno' *Gymnocalycium spegazzinii*. Another hybrid that drew admiring responses was x *Trichomoza* roseiflora (*Trichocereus atacamensis* x *Denmoza rhodacantha*] photographed at Amblayo, Salta [Fig.18]. Further north we saw fine *Soehrensia formosa* and *Cumulopuntia boliviana* subsp. *ignescens* in the Parque los Cardones, Salta, with flowers in shades of yellow, amber and pinkish-mauve [Fig.19]. Much further south in La Rioja province *Gymnocalycium albiareolatum* was cryptic; once again only flowers and fruits betrayed its presence.

Philippe found more hybrids of *Leucostele terscheckii* x *Soehrensia strigosa* and very healthy plants of *Tephrocactus articulatus* and *Gymnocalycium bodenbenderianum*. Thence to Sierra Velazco in La Rioja where there were large *Soehrensia formosa* and its hybrids with *Soehrensia huascha*; also more hybrids of *Soehrensia bruchii* x *Echinopsis schickendantzii*

Photo: R. Gillman

Fig. 21 *Echinocactus texensis* (with a lost explorer?) at Dagger Flats, Big Bend N.P., Texas, USA

Photo: R. Gillman

Fig. 22 *Epithelantha bokei* avoiding sunburn in limestone rocks, Big Bend N.P., Texas, USA

near Tafi del Valle. The question "Does this road go all the way to Chilecito?" generated laughter – the answer was cryptic: "It is the road to nowhere." More cryptic examples of *Gymnocalycium uebelmannianum* in gravel and dry vegetation rounded off that segment of the tour.

Philippe continued with images from another visit further south made later in the year after more rain, though still within the Andean rain shadow. The notable plants in that very arid part of San Juan province were fine examples of *Pyrrhocactus bulbocalyx* [Fig.20] growing in open, rocky situations exposed to the elements and many *Tephrocactus* plants. Journeying to south-west Catamarca province we saw examples of *Pterocactus* & *Reicheocactus bonnieae*. As a result of his explorations Philippe has confirmed localities for *Pyrrhocactus* and *Maihueniopsis* further north than previously known. This programme gave insights into an interesting phytogeographical region with complex species distribution and the occurrence of hybrids; these aspects picking up themes explored before lunch.

Paul then introduced Rick Gillman who had promised us a story of 'Death & Life in Big Bend'. After an arresting introduction we were treated to some facts & figures. Big Bend is an area of 3500sq.km (1360sq.miles); it is 500 million years old with diverse geology and spectacular scenery; also there are some fifty species of cacti there. Rick visited in June: "Don't go in June its too hot, 43°C (110°F) by day and -15°C (5°F) at night. The last time I visited, it really tipped it down; how lucky can you be?" He commented that the Chisos Mountains near the centre are very nice, but reminded us of the need to book accommodation there, or camp.

Rick showed us a 'Visitor Information' finger post: "If you go down that track you would not get any information, but you would fall off a very high cliff into raging water." He confirmed Roger's observations earlier that some localities had no rain for years and many plants were dead, including *Ariocarpus fissuratus*, *Yucca* and even *Agave lechuguilla*. This fact elicited the barbed remark "Every cloud has a silver lining." A human grave covered by rocks to prevent animal interference also provoked 'feedback': "That'll make sure he doesn't get up again." The company were in fine form after their ample lunch.

Rick regaled us with cactus species in alphabetic order. First we had a test to find the very cryptic (again) *Ariocarpus* amongst the gravel in a desolate habitat. Then by contrast *Coryphantha echinus*, huge clumps of *C. macromeris* in damper places, *C. ramillosa*, *C. scheeri*. A favourite species followed, a large *Echinocactus texensis* with a hat for scale [Fig.21], or was this the grave of a lost Explorer? *Echinocereus* was next, first *E. chisosensis* with some varieties. "I could not tell you why it's different." John Pilbeam's response "Because it just is" provoked mirth. Then we 'toured' more *Echinocerei*: *E. coccineus*, *E. dasyacanthus*, *E. davisii*, *E. enneacanthus*, *E. russanthus*, *E. stramineus*, and *E. viridiflorus*.

Very cryptic *Echinomastus* (*Sclerocactus*) *intertextus* looked odd growing in water on a thin stalk; by contrast in dryer, stony substrates were *Echinomastus* (*Sclerocactus*) *mariposensis*, and *E. warnockii*. The weather prevented Rick from finding *Epithelantha micromeris*; its habitat was across a flash-flooded river wash. However a fine group of *Epithelantha bokei* sheltered from the sun [Fig.22] was a very photogenic substitute. More nice plants were on offer: *Escobaria sneedii albicolumnaris*, *E. tuberculosa*, *E. variicolor*, *Ferocactus*, and *Glandulicactus* (*Sclerocactus*) *uncinatus* hidden amongst dry grass.

Rick showed us a few 'good' *Mammillarias*, *M. heyderi*, *M. meiacantha*, and *M. pottsii*, then small clumps of *Neolloydia conoidea*. Opuntias completed the 'Big Bend Alphabet'; *Corynopuntia aggeria*; Rick had it labelled differently when assembling the talk. He commented: "I didn't call it a *Corynopuntia* I called it a bloody opuntia." Amongst other opuntias were *O. macrocentra* with fine long black spines, yellow flowers and reddish fruits, leading us to the final one, *O. schottii*, which in Rick's words: "Was not the 'Dog Cholla', but rather the 'Dog-Something Cholla'."Outside the Park he showed us *Peniocereus greggii*, a handsome *Thelocactus bicolor* "A fantastic plant to grow" and *Thelocactus flavidispinus*. The final succulent was the unexpected hybrid *Agave harviana* x *Agave lechuguilla*. Rick deserved the applause for photographing and showing us lots of interesting plants in a favourite locality for cactophiles.

After tea Zlatko Janeba returned to tell us about 'Expedition Yucatán'. This was a quest supported by the BCSS Conservation Fund to seek *Mammillaria yucatanensis*. I am grateful to Explorer Chris Davies for the following details. 'G. F. Gaumer collected it in 1921 on the landward side of coastal marshes near Progreso and described it in 1926. It is regarded now as a subspecies of *Mammillaria columbiana*, which is reportedly found in Mexico (Chiapas and Yucatán), Honduras, Guatemala and Jamaica. This subspecies has reddish-brown central spines in contrast to the golden-yellow of the type, though there is doubt that the plant exists in habitat.'

Photo: Z. Janeba

Fig. 23 *Tillandsia brachycaulos* in Chichén Itzá, a large city built by the Maya civilization in Yucatán.

Photo: Z. Janeba

Fig. 24 A view of the habitat east of Celestún, Yucatán, along the road 281. Limestone outcrops with *Agave angustifolia*, *Nopalea gaumeri*, and *Acanthocereus tetragonus*.

The Mexican Yucatán peninsula is mostly flat limestone plateau, with sinkholes, covered in tropical jungle and subjected to Caribbean hurricanes. The flora includes many bromeliads (including at least twenty *Tillandsia* species), roughly sixty orchid genera and some thirteen cactus genera including twenty taxa. Now best known for Caribbean coastal resorts and Mayan ruins, there is commercial exploitation of the vanilla orchid and *Agave* for henequen fibre.

Zlatko set the scene with images of the wildlife, ruins, markets, hotels, non-succulent flora; then we headed for the field to hunt for cacti. The 2013 trip was a circumnavigation of the coastal regions of the peninsula from the Belize border in the south-east to the northern coast including the area around Progreso. We saw many habitats where the *Mammillaria* might grow and enjoyed myrmecophilous

Photo: Z. Janeba

Fig. 25 *Mammillaria gaumeri* is often completely covered by fallen leaves. SE of Progreso, Yucatán.

Photo: Z. Janeba

Fig. 26 Flowering *Stenocereus* aff. *griseus* (according to the NCL) near Dzilam de Bravo, Yucatán.

orchids, *Tillandsia brachycaulos* [Fig.23] – widely available, easy to grow and flower with your cacti – another colourful bromeliad *Bromelia pinguin*, also the cacti *Pilosocereus gaumeri*, *Nopalea gaumeri* and *Mammillaria gaumeri*.

Zlatko showed a typical open-woodland, coastal habitat along the road 281 east of Celestún in north-west Yucatán [Fig.24] with many succulents. But there was no sign of the target species: "Has the '*yucatanensis*' been destroyed by hurricanes?" Certainly the coastal mangroves have been damaged both by hurricanes and development. We saw a number of nice clumps of *Mammillaria gaumeri* [Fig.25] growing under bushes (and often completely covered by fallen leaves), but many of those are threatened by construction projects. These have been serious losses in the ecology of the coastal regions, though one conspicuous survivor of the coastal habitats (up to now) was *Stenocereus* aff. *griseus* (according to the NCL) [Fig.26]. There have been some efforts to establish reserves and study areas, but these are quite limited at present.

So, perhaps the quest will continue since Zlatko and his colleagues found no plants of *Mammillaria yucatanensis* in habitat; indeed it is rare even in specialist collections. His excellent photography and eye for interesting subjects gave the audience a feel for places that many tourists do not see and cactophiles seldom visit.

Regular Explorers Aldo & Daina Delladdio [Fig.27] were welcomed warmly to give their programme 'April in Mexico'. Their introductory slide was a play on a film poster: '2013 the year a small group of Mexicans and Italians set out on the greatest adventure of them all … to see if there is *Mammillaria marcosii* beyond Xichú'. Their long and tortuous route ventured into Coahuila to the north, Zacatecas to the west, Nuevo Leon to the east and Queretaro in the south. They journeyed to see old favourites and to find new plants at a different time of the year from previous explorations. No rain had fallen for six months so we started with some very dry *Epithelantha* and *Pelecyphora*; these were followed by a new population of very clean *Echinocactus grusonii* plants in a sheltered canyon near San Rafael de las Tablas, Zacatecas [Fig.28].

More wide landscape views included a large *Astrophytum myriostigma* by grey rocks in Durango, beautiful open expanses of soft sand (deceptive without 4WD), and a newly-described *Escobaria* in the deep white sand. They revisited known sites to see more nice *Ancistrocactus*, *Ariocarpus*, *Coryphantha*, *Echinomastus*, *Epithelantha* and a fine 25cm (10") diameter *Echinocactus horizonthalonius* near Rayones, where they also recorded one of the few plants in bloom – an orange-flowered *Ferocactus*.

Many mountains and canyons are hardly botanised and amateurs can contribute; they can also monitor known habitats. One such is a gypsum cliff near Peña Blanca, Queretaro. The weathered rocks are habitat to many *Strombocactus disciformis* plants; however their

Photo: A. Delladdio

Fig. 27 Aldo & Daina Delladdio relaxing in San Miguel de Allende, Queretaro, Mexico.

Photo: A. Delladdio

Fig. 28 *Echinocactus grusonii* at the new locality growing in a canyon, San Rafael de las Tablas, Zacatecas.

Photo: A. Delladdio

Fig. 29 *Strombocactus disciformis* plants in a gypsum cliff, Peña Blanca, Queretaro, Mexico in 2011.

Photo: A. Delladdio

Fig. 30 *Strombocactus disciformis* plants in the same gypsum cliff shown in Fig.29, two years later in 2013.

number has diminished significantly between 2011 [Fig.29] and 2013 [Fig.30].

Moving on towards Queretaro we enjoyed *Mammillaria schiedeana, Dudleya* sp., and *Turbinicarpus alonsoi* in some of the many side canyons worth exploring. Then their journey was concluded with shots of big clumps of *Mammillaria perbella, M. duwei, Stenocactus* and *Strombocactus*. After all that effort Aldo and Daina didn't find *Mammillaria marcosii*, so will they try again? We hope so and they will be welcome to tell fellow Explorers more about their adventures.

After an excellent chicken dinner with much more Chilean wine, there was an air of anticipation; the crowd was noisy, even unruly. Martin Lowry said he had reported on his northern travels and he introduced Explorer Trevor who, by contrast, had travelled south. Trevor explained he had been intrigued by a seventeen-day tour to be led by Guillermo Rivera including a double crossing of the Andes mountains to enjoy the fantastic scenery there [Fig.31]. Trevor, David, Don & John travelled a few days early to "Do some touristy things" and to help Trevor polish up his Spanish; hence the title 'Tres hombres de cactus en Córdoba'. So we were treated to a complementary Spanish lesson with additional phonetic captions, including sign recognition for ladies' and gentlemen's lavatories and the vocabulary to request directions to them! Then he embarked on an overview of his pre-tour explorations. At the habitat of *Gymnocalycium erinaceum* Trevor had photographed the same view east of Sauce Punco as had Graham for his book [Ref.2]. This was not surprising as Graham commented that he had shown Guillermo Rivera that very site. It demonstrated the value of information exchange amongst Explorers.

Day-1 north of Córdoba: Trevor's first Argentinian cactus (TW001) was

Photo: T. Wray

Fig. 31 Andean scenery 'Valle de la Luna'.

Photo: T. Wray

Fig. 32 A cryptic *Gymnocalycium capillaense* TW002.13.

Gymnocalycium mostii and the species turned out to be … everywhere! Harder to find [Fig.32] was *Gymnocalycium capillaense*, very cryptic (it's that theme again) in dense grass. More gymnos followed: nice clumps of *G. bruchii*, neat *G. amerhauseri*, also some debate over the varietal status of *G. mostii* ssp. *valnicekianum* plants.

Day-2 south-west of Córdoba: more gymnos, *Echinopsis candicans* and the Argentine-Chile Dakar Rally passing causing more traffic. We saw *Gymnocalycium mostii* again, also *Opuntia sulphurea* with mealy bugs. Trev also found an interesting hemiparasite [Ref.3] *Tristerix corymbosus*, a member of Loranthaceae locally termed 'Quintral', growing on *Acacia*; also another 'showy mistletoe' *Tripodanthus flagellaris*. Near the observatory *Gymnocalycium andreae* grew in a very wet place. Trevor saw some large ants; indeed he commented that ants were nearly always in the cactus flowers and he had

Photo: T. Wray

Fig. 33 Ants removing petals from *Parodia nivosa* flowers.

photographed them removing petals from *Parodia nivosa* [Fig.33]. *Gymnocalycium ochoterenae* was growing amongst *Acacia*, also *Acanthocalycium violaceum* aka *Echinopsis spiniflora*. Finally Trev and chums found a Garden Centre selling lots of maybe habitat-collected plants.

Day-3 quite near Córdoba: close by the 'tractor museum' we were shown *Echinopsis aurea*, *Parodia mammulosa* and *Gymnocalycium quehlianum*, followed by a lively discussion on three species growing sympatrically: *G. quehlianum*, *G. monvillei*, and *G. calochlorum*.

Day-4 in Córdoba: The Jardin Botanico with *G. schickendantzii*, *quehlianum* and *stellatum*, this time not naturally sympatric, but planted deliberately. This was to check who was still awake! Trevor drew his programme to a close with views of the town and the succulent tree: *Ceiba* (or *Chorisia*) *speciosa* with its characteristic spiny trunk. To complete the elementary Spanish lesson he showed images of beer and we were exhorted to practice (aloud) 'Uno Quilmes Grande, por favor'. Trevor's response to this chorus was: "I don't mind if I do – thank you". There was prolonged applause and the audience members retired to the bar to buy him the promised beer.

Sunday dawned fair and the crowd at breakfast were looking forward eagerly to a tight schedule of six programmes with enticing titles. Two mentioned 'adventures' and another 'fear' and the places included Arizona, Mexico, Bolivia, Chile and Peru. There was a rumour of something on molecular studies too. How could this not be a good final day?

Photo: M. Lowry

Fig. 34 *Blossfeldia liliputana*, near Millares, Chuquisaca, Bolivia.

Peter Arthurs chaired the morning session and first we heard from Martin Lowry on (to him) more familiar ground telling us stories from 'M&Ms Bolivian Adventure' [Ref.4]. M&M refers to Martin & Mats Winberg, who made their journey during November and December. The salient event during their visit was a Bolivian national census. This entailed them being restricted to a town for twenty-four hours with no exceptions for alien visitors to pass the locked gates! "I've never seen so dead a town" which elicited the response "Did you tell them you were coming?" So the audience were on form despite time spent in the bar the previous evening.

On the road to Samaipata my early highlights were *Hildewintera auriespina* amongst many bromeliads and *Cleistocactus candelilla* with its shocking pink flowers. Views of *Gymnocalycium pflanzii* and *G. zegarrae* plants prompted a learned exchange between Explorers. John Pilbeam asked: "Why isn't it a separate species?" Martin deflected the question, saying: "Ask Graham." Graham's reply was equivocal: "Well, it's not that different." Such exchanges sharpen the mind during a postprandial session. There were gasps of admiration for a slope covered in hundreds of *Weingartia neocumingii* plants up to 12cm (5") across, followed by another slope covered in the columnar *Castellanosia caineana*. Martin commented that new roads had appeared since he first visited Bolivia in 1996 and they facilitated access to habitats. The locals cultivate the most level ground by hand, but leave rockier and steeper places that form happy hunting grounds for cactus explorers.

Photo: M. Lowry

Fig. 35 *Parodia gibbulosa* Brandt (syn. *P. gibbulosoides* Ritter), near the Rio Pilcomayo, Chuquisaca, Bolivia.

Martin continued with glimpses of many habitats and plants: *Rebutia cardenasiana* (or an intergrade with *R. mentosa*), *Cleistocactus tominensis* 100km further north than known before; *Echeveria chiclensis* that is known hitherto only from Peru, *Rebutia mentosa*, and a *R. canigueralii* form. The latter prompted the exchange: "There are a couple of specimens on the window sill." "Gosh, I am going to be weighed down going home." "No, you're not having them." One memorable day the travellers crossed the bridge over the Rio Pilcomayo, completed after a ten-year wait, then they turned left and headed for the Rio Poco Poco to discover an undescribed *Trichocereus* sp., also a new *Weingartia* sp. and a yellow-flowered *Parodia tuberculata*.

We marvelled at the images of clumps of the neat *Blossfeldia liliputana* [Fig.34] growing in soil pockets between layers of shale; indeed 'wall-to-wall' *Blossfeldia* in a near vertical rock-face. Further on we appreciated *Rebutia cintia*, and the new *Parodia hegeri* at 4100m, the

Photo: C. Davies

Fig. 36 *Stenocereus stellatus* in an open landscape.

Photo: C. Davies

Fig. 37 *Pachycereus pecten-aboriginum*.

highest altitude recorded for a *Parodia*. There were more gems; an undescribed *Cleistocactus* followed by a group of quite magnificent plants of *Parodia gibbulosa* [Fig.35]. These were very special and, I am advised, are quite difficult to grow. "Yes there's a lot to see in Bolivia; yet we are only just scratching the surface when we go to these places." Martin had confirmed the importance of exploration.

Peter then introduced Chris Davies who promised 'More from Mexico'. We were settled down to enjoy some mammillarias … but then Chris sprung two surprises. He began with some stunning photos of a snowy, misty Big Bend in 2000; yes everybody was wide awake!

Photo: C. Davies

Fig. 38 *Stenocereus montanus*.

Then he announced: "No mammillarias, but instead some tall cacti!" Chris had developed a programme to show many other interesting plants he had recorded on his extensive Mexican travels. So we were to enjoy, and debate the identity of, many sculptural columnar cacti.

Stenocereus stellatus looked at home amongst the light scrub and trees as well as in a more open landscape [Fig.36]; this was followed by sight of *Pachycereus fulviceps*, *Cephalocereus columna-trajani*, *Pilosocereus chrysacanthus* x *quadricentralis* (following our hybrid theme) and the massive *Neobuxbaumia tetetzo*. Many growers do not have greenhouse space to grow larger cerei, though some make attractive plants when young; so it was quite a treat to see examples in flower and fruit in their home ranges. These included *Stenocereus pruinosus*, a giant *Pachycereus weberi*, *Escontria chiotilla*, the unusual *Stenocereus beneckii*, and *Pachycereus pecten-aboriginum* with its prominent yellow-brown spiny fruits [Fig.37]. Then an old favourite: silver-grey columns of *Cephalocereus senilis* growing on a hillside with large clumps of mammillarias. Chris – we knew you could not resist including at least one!

Another hybrid was pictured at San Carlos Bay on the Sonoran coast of the Sea of Cortez, *Stenocereus gummosus* x *Rathbunia alamosensis* (now *Stenocereus alamosensis* Nigel Taylor transferred it, conserving *Stenocereus*). Tall cerei are used as fences by the locals; Chris had captured a good example of a row of *Stenocereus montanus* and we enjoyed seeing its flower [Fig.38]. There had been considerable debate over the identities of some plants and

Photo: P. Berresford

Fig. 39 *Sclerocactus erectocentrus* south east of Vail, Pima Co., Arizona, 1062m.

Photo: P. Berresford

Fig. 40 *Echinocereus rigidissimus* North San Pedro River Road, Pima Co., Arizona, 1289m.

this caused one of the resident wags to quip: "You could do a whole talk with captions that say 'this is not a …'." However this was one of the most interactive sessions of the whole weekend and Chris earned deserved applause for his programme that encouraged the audience to look beyond the sought-after miniatures to some plants they might be unlikely to grow themselves.

After morning coffee we were promised a Hunter S Thompson themed programme 'Fear and Cacti around Arizona' by Explorer Peter Berresford. He journeyed during June with two companions from Kew and "There was a lot of frantic driving through the desert and fear that the trip would not materialise." The objectives were clear: "To see as many interesting taxa as possible en route in two weeks, to check out a few taxa not previously seen by me, to include 'interesting scenery' and finally not to eat at any 'chain' food diners." The result was 6100km (3800miles) covered in two weeks: "Did you do it by car or aeroplane?"

Peter started his programme at Peña Blanca Lake, Ruby Road near the Mexican border and we saw *Erythrina flabelliformis* (the Coral Tree) and very healthy clumps of *Coryphantha recurvata* at the northern edge of its distribution; then west of Tucson to Three Points, where a fine vista included Saguaro, *Opuntia bigelovii*, *Ferocactus wislizenii* and *Coryphantha robustispina* ssp. *sheeri*. Peter then showed us Vail, east of Tucson, to see *Sclerocactus erectocentrus* [Fig.39] with examples from seedlings to adult plants.

Peter could not help himself showing us some 'Arizona Hedgehogs' *Echinocereus rigidissimus* [Fig.40 & Fig.41]; we appreciated the variability of spination and the large showy flowers. More 'hedgehogs' followed including *Echinocereus* '*rhyolithensis*' in New Mexico followed by a very hurried exit from the locality in a dust storm. Then a real rarity, a large *Echinocereus viridiflorus* was captured in flower. A new taxon found recently at Badger Springs Trail is the hexaploid (2n=66) *Echinocereus yavapaiensis* [Fig.42]. This polyploid grows into big bushy plants that neatly reminded us of a theme from Roy's talk the previous day.

Peter gave the other succulent enthusiasts a treat with images of very fine *Agave utahensis* ssp. *eborispina* and var. nevadensis in Nevada, which were followed by three *Echinocereus triglochidiatus* ssp. *mojavensis* plants with spines, twisted spines and bristles! Peter's programme sign-off was: "So there was nothing to fear after all."

The session immediately before lunch featured a second Peruvian exploration by Paul Hoxey. In contrast to the coastal Lomas habitats of Friday evening we were now to venture inland to see the highlights of a visit Paul made earlier in the year. He travelled from Arequipa, east to Puno, north-west to Cusco (below Macchu Pichu), thence to Quillabamba in the Urubamba valley where few people visit.

The first interesting sight was the 7m (23ft) tall inflorescences of *Puya raimondii* standing sentinel on the altiplano at 4000m (13100ft)

Photo: P. Berresford

Fig. 41 *Echinocereus rigidissimus* North San Pedro River Road, Pima Co., Arizona, 1248m.

[Fig.43]. We saw *Lobivia maximiliana* and *L. pentlandii* growing sympatrically: "I am sure Martin will put me right if I get the names wrong." The resident wag commented: "I am sure he will." However, Martin agreed with the identities; the two species exhibit different pollination syndromes and consequently do not hybridise. There is some habitat destruction in the altiplano through mining; villages develop into towns putting pressure on the flora. *Punotia lagopus* grows in hummocks close to the ground up to 5000m (16400ft) altitude; Paul showed stem-tip sections and commented they are quite chlorotic with the chlorophyll-containing tissue strongly concentrated near the tips.

Travelling down the steep valleys on the east face of the Andes to Cuyocuyo Paul highlighted some extensive terracing; the Incas were impressive cultivators in times past. *Lymanbensonia* (aka *Pfeiffera*) *micrantha* [Fig.44] is known only from one valley near Cuyocuyo. Botanically it is an interesting relict that

Photo: P. Berresford

Fig. 42 *Echinocereus yavapaiensis* Badger Springs Trail,Yavapai Co., Arizona 929m.

scrambles over rocks at 2500m (8200ft) altitude. Paul commented: "I have to admit that some of the other plants are more interesting than the cacti." There were many nice bromeliads and orchids. Paul has found a new *Echinopsis*/*Trichocereus*/*Soehrensia* in three valleys, which grows up to 2m (6ft) tall and bears enormous white flowers. Graham had seedlings for sale (PH722) so some lucky purchasers had struck gold. There were also plants of *Echinopsis serpentina* (described by Martin from a population in Bolivia), some brightly flowered shrubs, orchids and a *Tillandsia* with leaves 50cm (18") long.

Then we traversed the altiplano with views of a glacial lake to reach Quillabamba, a nice town in the Urubamba valley. Pendant *Rhipsalis* and scandent *Cereus* were growing amongst the trees and bushes. Paul found *Samaipaticereus*, which grows in Bolivia; it is now identified in Peru 1600km (1000miles) disjunct, but both sites are on the north-eastern fringe of the Andes at similar altitude. Going lower Paul reached dry valleys with warmer climate eventually becoming tropical. Returning to 3000m (9800ft) Paul checked on some promising rocks and found colourful *Tillandsia*, a succulent *Pilea* and *Echeveria* '*decumbens*' [Fig.45]: "It's the nearest habitat so I'm calling it '*decumbens*'." But John Pilbeam retorted: "You're wrong; it might well be a new species."

Back over the altiplano seeing icicles on a fountain at midday, we were taken to see the upper reaches of the Rio Tambo at 3000m (9800ft). There Paul found attractive plants of

Photo: P. Hoxey

Fig. 43 A population of the giant bromeliad *Puya raimondii* PH1002.04 Between Huatasani and Putina, Puno, 4000m

Neowerdermannia chilensis. He also sought a plant pictured in Quepo #24 as a *Cumulopuntia* species with long juvenile leaves. Could it be *Austrocylindropuntia verschaffeltii*? Paul found the plant and the DNA showed it is a *Tephrocactus,* which is a new genus for Peru. So we had seen examples of two new genera in the Peruvian flora. Paul's final image showed spots of light either side of the sun, an effect termed 'parhelion' or 'sundog', which is caused by the refraction of the sunlight by vertically aligned hexagonal ice crystals. More deserved applause for a highly respected Explorer.

Paul Hoxey remained on his feet and gave a short 'Overview of Molecular Studies' to replace a speaker unable to attend. He had assembled details of many studies and the conclusions drawn to date: "Together they indicate a need to move towards a re-assessment of the entire cactus family."

He began his summary with the origin of

Photo: P. Hoxey

Fig. 44 *Lymanbensonia micrantha* PH1004.01. Cuyocuyo, Puno, 3200m

Photo: P. Hoxey

Fig. 45 Perhaps *Echeveria decumbens*. John Pilbeam doesn't agree. PH1025.02 Lares valley, Cusco, 3030m.

Photo: P. Corman

Fig. 46 *Eulychnia chorosensis*, Chile, Coquimbo, Punta Choros, 50m.

the family roughly 35 million years ago with *Pereskia* the basal member, then worked through various groups identifying potentially reasonable conclusions for which the statistical evidence is strong. These were contrasted with the more uncertain areas where 'more work is needed', including the 'Trichocerei' for which Graham has invited Boris Schlumpberger next year: "To tell us all about it." Some groupings look reasonable from their geography and generic uniqueness, whereas other groups are very uncertain. Undoubtedly some genera will disappear, whereas others may make a 'comeback'. Graham thanked Paul for stepping in at very short notice with a thought-provoking presentation that will, no doubt, be revisited in future.

Graham introduced Philippe Corman, who was to complete our memorable weekend with his programme 'Adventures in Chile – *Copiapoa* country'; some tales of a November visit. Graham commented: "I look forward to seeing God's own cactus." After colourful examples of desert wildflowers Philippe featured *Eulychnia chorosensis* [Fig.46], described by Paul Klaassen in 2011 [Ref.5], followed by a

Photo: P. Corman

Fig. 47 *Copiapoa laui* Chile, Antofagasta, Quebrada Guanillos, 200m.

procession of *Copiapoa* plants. In the Quebrada de Castile we marvelled at a cristate *Copiapoa cinerascens*, *C. columna-alba*, plus lots of wildflowers in alpine/desert landscapes. *C. laui* [Fig.47] was quite cryptic in gravel close to the substrate surface in contrast to large clumps of other *Copiapoa* species such as *C. columna-alba* and *C. longistaminea* in otherwise empty, rocky landscapes.

Philippe showed some areas near Taltal where habits have been lost to mining activities, before he visited old specimens of *Eulychnia taltalensis*. More plants of *Copiapoa* and *Eriosyce* were interspersed with *Cumulopuntia*, bulbs, wildflowers and dramatic views of the habitat. Near Paposo we saw a carpet of *Nolana* with cobalt-blue flowers surrounding and contrasting with *Echinopsis deserticola* and its large white flowers. Philippe commented: "100m further inland there was no vegetation." Near Morro Moreno many of the *Copiapoa atacamensis* were dead or dying in harsh conditions, yet higher up the slopes the plants were in better condition, as were some *Eriosyce recondita*. At El Cobre north of Paposo it was also very dry and *Eulychnia* and *Copiapoa solaris* were suffering, as was an ex-Explorer [Fig.48].

As Philippe drew towards the end of his 'Copiapoa Tour' there was a round of applause for Roger Ferryman and fine clumps of *C. ahremephiana* [fig.49] in the Quebrada Botija. More species followed, including *Copiapoa variispinata*, *C. solaris* and *C. atacamensis*. Philippe noted that seeds from plants at higher altitudes seems to germinate better and

Photo: P. Corman

Fig. 48 An ex-Explorer? Scarecrow Antofagasta, Chile, coast north of Botija.

Photo: P. Corman

Fig. 49 *Copiapoa ahremephiana* Antofagasta, Chile, entrance of Quebrada Botija.

wondered why; however, no ideas were forthcoming. He completed his wonderful programme with an image of massive clumps of *Copiapoa atacamensis* in its challenging habitat – a fine memory of a copiapoa-rich programme.

Graham thanked Philippe and all the speakers; then bade us farewell. The sixteen presentations had featured tales of intrepid travel, acute observation, science and scholarship. We were invited to re-assemble on the third weekend of September 2014 to celebrate the tenth Explorers Club weekend, no doubt in fine style. Perhaps the explorer who left his lower legs in the grounds of the botanic garden [Fig.50] [Ref.6] will have been re-grafted on to them before then?

I thank the Explorers who agreed to the use of the images I selected from their programmes to illustrate this report. Their exemplary photographic skills coupled with good projection technology allowed the audience to appreciate the finer points of more than two thousand, six hundred views of plants, wildlife, people and environments. I have been privileged to review them all and select fewer than two per cent to convey to you, the reader, something of their artistry and significance to conveying information to the assembled company of Explorers.

Roland Tebbenham

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6. Liane Lang's bronze casting entitled 'Felled' ('Sculpture in the Garden' exhibition, 2013)

I hope that readers of this account will get a feeling of the informal and relaxed atmosphere of our meeting. The tenth weekend is planned for September 19th - 21st 2014. Regular attendees will be given first refusal on the 55 places available, but if you would like to attend, please let me know and I will offer any vacancies on a first come, first served basis.

GC

Photo: R. Tebbenham

Fig. 50 The Lost Explorer?

Nicaraguan Field Notes (1)
Chaguitillo, 2013--Days 1 & 2

Leland Smith starts his account of his adventures in Nicaragua, a country we rarely hear about.

Pictures by the author

Fig. 1 *Opuntia guatamalensis*

Fig. 2 *Opuntia guatamalensis*

This is a first in a series of articles on the travels of an amateur naturalist and long-time cactus enthusiast, mostly in the northern mountains of Nicaraguan, an area with a mixture of ecosystems including tropical dry forest, tropical savanna, and cloud forest. I will use the scientific names used in the articles by Dr. Hunt in the 26th and 28th issues of *Cactaceae Systematics Initiatives* but cross reference with older names still in common use where this is needed for clarity. I will illustrate my account with photos as I go and more photos are available on my personal webpage. Some footnotes and references may be in Spanish as they are the only sources available.

On this first trip I had some errands to run south of town so I decided to continue on to Chaguitillo, a small town 4km east of Sebaco, Matagalpa. It is home to a small Precolombian museum which manages two archeological sites nearby, a Deer Sanctuary (el Santuario de Los Venados) and 'Monkey Falls' (el Salto del Altar de los Micos). These two rugged canyons have substantial cactus populations and public access.

In early November the annual rainy season is rolling to a close with maximum greenery, insects, and more sun than clouds. I started the trip by going through Chaguitillo on the main road and continuing about 8km to a site where I have found plants of *Opuntia guatemalensis* with some peculiar characteristics. *O. guatemalensis* is characterised by variation in spination, shape and size of cladodes, and growth habit, which varies from sprawling to shrubby to hanging. Fig. 1 shows a plant in the same area that is quite typical of *O. guatemalensis*.

The particular population in question, which I refer to as the prostrate form, has small cladodes with few and small spines, and grows in long strings with little branching as shown in site photo [Fig.2]. I took a cutting of this plant several years ago and grew it up to flowering size to see if these traits were environmental or genetic. The plant maintained this form of growth and the flower was typical for the features of the species but was quite a bit larger than normal, being about 3 inches in diameter. One priority of this trip was to revisit this site, take another cutting for verification, and see if I could find any more occurrences of this plant. Travelling another 7km down the road I found two similar plants and took cuttings to be grown out with their site locations noted.

Nearby to the first stop are some specimens

Fig. 3 *Opuntia decumbens*

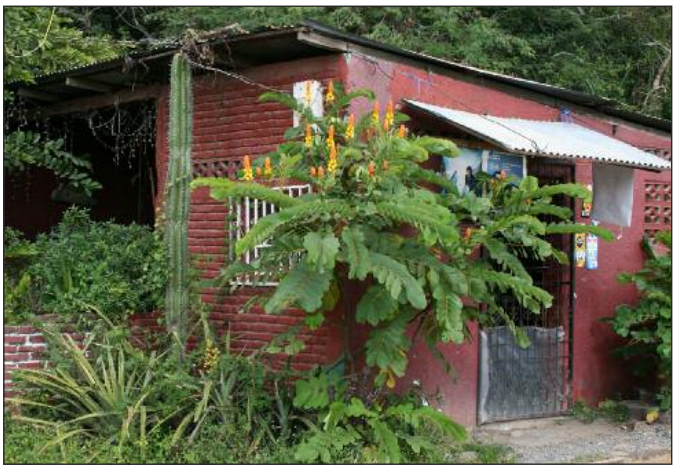

Fig. 5 *Pachycereus aragonii* (*Stenocereus eichlamii*)

Fig. 4 *Nopalea lutea*

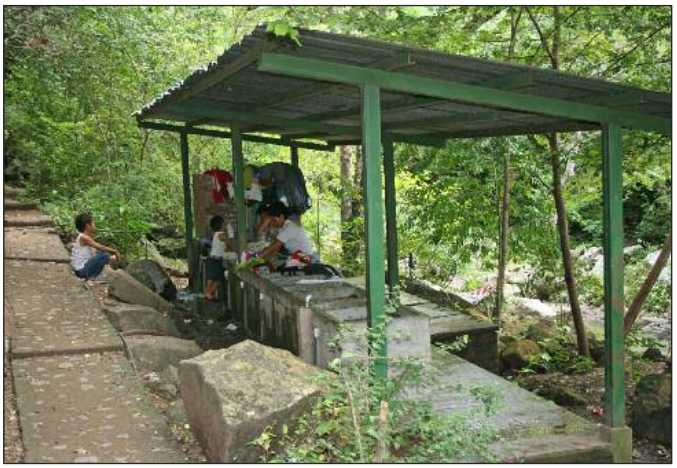

Fig. 6 Clothes washing station

of *O. decumbens* (Fig.3). Key indicators for this plant are its low clumping growth pattern, roundish thick cladodes, purple markings by the areoles, and the thick groups of yellow glochids.

At this site and one other in Leon, I found plants that looked like *O. guatemalensis* in shape but that had the purple markings characteristic of *O. decumbens*, which brings up the possibility of chance hybridization of species with overlapping ranges. The one cutting of this I took grew but lost its purple colour in the first year and has not yet flowered. As I find more examples of this I will take more cuttings.

There was not much else on this road, although I did see one roadrunner. Unlike the roadrunners of urban Arizona, this one did not stop to have his picture taken. I did see [Fig.4] one large *Nopalea lutea* growing within another tree that looks like an acacia. There may be a nurse tree phenomena here, but I doubt that the cactus will contribute to the death of the tree. In the rainy season the tree will make its growth and in the dry season the cactus will take over. They appear to have been co-existing for quite some time. On this road I saw little else of the cactus family, but in the lush growth of the late rainy season cactus often are hidden by annual herbaceous growth.

Getting back to town I stopped at a local corner store for a 'Deluxe Field Lunch', one ice cream cone. In the heat and humidity of midday I have no desire to eat a big meal. I do carry a small bag of trail mix in my daypack, just in case. Across the street [Fig.5] was a specimen of *Pachycereus aragonii* (*Stenocereus eichlamii*) showing that this species growing in a sheltered location may remain a single column to considerable height. In nature, so far I have found only the young plants in columnar form. According to one farmer I talked to a few years ago, wind damage is a big player in this. Fallen stems root well from the pieces.

Fig. 7 *Acanthocereus tetragonus*

Fig. 9 Petroglyphs of monkeys and deer

Fig. 8 Waterfall

Next I went to the parking area for Deer Refuge, passing the community clothes washing station that has all-year water piped in from upstream [Fig.6]. Like many reserves in Nicaragua, this one is mostly private property with multi-use management and some public features built in. Passing a thicket of *Acanthocereus tetragonus* [Fig.7] in the shade of small trees I worked my way up to a very special spot. There is a pool of water at the base of a small waterfall [Fig.8] and to the right of it is a group of petroglyphs depicting deer and monkeys [Fig.9]. It seems to be the trend in Nicaragua to carefully paint the petroglyphs to make them more visible to the public and encourage interest, an act that would be an anathema to many first world archeologists. Sadly, these monkeys and deer are long gone from the area, but they were obviously important to the pre-Hispanic inhabitants.

At this point, the trail ends for me. Once in the dry season I crawled up the rock face to get around the falls, but this time of year it is too slippery and I have found easier ways to get upstream. While sitting by the falls for a break, I noticed almost directly above me on the cliff were a number of split leaf *Philodendron*, which I associate with epiphyllums because they seem to like the same micro habitat. I don't really expect epiphyllums at this elevation but I will make another addition to the list of things to explore up-canyon.

I went back down to Sebaco, found a hotel and showered. Later I went for a ride to Old Sebaco, where across from the old church I found a living fence of *Pachycereus* [Fig.10].

The next morning I got up fairly early to explore in the comparative cool of the morning. I started up the canyon and turned left on a side trail that I had found on a previous trip to a dirt road that leads to some *Pachycereus* and *Mammillaria* growing on a rocky hillside with a sunny exposure [Fig.11]. Some small examples of *O. decumbens* and *Peniocereus hirschtianus* were found along the way

Fig.12 shows a mature clump of *Mammillaria karwinskiana* with flower buds which look identical to flowers I saw on similar plants in Somoto Canyon several years ago. The flowers were light yellow with what I would call reddish-brown longitudinal stripes. A quick study of this plant's spines in Fig.13 seems to show 1 central spine with 6 or 7 radial spines. The spines are mostly white with some dark or dark tipped. Wool is present and there is one red fruit visible. If *M. voburnensis* (and/or *M. echlamii*) is now considered a subspecies of *M. karwinskiana*, this should provide

Fig. 10 *Pachycereus aragonii* (*Stenocereus eichlamii*) used as a fence

Fig. 11 *Pachycereus aragonii* (*Stenocereus eichlamii*)

documentation of what exists at this site.

I climbed down from the hill and stopped to introduce myself to a local farmer working in the field. He said the cactus here were well known as a curiosity but not used for anything. He said birds nest in the holes in the *Pachycereus* and that up the canyon is another 'round cactus with red flowers' which gets added to my to-do list. I followed the road down for a while noting that it was too eroded for a 2 wheel drive vehicle and when it was obvious that it was not heading back to the village and the parking lot I doubled back and went back by the same trail I entered on.

I hope to get back to this area in January when the seasonal brush and many of the mosquitoes will have disappeared and the weather will be a little cooler. I want to document the Mammillarias because in the other canyon there are Mammillarias with a different appearance, as well as try to find the cactus mentioned by the young farmer. I also

Fig. 12 *Mammillaria karwinskiana*

Fig. 13 *Mammillaria karwinskiana*

want better access to a large number of *Pachycereus* to do spine and rib counts.

Leland Smith

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Travel with the cactus expert (9)

Zlatko Janeba continues his adventures in the US. The classification of the genus *Sclerocactus* is indeed complicated but they are certainly beautiful and interesting plants.

Photographs by the author

Fig.1 Rock formations along the U.S. 160 in northern Arizona.

After a continental breakfast in Best Western Inn we headed west along the U.S. 160 towards the state of New Mexico. Landscape there seemed to be very dry but beautiful and photogenic [Fig. 1]. We did our first stop of the day (May 5th, 2006) while still in Arizona, since I had noticed sclerocacti just next to the road, while driving. There, near the milestone 461 at elevation of some 1600 m, *Sclerocactus parviflorus* was quite common and just started to flower [Fig. 2 and 3]. Nevertheless, there were many dead plants and mummies around, especially behind the fence where they evidently were damaged by the cattle. We also saw *Opuntia polyacantha* there. At 9 a.m. it was quite windy with the air temperature about 26°C, but the temperature at the soil surface had already reached 35°C.

The next place we visited was where Josef had seen cacti more then 20 years earlier. There, a dirt road started some 3 miles south of Shiprock. We took it and drove less than 1 mile eastwards to our final destination near low barren hills at an elevation of some 1550m, typical clay badlands [Fig. 4]. *Sclerocactus mesae-verdae*, better known as *Coloradoa mesae-verdae*, was supposed to grow there commonly but, after much effort, I only found a single small *Sclerocactus* seedling [Fig.5] and Josef found none. Later we spoke to Ken Heil, an expert on local flora, and he told us there were no living plants at that location anymore. All

Fig.2 *Sclerocactus parviflorus* is about to start its flowering season in northern Arizona. In the top of the plant there can be found several seeds from the previous year.

Mesa Verde fishhook cacti were gone, he said. So actually, we were quite lucky to find one seedling but I suppose there should be plenty of seeds (and maybe copious seedlings, but hard to find) in the soil waiting for a humid year to sprout in numbers and revive the cactus population again. As we could see in a while again, the conditions at that place were

Fig.3 A habitat picture with the same specimen of *Sclerocactus parviflorus* as in Fig.2, northern Arizona.

Fig.4 Typical inhospitable habitat of *Sclerocactus mesae-verdae* near Shiprock, New Mexico. Shiprock is an isolated volcanic rock hill some 480m tall which is of great religious and historical significance to the Navajo People. It can be seen at the top left corner of the picture.

Fig. 5 The single *Sclerocactus mesae-verdae* seedling we managed to find in the area near Shiprock in 2006, New Mexico. The seedling seemed to be in very good shape and in full growth.

Fig. 6 Mummies of *Sclerocactus parviflorus* in the same area near Shiprock, New Mexico.

Fig. 7 *Sclerocactus cloverae* ssp. *brackii* in its habitat near Bloomfield, New Mexico.

really very harsh. I encountered some 10 mummies of another *Sclerocactus* species, probably *S. parviflorus*. All of them completely dried up by extreme local conditions as there were no other signs of damage to them. We also observed several parched joints of *Opuntia*

Fig. 8 Josef Busek taking photo of *Sclerocactus cloverae* ssp. *brackii* near Bloomfield, New Mexico.

polyacantha. It was very windy with a comfortable air temperature of 23-24°C at about 1 p.m. and the soil was about 10°C warmer (33°C).

Our other stop was just south of Bloomfield (NM) where we studied nice population of *Sclerocactus cloverae* ssp. *brackii* [Fig. 7]. This smaller form of *Sclerocactus* has several names. Firstly, it was called *Sclerocactus gradyi* after its discoverer Mr. Grady (the name was not validly published), later it was called *S. brackii* after Steven Brack of Belen (Mesa Garden), and it was described finally as a subspecies of *Sclerocactus cloverae*. Both names *S. cloverae* and *S. cloverae* ssp. *brackii* were described by Heil and Porter in 1994 (that time as *S. cloveriae*) and they are supposed to be closely related to *S. whipplei*, as well as to *S. parviflorus*. For its large flowers (relatively, compared to a smaller plants), I would personally suggest it to be more closely related to *S. parviflorus*. The flowers we saw near Bloomfield were quite uniform in size, about 5cm in diameter when

fully open [Fig.10], thus much bigger than in the Hochstätter's description (1.5 - 3.5cm).

The New Cactus Lexicon (2006) accepted only *S. whipplei* (distributed in Arizona and Utah) and its ssp. *heilii* (from New Mexico), with *S. cloverae* being only a synonym of the latter (there is no mention of the name *brackii*). On the other hand, F. Hochstätter (The Genus Sclerocactus, 2005) originally recognized 3 taxa within *S. whipplei*, namely ssp. *whipplei*, ssp. *busekii* (= *S. sileri*), and subvar. *aztecia* (where he included both *S. cloverae* and its ssp. *brackii* as synonyms). In 2007 (Succulenta 86(2): 90) he made a new combination as *Sclerocactus whipplei* ssp. *cloverae*, where the spelling *cloveriae* was changed to *cloverae*, as advised by Roy Mottram. So there is enough confusion among these plants but, whatever name you apply in your collection, and whether you consider them as separate taxon or not, *S. cloverae* ssp. *brackii* is an attractive cactus flowering at quite an early age with a beautiful large flower.

The habitat south of Bloomfield is formed by barren gravelly or sandy clay hills of the Nacimiento formation with scattered juniper trees at an elevation of 1700m [Fig. 8]. We saw some 10 plants, most of them in flower [Fig. 9 & 10]. The largest plants were about 7-8cm in diameter, but usually smaller. They preferred to grow on the tops of low hills or their western slopes. We also encountered *Coryphantha vivipara*, *Opuntia polyacantha*, *O. whipplei*, and a large aggressive bullsnake, a non-venomous colubrid snake from the genus *Pituophis* [Fig. 12]. A big part of the habitat was completely destroyed, bulldozed and evidently ready for the construction of new houses or something [Fig. 11]. This particular place seems to have its doomsday coming quickly, being very close to the spreading town of Bloomfield. Fortunately, this splendid *Sclerocactus* form is reported to be known from several other locations nearby and, hopefully, these places are further from the city limits.

We also wanted to see a population of scleros growing near Aztec Ruins National Monument (*Sclerocactus whipplei* var. *heilii*) but it was already too late as they closed the

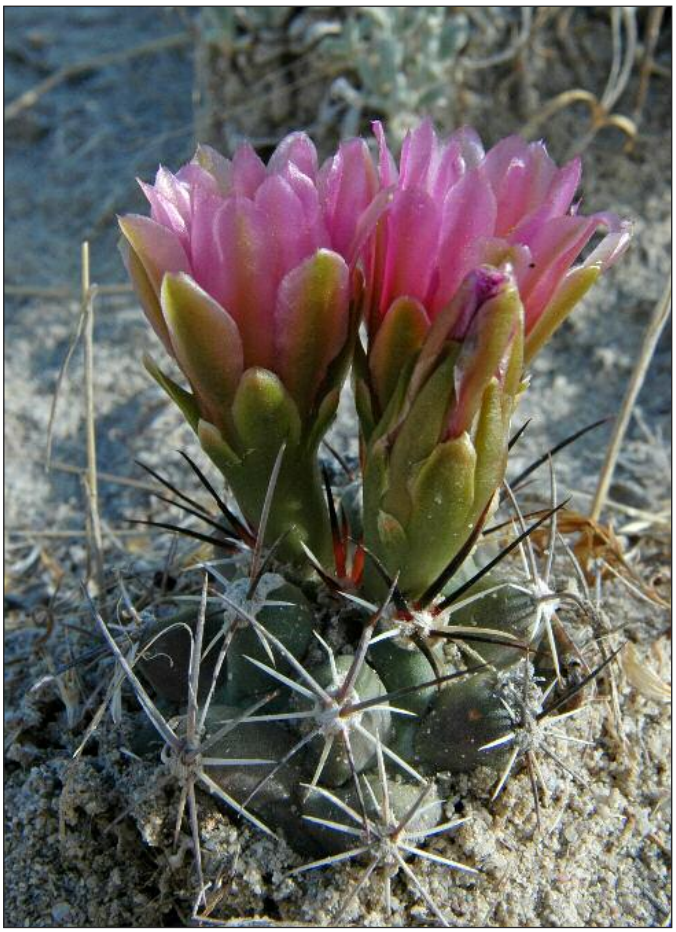

Fig. 9 A flowering specimen of *Sclerocactus cloverae* ssp. *brackii* near Bloomfield, New Mexico. The flowers are partially closed in the late afternoon and thus they appear to be more tubular in shape.

Fig. 10 *Sclerocactus cloverae* ssp. *brackii* with almost fully open flower, Bloomfield, New Mexico. The sap beetles (Nitidulidae) often feed on the beautiful flowers of many cacti.

touristic site at 5p.m. Thus, we found a Motel 6 back in Farmington and spent the evening with numerous attempts to reach Mr. Grady and Mr. Heil by phone but without any success. Josef knew both of them personally and it would have been very interesting to

Fig. 11 The bulldozed habitat of *Sclerocactus cloverae* ssp. *brackii* near Bloomfield, New Mexico

meet them. However, we had just found out that Mr. Grady had died not long ago, while nobody was answering my call at the Heil's. So I only left a short message with my cell phone contact at their answering device and we called it a night.

Fig. 12 The light colour variation of the bullsnake, *Pituophis catenifer* ssp. *sayi*, near Bloomfield. It is a North American snake from the family Colubridae. It is a heavy-bodied but small-headed snake that may reach 2.5m in length. It feeds mainly on rodents but also on birds, their eggs, and lizards.

Note: I do not think the names *S. cloverae* ssp. *brackii* or *S. cloverae* have to be necessarily kept for science. There are more studies needed. Nevertheless, I used the name *S. cloverae* ssp. *brackii* in my story to make clear I was writing about the population of sclerocacti where all reproductive individuals maintain juvenile morphology for an extended period of time.

Zlatko Janeba

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The Type Locality of Melocactus paucispinus

It is quite difficult to identify some *Melocactus* species because many look alike, but *M. paucispinus* is one of the most distinct and a truly beautiful plant. Graham Charles tells us about it and its type locality. **Photographs by the author**

Fig. 1 The type locality of *Melocactus paucispinus* west of Seabra, Bahia, Brazil

Many Brazilian cacti have a strong habitat preference and are only found on one type of substrate. *Melocactus paucispinus* is an example of a species which only grows on white quarzite sand. Patches of this sand occur in the state of Bahia, Brazil, and one such place is next to a main road near Seabra.

The discovery of such a beautiful *Melocactus* at this place is said to be down to a lucky stop since the plant has a very limited distribution here. For some time, *M. paucispinus* was thought to only grow at its type locality and because there are not many plants there, it was considered to be endangered.

However, the species has now been found to be much more widespread and more populations have been discovered, also in white quarzite sand. See the *New Cactus Lexicon* picture 174.3 which was taken at a large population near Morro do Chapéu.

The quarzite sand is a very specific habitat and is the finding place for many Brazilian cactus species. Although the surface is white, because it is washed by rain, below the surface decaying organic matter makes the sand dark and very acidic, a clue to successful cultivation.

Perhaps because of its limited distribution, *Melocactus paucispinus* was not described until

Fig. 2 *Melocactus paucispinus* GC1013.03 at the type locality west of Seabra, Bahia, Brazil

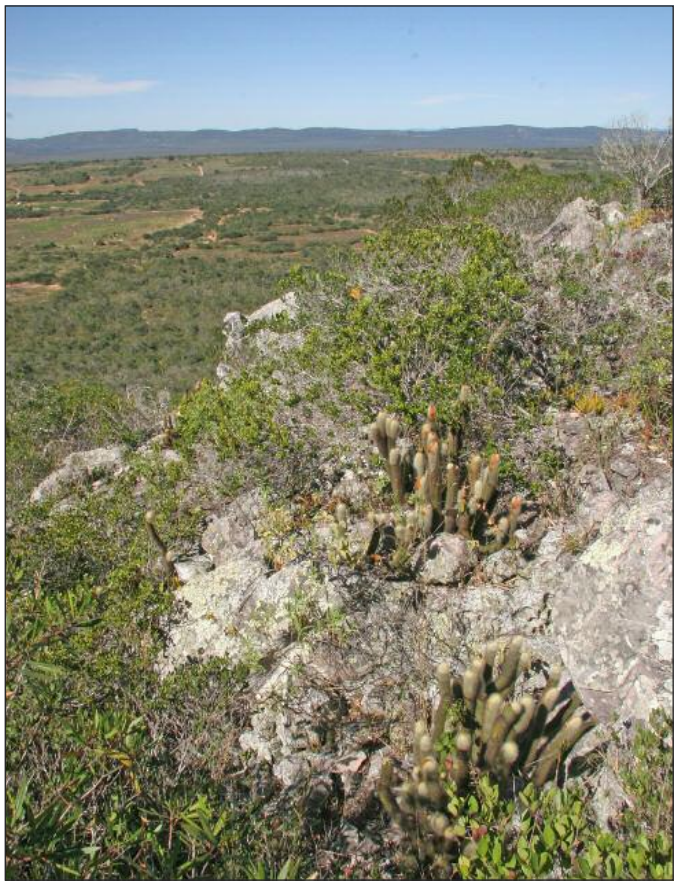

Fig. 3 *Micranthocereus streckeri* GC1013.04 at its type locality on a hill west of Seabra, Bahia, Brazil

1983. It is probable that neither Buining nor Horst saw this plant, else surely they would have given it a name.

It was described by Gerhard Heimen and Rainer Paul in *Kakteen und andere Sukkulenten* 34(10):227-229, one of the illustrations being a dramatic line drawing by Carla Wolters. The plant was discovered on 21st August 1981 when the authors were travelling with Hovens, Strecker and van Heek. Until they found a plant with a cephalium, they thought they had found a *Discocactus*, some species of which also grow in white quarzite sand.

Three years later, also in KuaS, van Heek and van Kriekinge described a new species of *Micranthocereus* from the nearby hill. They had been travelling in July 1985 with Köpper, Heimen and Strecker. They were revisiting places where some of them had been before in 1981. When they stopped at the locality of *M. paucispinus*, they found a new *Micranthocereus* which they only identified because it was in flower. It was named *Micranthocereus streckeri* and is one of the most distinct species in the

Fig. 4 *Melocactus paucispinus* GC1013.03 at the type locality west of Seabra, Bahia, Brazil

genus. The small bright pink flowers are similar to those of the type species, *M. polyanthus,* but the plant has a true lateral cephalium in a groove, unlike the bristly zone which the other small-flowered species have.

Also growing on the hill is *Micranthocereus* (*Austrocephalocereus*) *purpureus*, a widespread night-flowering, bat-pollinated species which also has a cephalium. It has been suggested (Machado 2008) that *M. streckeri* is a natural hybrid between *M. purpureus* and *M. polyanthus,* an idea supported by this hill being its only known habitat.

Cultivating *Micranthocereus streckeri* is the same as other species of the genus. They need an acid medium with as much warmth and sunshine as possible with plenty of water when growing. However, *M. streckeri* needs to be larger than the other small-flowered species before it will bloom and it the only one I have yet to flower.

GC

Fig. 5 *Micranthocereus streckeri* GC1013.04 at its type locality on a hill west of Seabra, Bahia, Brazil

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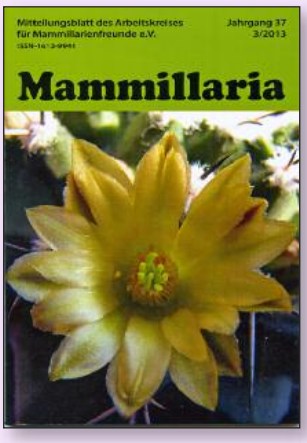

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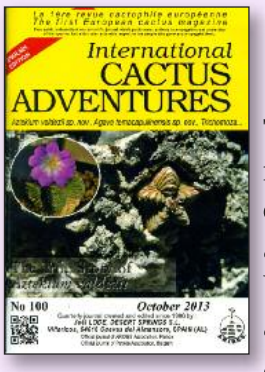

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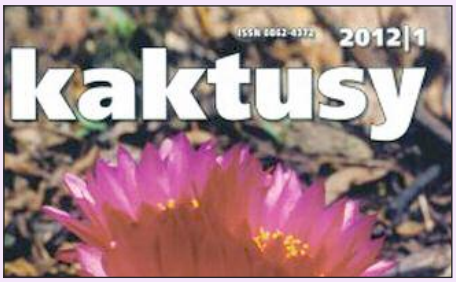

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P.O. Box 72, Belen, New Mexico, USA

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http://www.mesagarden.com

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Collected in habitat or in our collection.
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www.cactusalvaralto.cl

If you are in Chile, you are welcome to visit our collection by appointment.

Ingrid Schaub & Ricardo Keim, Olmué, Chile
email: ricardokeim@gmail.com

Seeds from Ralf Hillmann

New seed list available in December.
All seeds are from habitat source or pollinated in my own collection.
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For more information please contact
sulcohilli@gmx.ch

A comprehensive list of seeds from the Czech Republic:
http://www.cactus-hobby.eu

An extensive seed list from Prochazka, strong on Mexican cacti:
http://www.kaktusy.com

The new offer of the seeds (mostly with locality data) is available from Jan Jecminek on his website:
www.cactus-succulent.com

The famous Uhlig nursery in Germany has a large seed list of cacti and succulents:
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No lists but we sell on Ebay.

Website: http://www.tonyironscacti.co.uk

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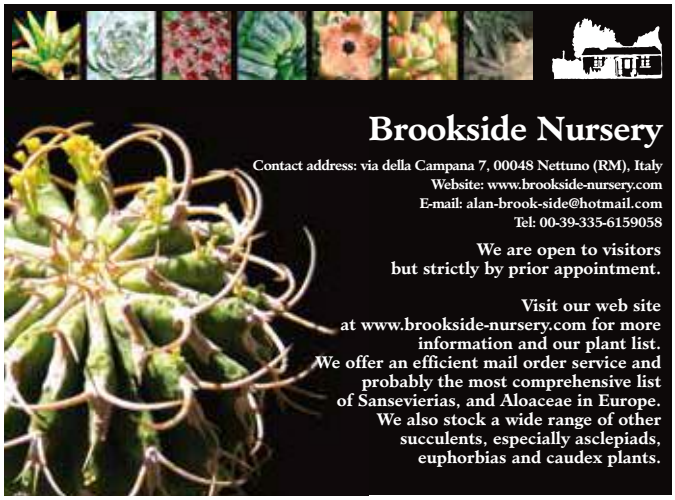

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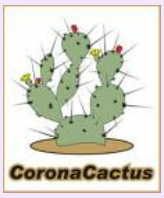

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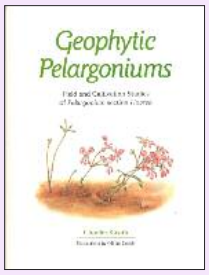

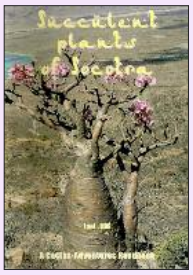

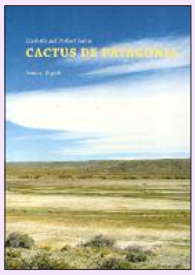

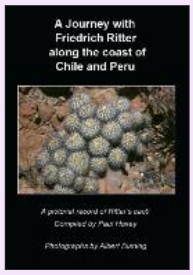

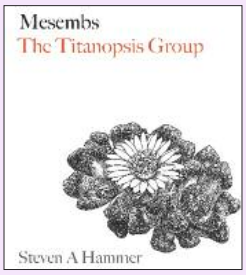

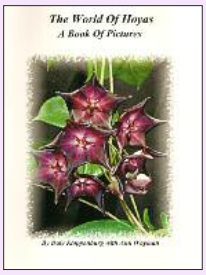

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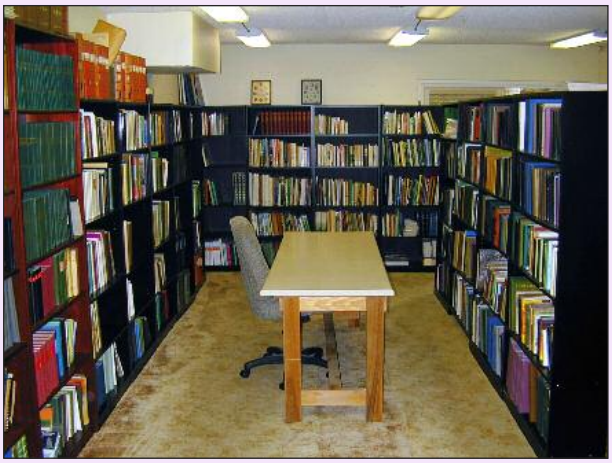

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