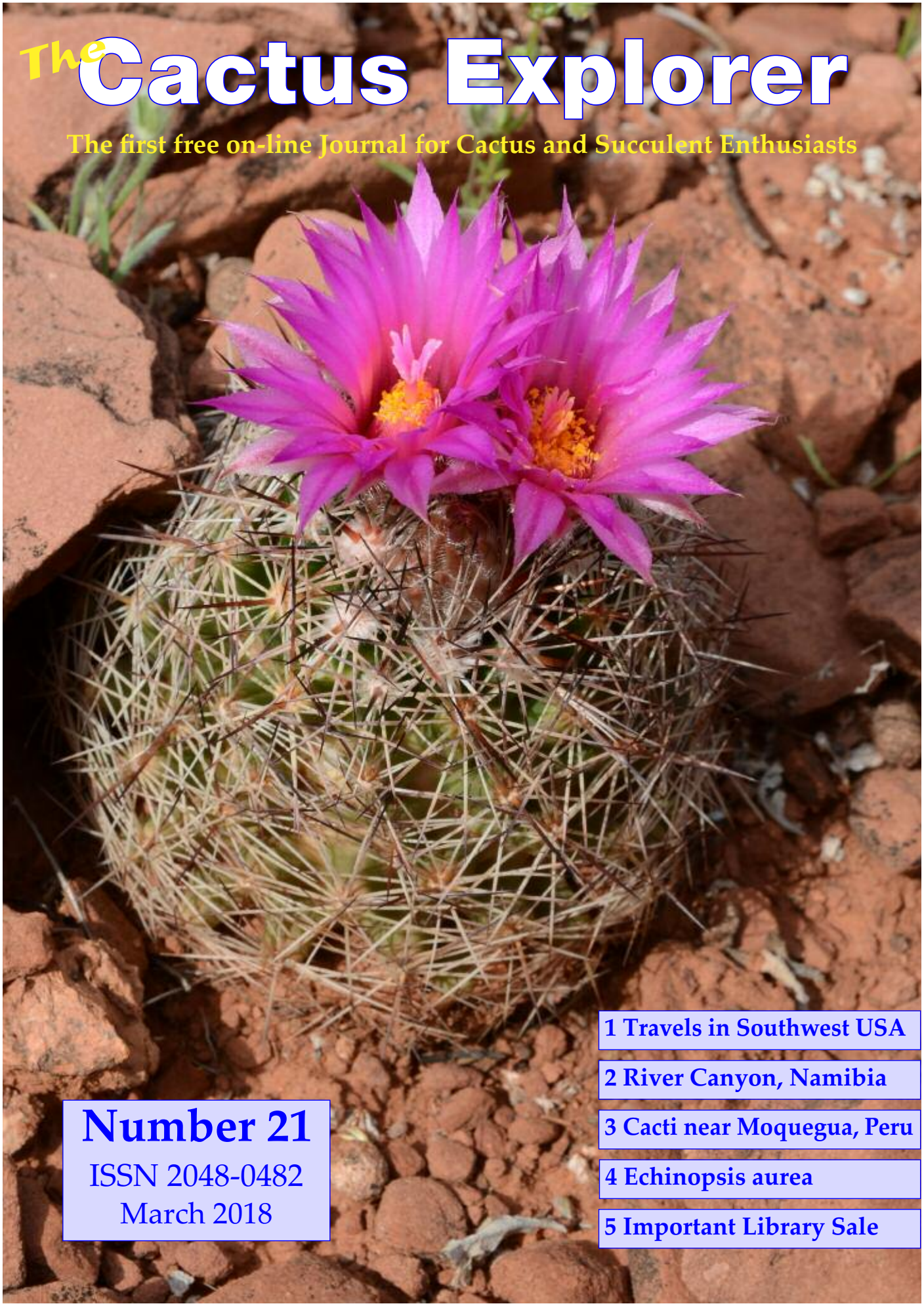
The Cactus Explorer

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



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In this Edition

Cover Picture: *Escobaria vivipara* near Sedona, Arizona. Photograph by Denis Diagre.
See his article about exploring for cacti in the American southwest on page 32.

The No.1 source for on-line information about cacti and succulents is http://www.cactus-mall.com
The best on-line library of cactus and succulent literature can be found at:
https://www.cactuspro.com/biblio/en:accueil

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 quickly and the copy deadline is just a few days before the publication date. There will usually be three issues per year, published when sufficient material is available. 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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This issue published on
6 March 2018

Introduction

The Best Time of the Year?

The winter had not been extreme until this last week when we had lots of snow and days of cold temperatures. As usual at this time, I have had enough of winter and look forward to waking up my cacti and succulents in the glasshouse.

The last few months have been the chance to get on with activities that get left during the busy growing season. My priority has been to get on with my book about *Matucana* and *Oroya* that I have been working on for some time.

My objective has been to see all the species in habitat and get digital pictures of them in flower. This has proved to be quite difficult because the flowering time of matucanas is rather unpredictable and appears to depend on the rainfall.

I felt fairly sure that *M. haynei* flowered in the Peruvian autumn and winter so I had planned to visit last April. However, due to an El Niño event, the summer rains had been destructive and continued later than usual, resulting in damaged roads forcing me to postpone my visit. So, I plan to go this year and give myself the chance to get the last few pictures I need.

The last few months have seen the passing of a number of prominent people in our hobby, most of whom I knew personally, so I report their loss with a particularly heavy heart. You can find short obituaries to some of them on page 9. As I write this I hear that Lee Miller has died. Lee was Secretary of the American Society and I travelled with him on the two South American CSSA trips for which I acted as a botanical guide. He shared my love of books so we we had some interesting chats after our days in the field.

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

As we look forward to the longer, warmer days, it is time to buy seeds. You will find adverts for many suppliers starting on page 63, but remember that specialist societies are a good source of inexpensive seeds. Extensive lists are also offered by the major Societies and it is one of the benefits of joining your national society or one specialising in your favourite plants (see pages 58-62).

I am surprised that I don't get asked to include more free adverts from hobbyists in the pages of the **Cactus Explorer**. What happens to all the seed that is distributed? I would have expected that lots of spare seedlings are raised which could be sold or exchanged. And what about those species you have always wanted to own? You are most welcome to place an advert for your 'wants' as well.

This edition sees the offer of an extensive library for sale. You can download lists of what is available from the links on page 11 or at the foot of this page. This is a chance to get some rarely offered books and prints for your own cactus library. Many items of literature are extremely rare but, because the demand is relatively small, the prices are affordable. By coincidence, the Weinmann prints I talk about in the '*Succulents on a Plate*' feature on page 19 are both available for sale from this library!

Please consider contributing an article or something for one of the regular features to the next issue of the **Cactus Explorer**, which I hope to publish around September.

Have a good growing season,

Graham Charles

An important Library for Sale

There is more information on page 11 but here are the links to download the lists:

Excel list of Books, Trade catalogues, Journals, Separates and Post Cards.

MS Word illustrated list of separate plates.

News and Events

Oxford Branch
60th Anniversary Show
(with the Mammillaria Society Show)
28th July 2018 10.00 a.m to 3.30 p.m.
FREE ENTRY
Old Mill Hall, Grove, Wantage OX12 7LB

Plants for sale by
Craig Barber - William's Cactus
Stuart Riley - Plant Life
V Davies -Branch Plant Sales

Refreshments (Bacon rolls and salad lunch available on request)

Ample free car parking
Contact *Bill Darbon* 01993 881926/ 07760 119983

UK Cactus Marts in 2018

We like nothing better than buying plants so why not visit the plant sales being held in the UK. In date order:

Saturday April 7th 2018
South East Cactus Mart
Swalecliffe and Chestfield Community Centre
19, St Johns Rd, Swalecliffe, Kent CT5 2QU
Open 10am till 3 pm
Admission £1 (children free)
More info. from davejappleton@hotmail.com

Saturday May 5th 2018
The North West Cactus Mart
St. Thomas More Church Hall, Mainway, Alkrington, Manchester M24 1PP
Open 10.30 till 2.30 pm

Saturday 12th May 2018
19th Havering Cactus Mart
Open 10am to 3pm
North Romford Community Centre,
Clockhouse Lane, Romford, Essex, RM5 3QJ
At least 14 Leading Nurseries, Large Hall,
Refreshments and Snacks all day
Admission 50p (children free)

Saturday 30th June 2018
South West Cactus Mart
Open 9.30am to 1.30pm
Portishead Youth Centre,
1 Harbour Road,
Portishead, Bristol, BS20 7DD
Free Admission

Sunday October 14th 2018
Autumn South East Cactus Mart
Crockham Hill Village Hall ,
Church Lane, Edenbridge TN8 6RP.
Open 10am till 3 pm
Admission £1 (children free)
More info. from davejappleton@hotmail.com

The Event of 2018

You have had to wait 4 years for the

BCSS International Convention

so to be sure, book it now.

Friday 13th – Sunday 15th July 2018

Stamford Court Conference Suite at the University of Leicester, UK

SPEAKERS

Aymeric de Barmon (France)
"Cultivation of Cacti"

Philippe Corman (France)
"Cacti of Mendoza and San Juan, Argentina" & "The Habitats of Cacti"

John Ellis (UK)
"Photography of Succulents"

Adam Harrower (South Africa)
"The new cliff-dwelling succulent house at Kirstenbosch Gardens" & "The Knersvlakte, S. Africa"

Wolter ten Hoeve (Netherlands)
"Mexico with Mammillaria"

Joël Lodé (Spain)
"Taxonomy of the Cactaceae" & "Socotra"

Ricarda Riina (Venezuela/Spain)
"Succulent Euphorbias of the New World" & "New findings on the semi-succulent *Euphorbia balsamifera* group: from the Sahel to the borders of Africa and Macronesia."

Plant Sales and Displays
Full Residential Package **£260**
Non-Residential Package **£160**
Book on-line at
www.bcss.org.uk/convention.php

The BCSS Judges Course

Whether you want to qualify to be a show judge or not, this residential weekend is an enjoyable opportunity to learn more about plants, see friends and even buy plants at the car park sale.

This year the event will take place from Friday August 31st to Sunday September 2nd. The pleasant rural venue, Moulton Agricultural College, is situated near to Northampton.

The 2018 course will cost you £150 which includes all meals and accommodation.

Contact: Bill Darbon
Tel: 01993 881926/ 07760 119983.
email: william.darbon77@btinternet.com

Mammillaria Society

Annual Meeting at Wisley

4th May 2018 10.00 a.m to 4.00 p.m.
FREE ENTRY
The Hillside Centre, RHS Wisley

WHAT A GREAT DAY OUT!

You can get free admission to one of the best gardens in England which will look wonderful in May.

Plant displays and sales.

Two talks during the afternoon.

More information in the February 2018 Mammillaria Society journal

Huitzilopochtlia

There is a new edition of this *Mammillaria* newsletter available as a free download from the Cactus Explorers website

Greetings from Peru

I am sure that many readers will remember Natalia Calderón from Lima, Peru. She studied cacti for her botany degree at the Universidad Nacional Agraria La Molina and spent some time at Kew in 2003 while studying for her masters from the Open Univesity.

Her account of *Haageocereus* was later published in *Bradleya* 25 (2007). It reviewed the whole genus, provided distribution maps and featured Natalia's excellent drawings of the plants.

I was very pleased in 2003 to be able to travel with Natalia and Chris Pugh in Peru. We were impressed by her dedication to collecting and pressing specimes of *Haageocereus,* usually while we drank beer!

Natalia reads the **Cactus Explorer** and recently wrote to me to tell me about her young daughter Samantha who is already interested in succulents.

So, recently, when the *Cactus Adventures* journal sent me a children's book about the cacti of Peru with Spanish text and stickers, I sent it to Samantha and here you see her playing with it. Thank you Joël!

The best chance of protecting plants in the wild is if the local people value them. Encouraging children to take an interest in their botanical heritage must be a good thing to do. As far as I know, Peru is the only South American country to have an active cactus Society and they publish the journal *Quepo*. It is a wonderful county with generous, friendly people. GC

The Naturalist's Travel Page

https://thetravelingnaturalist.org

Our website has free-to-use online talks for your succulent society's meetings - from many locations around the world. We also have illustrated trip reports and summaries of South African succulent-rich guest farms. Also, a short course on field photography. We are available to help in natural history travel and tour planning.


KaktuS
2018
Kakteen aus aller Welt
8. Ausstellung mit Verkauf
Sa. 2. Juni
So. 3. Juni
tägl. ab 9 Uhr geöffnet
Sportzentrum Eugendorf
bei Salzburg
Raiffeisen
Meine Salzburger Bank


Einladung
zur Internoto tagung
vom 20. bis 22. April 2018
im Landgasthof Holznerwirt
in Eugendorf


British Cactus and Succulent Society
Sheffield Branch
Annual Show 2018
Sheffield Botanical Gardens
Saturday 2 June 12:00 noon to 5.00pm
and Sunday 3 June 10.00am to 4.00pm
FREE admission and plant sales
For more info contact Show Secretary on 01246 231109
or visit www.sheffield.bcss.org.uk
Registered Charity No. 290786
@Sheffieldbcss
@CactusSucculent
@BCSS_CactusWorld


Bristol Cactus Societies
Show and Exhibition of
CACTI & SUCCULENTS
Saturday 26th May 2018
10:30 am – 5:00 pm
AT FILTON COMMUNITY CENTRE
ELM PARK, FILTON, BRISTOL, BS34 7PS
Admission: £1
PLANT SALES – REFRESHMENTS - EXPERT ADVICE ON HAND
FFI: CALL 0117 950 3604

BCSS Zone 19 Symposium

19th May 2018 9am to 5pm

St. Thomas More Church Hall, Kirkway, Alkrington, Middleton, Manchester, M24 1PP.

Harald Jainta, author of the recent book *Wild Lithops* speaking for the first time in the UK.

Graham Charles will talk about his recent adventures 'Searching for Cacti in Peru'.

Petr Pavelka from the Czech Republic, nurseryman and explorer will speak about Madagascar, Itermo and the south.

PLANT SALES

£15 including a substantial buffet lunch.

Book your ticket from Peter Bint:
0161 643 8932
peter@bint.myzen.co.uk
313, Manchester New Road, Alkrington, Middleton, Manchester M24 1NR
Cheques payable to BCSS Zone 19

British Cactus & Succulent Society

Zone 12 CONVENTION

Derek Desborough Memorial Lectures

Crawley Horticultural Society Hall, Ifield Avenue, Crawley, RH11 7AJ

Sunday 22 April 2018
doors open at 12:30

Two Excellent Speakers:
Martin Lowry: ***The Cacti of Bolivia***
Trevor Wray: ***Succulent Gardens of the Western Cape***

Professional and members' plant sales

Generous buffet!

Tickets £10
from Graham Evans or Suzanne Mace

Besler's Hortus Eystettensis

Following my article about the 'Opuntia in a cage' in **Cactus Explorer** 20, Roy Mottram wrote to me:

I made the original of your plate from Besler the lectotype of *Cactus opuntia* L. in *The Cactician* **3** (2013: 57–59). It was original material because Linnaeus (1753) cited the plate in *Hortus cliffortianus* (1738) as "Autumn t.41".

The plate is of *O. ficus-indica*, not *O. tomentosa*. Your account gives a possible explanation as to why Gordon Rowley chose to call it *O. tomentosa*. This species has only red flowers, never yellow, while the plate has yellow flowers. The cladodes are also narrower, pubescent, and the tree more lax in *O. tomentosa*. The flower colour can be easily seen on the original coloured plates, but Gordon's copy is probably not original colouring and may have been erroneously coloured red throughout. Surviving original copies of the coloured version only number 5–10, with very few in private hands, hence the enormous prices paid for them. The second plate of the opuntia with just a single cladode from the massive plant is very obviously yellow-flowered.

Individual plates in the trade are all later colouring. Even the uncoloured copies are perhaps forgeries, because original uncoloured copies of the original work are also very expensive - £100,000 plus. They are very easy to forge with a blank sheet of hand-made paper and a photocopier! There are two further later editions which are cheaper, but not by much!

The best modern facsimile is the one published by Taschen in 2000, which is a faithful reproduction of the copy in the Eichstaett University library. The bars should be red on originals of your Autumn t.41.

Thank you Roy. Well, I still like the blue bars of my cage even if they should be red!

GC

Derek Bowdery

1932 – 13th January 2018

Derek was well known in Britain for being a really pleasant man who loved his ferocacti. He co-authored a book about the genus with his great friend John Pilbeam and gave taks about his passion. He became even more famous recently for flowering a *Carnegiea* in his glasshouse that Charlie Glass had helped him plant.

He organized the events of the Kings Lynn branch of the BCSS which held its meetings in his house and also its show in his extensive conservatory. He ran *Eau Brink Nursery*, housed in a large glasshouse next to his home.

I will fondly remember my visit to see him in hospital the day before he died. His partner Karen was looking after him and we had a good time reminiscing about the places he had been to see cacti and our long friendship. GC

John Lavranos

29th Mar. 1926 – 31st Jan. 2018

John was probably the most successful succulent plant explorer of all time. He published 180 taxa and had 17 named after after him. He was a charming and entertaining man and I have the fond memory of dining with him and his wife during the 2007 CSSA Convention in Seattle.

You can download lists of his extensive field numbers from Cactician 10 & 11.

GC

Karel Kníže

7th Nov. 1941 – 8th Jan. 2018

For 5o years, Karel Kníže lived in Peru and ran a plant exporting business. He was probably responsible for sending more habitat collected cacti than anyone else. It meant that many hobbyists could buy mature cacti but I think the time for that has now passed and the practice should stop. The collection of seeds leaves the mature plants to flower and fruit again so this is surely a better way of satisfying the demand. There can be no doubt that his activities damaged habitats in South America and sadly the practice is still continuing. GC

Philip Downs

6th Jan. 1936 – 26th December 2013

Born in Yorkshire, Philip went to live in South Africa where he was a successful dental surgeon. He developed his interest in plants and wildlife whilst there, returning to work in Chesterfield, England in 1986. Following his retirement he went to live in New Zealand where he played an active role in various succulent societies there.

He will be remembered for his extensive knowledge of succulents, two of which, a *Sansevieria* and an *Aloe* were named in his honour.

Thanks to Max Croft of the *Auckland Cactus Newsletter* for information about Philip.

Repertorium Plantarum Succulentarum

Published annually by the IOS, each issue is a compil

ation of new names, taxa and new combinations, published during the previous year. There is also a list of the most significant articles and books published about succulent plant systematics.

Until 2009, RPS was only available as a paid printed version.

Since 2011 (No.61 of 2010), RPS has been available as a free pdf format download which you find at the CactusPro library:

https://www.cactuspro.com/biblio/fr:rps

Opuntia Web.

This website about the opuntias of the USA has been redone and is better than ever. There are 1,500 photographs of the various species in habitat.

Opuntia and related species (= opuntiads) are unique cacti with unusual shapes and beautiful flowers. Common in parts of the United States and Mexico; they also occur throughout most of the Americas. There are over 50 species of opuntiads in the United States and many more in Mexico. Opuntia Web describes opuntias of the United States.

www.opuntiads.com

A Library for Sale

Many of the rarer books about cacti and succulents are only available for sale occasionally. Now, after 40 years of collecting, Albert Hofman has decided to sell the bulk of his library.

The offering of books extends to more than 1400 titles, dating from 1800 onwards.

This is a rare opportunity to buy trade catalogues published by many different suppliers and dating back to the early years of the 1900s.

The list of journals and magazines includes some hard-to-get items including an impressive collection of Japanese titles.

The list of separates is a section with articles extracted from many, mainly scientific, journals.

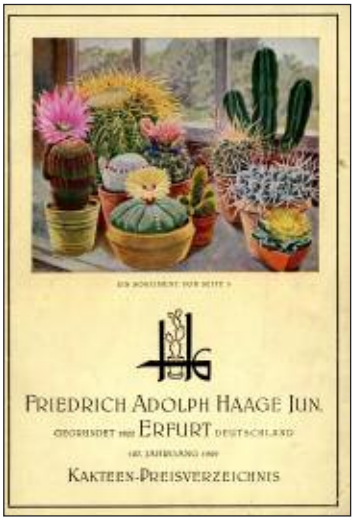
Finally, there is a separate illustrated list of prints from historic books about plants such as Curtis's Botanical Magazine (13Mbytes).

All you need to do is to send Albert an email listing what you would like to buy then he will send you an invoice to which will be added the cost of postage.

You need to respond quickly since each item will be sold to the first purchaser requesting it.

Print of *Cactus speciosissimus* fromVan Geel Sertem Botanicum

Print from De Bry: Florilegium 1612



Nursey catalogue F.A. Haage junior 1929

You can download the lists here:

Excel list of Books, Trade catalogues, Journals, Separates and Post Cards.
MS Word illustrated list of separate plates.

Or as separate PDFs:

Books
Journals
Separates
Trade Catalogues
Post Cards
Plates

Albert Hofman,
Joris van der Haagenlaan 37,
6814 LJ Arnhem,
Netherlands
alberthofman@upcmail.nl

In The Glasshouse

Graham Charles shows us the diversity of the widespread Argentinian *Echinopsis aurea* and what a good glasshouse plant it makes. Photographs by the author

I often find myself talking about how certain plants become unfashionable. Well, perhaps you might say that *Echinopsis* species, in the strict sense, have never been fashionable and are fit for nothing but to serve under another plant as a grafting stock!

Yet, while the species may be suffering a temporary(?) fall from favour, *Echinopsis* hybrids are more popular than ever. I am told that sales of the Schick hybrids distributed by the ISI have outsold all the other cacti put together. You can read more about hybridization and see pictures of some named cultivars in Gordon Rowley's book *Succulents in Cultivation - breeding new cultivars*.

Fig.1 *Echinopsis aurea aurea* GC997.03 North of Ischilin, Cordoba, Argentina. 955m

Fig.2 *Echinopsis aurea aurea* GC392.05 La Falda, Cordoba,Argentina.1350m

Whilst white is the most common colour of *Echinopsis* flowers, there are a number of species that have other colours. I want to tell you about *Echinopsis aurea* which usually has yellow flowers, but they can be red and rarely white. You may see the plant labelled as a *Lobivia* but the molecular study by Schlumpberger & Renner (2012) placed it in *Echinopsis* s.s.

The species is widespread but only occurs in Argentina. In the south of its range, in the mountains of San Luis, there is a form that is densely covered in white spines with a short columnar habit. It was named as *Lobivia leucomalla* by Rausch in 1965. This is one of a number of forms which were describes as separate species, for instance, the most northerly form was called *Lobivia callochrysea*

Fig.3 *Echinopsis aurea shaferi. Preston-Mafham* 356 Custa de Chilca, Catamarca, Argentina.

Fig.4 *Echinopsis aurea dobeana* GC29.08 Cuesta El Portezuela, Catamarca, Argentina. 1600m

n.n. by Ritter although its position in the molecular study (Schlumpberger & Renner, 2012) places it next to *E. tubiflora* with which it grows in habitat, suggesting hybrid origin.

In between can be found the type form (Figures 1 & 2), originally descibed by Britton & Rose from Cordoba and the form originally called *L. fallax* Oehme. There is also a red-flowered form (Figure 4) from the Sierra Ancasti (*Lobivia dobeana* Doelz) and a white-flowered form which was described by Rausch as var. *albiflora* from Piedrita Blanca near to Agua de Ramon where I saw it (GC950.06, Figures 5 & 6).

Another form which is easily recognized is *Lobivia shaferi* which makes large clusters of small short cylindrical heads and produces large yellow flowers (Figure 3). This comes from near Andalgalá, Catamarca.

All the forms of *Echinopsis aurea* are very easy to grow and flower in cultivation. They are cold tolerant and, if given plenty of water and good light in the summer, will soon grow into handsome plants. Yellow is an unusual colour for the flowers of a true *Echinopsis* so it has been used in hybridization to introduce the colour into the progeny.

So, a reasonable view of the species would be:
Echinopsis aurea var. *albiflora* Rausch
Echinopsis aurea ssp. *aurea* Britton & Rose
Echinopsis aurea var. *callochrysea* (Ritter) Rausch

Fig.5 *Echinopsis aurea albiflora* GC950.06 Agua de Ramon village, Cordoba, Argentina. 380m

Echinopsis aurea var. *dobeana* (Dölz) Rausch
Echinopsis aurea ssp. *fallax* (Oehme) Lowry
Echinopsis aurea var. *leucomalla* (Wessn.) Rausch n.n.
Echinopsis aurea ssp. *shaferi* (Britton & Rose) Lowry

References

RAUSCH, W. (1975). *Lobivia. The day flowering Echinopsidinae from a geographical distribution point of view*. Rudolf Herzig.

RAUSCH, W. (1985). *Lobivia 85*. Ridolf Herzig.

SCHLUMPBERGER, B.O. & RENNER, S.S. (2012). Molecular Phylogenetics of *Echinopsis* (Cactaceae): Polyphyly at all levels and Convergent Evolution of Pollination Modes and Growth Forms. *American Journal of Botany* **99**(8): 1335–1349.

Fig.6 *Echinopsis aurea albiflora* GC950.06 Agua de Ramon village, Cordoba, Argentina. 380m

An Under Appreciated Cactus Genus: A MONOGRAPH OF HARRISIA

FRANCK, A.R. (2016). A Monograph of *Harrisia* (Cactaceae). ***Phytoneuron*** 2016-85: 1–159. Part 1, pp. 1-52; Part 2, pp. 53–68; Part 3, pp. 69–101; Part 4, pp. 102–134; Part 5, pp. 135–159. Published 12 December 2016. ISSN 2153 733X

Ask any knowledgeable cactophile in Australia about *Harrisia* and they will tell you its a pest: an invasive or noxious species that grows even in the underbrush. If cut, it persists and will grow anew due to tuber-like roots not unlike a *Peniocereus*. To those who cultivate cacti, *Harrisia* is the ideal grafting stock. To me, *Harrisia* is one of the most under-appreciated among cactus genera. When I first started collecting cacti about 5 years ago, the first cactus that gave me edible sweet fruit was *H. pomanensis* in a ½ gallon pot. At the size ofa kiwi, to date no other cactus in my collection has given me fruit in such a small container.

By latitude, from Argentina to Florida, the *Harrisia* genus has the widest non-contiguous natural distribution of any cactus genus in the entire the Cactoideae subfamily, which includes all cacti except Opuntia and related species such as *Cylindropuntia* (chollas) and *Tephrocactus*. Furthermore, some species of the genus hold the disreputable distinction of being the only invasive species from the entire Cactoideae subfamily.

The author of the work in this review is Dr. Franck, who is currently the Director and Curator of the Herbarium at the University of South Florida. He has published a thorough revision of chapter four of his 2012 dissertation. Up until his dissertation, *Harrisia* had received little attention. Dr. Franck's 2012 work is notable because he sheds light on a number of topics including the biogeography, phylogeny and taxonomy.

Franck's work is thorough to say the least. As a grower and collector, I was most interested in the descriptions of the species (e.g., size, fruit colour, number of spines and so forth). The *Harrisia* genus is divided into two parts: the subgenus *Harrisia* and the subgenus *Eriocereus*. Subgenus *Harrisia* primarily grows in North America; around the Caribbean, while subgenus *Eriocereus* is South American. *Harrisia* is a genus with a total of 19 species with its greatest diversity in the Caribbean where it is represented by 11 species.

He makes some interesting remarks including noting that *Harrisia bonplandii* is correct over Hunt's *H. balansae*. Franck also accepts *H. jusbertii*, commonly used as grafting stock, as a species, rather than as a hybrid. The illustrations do not disappoint: pictures, most of which are in colour, make up over half of the work. The pictures are the best part of the monograph.

The phylogeny is only summarized in the monograph because Franck covers how *Harrisia* came to North American from South America in a separate paper (Franck *et al*., 2013a). A European friend recently commenting regarding my *Harrisia* saying that it was an ugly cactus. I told him that I completely agreed: I didn't collect it because of its appearance: but because of its mix of interesting characteristics I described at the beginning (e.g., invasiveness, grafting stock, etc.). I think you'll find, as I have, that there's plenty to like in Franck's *Monograph of Harrisia:* is well-priced (its free), can be downloaded easily (see the link below); it accessible to both the novice and experienced cactophile. It is now the standard reference for the genus. I highly recommend it.

A ***Monograph of Harrisia*** is available as a free download at:

https://www.researchgate.net/publication/311791276_Monograph_of_Harrisia_Cactaceae

Bibliography

FRANCK A.R., COCHRANE, B.J. & GAREY, J.R. (2013a). Phylogeny, biogeography, and infrageneric classification of *Harrisia* (Cactaceae). *Syst. Bot.* **38**: 210–223.

Jorge Quiñónez jorgequinonez@icloud.com

On-line Journals

On-line Journals for you to download free

Publishing journals on the web is now very popular. Creating them is a lot of work so perhaps that is why some have ceased publication. Here are some links for you to download and enjoy.

Xerophilia

Issue 23 of *Xerophilia* appeared in February 2018. It is published in English as well as the language of the original article. The quality contents are impressive and varied. There is lots to read in its 102 pages.

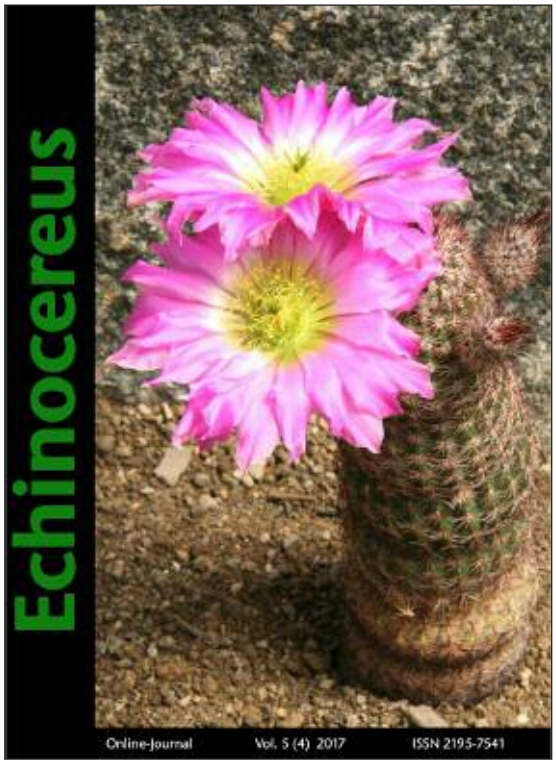
Contents include: · Editorial;· Xerophilia 23's Favourite Quote ; Peyote: Worship and Constraint; Enemy Plants; New records of interesting non-native succulents from Alicante; *Mammillaria orcuttii* Bödecker, not rare but beautiful; Notes on some species of the genus *Ariocarpus*; Succulents from the southwestern deciduous forests of Romania; First record of *Aeonium simsii* in New Zealand; Over-fertilization, a determining factor of aberrant growth.

The magazine may be downloaded free as a pdf from

http://xerophilia.ro

Contact: xerophilia@xerophilia.ro

ECHINOCEREUS Online-Journal



The German language on-line journal for Echinocereus lovers. The goals of this 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.

This issue, published in October 2017 includes: A whim of nature? Blooming surprise in September 2016; 40 year obsession with cacti; Observations in the greenhouse; Memories ... *Echinocereus ortegae* near San Miguel, Sinaloa.

The downloaded pdf file allows printing, but does not permit copying of the content. For those of us who do not understand German very well, the publishers also provide a downloadable MS Word document of the text making it possible to copy and paste it into a translation program. This is a major benefit of online journals and I thank them for this useful feature.

See website: www.echinocereus.eu

Sansevieria Online

The online journal for the growing number of enthusiasts for this genus. A small group of *Sansevieria* enthusiasts publish the first *Sansevieria* online journal in German. They welcome contributions on systematics, morphology, physiology, evolution etc.

This issue includes: *Sansevieria concinna* not only known from Mozambique; Observed in culture: *Sansevieria concinna*; *Sansevieria concinna* - a microscopic portrait; Sansevierias also at the Berlin Cactus Days 2017; Sansevierias in front of the camera; Cherished Sansevierias presented.

There is a cumulative index published.

Download the PDF from www.sansevieria-online.de where you can also find a special issue containing field number lists and an index to the journal.

Schütziana

The latest issue of Schütziana, the specialist on-line journal for *Gymnocalycium* enthusiasts, was published in December 2017 and features:

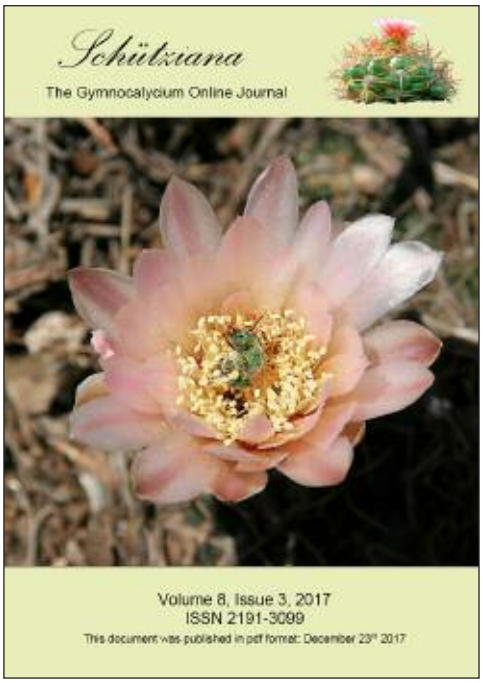
The Seeds of the Genus *Gymnocalycium* Pfeiffer ex Mittler Part 2: The Subgenus Gymnocalycium

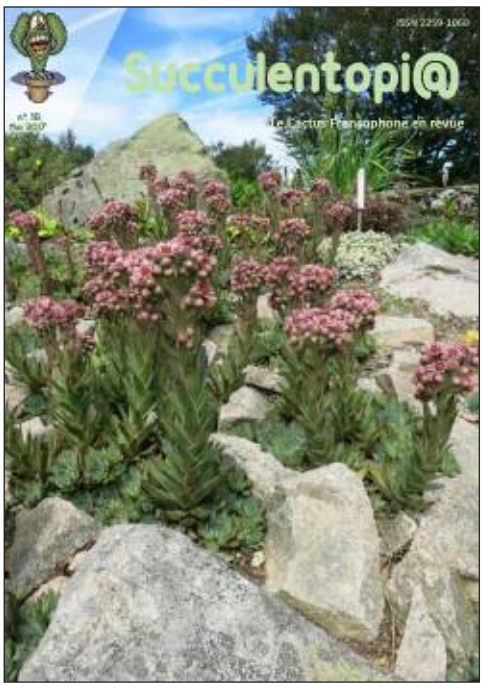
The text of this valuable publication is available in English, German, Russian and Japanese.

The pictures and distribution maps give a clear insight into the plants found in habitat and culture.

You can download free all the issues from:

www.schuetziana.org





Succulentopi@

It is good to see the return of Succulentopi@ after a break of more than a year. No.16 appeared in May 2017.

This was the first online journal published in French. The quality is excellent as you would expect from Yann Cochard and his enthusiastic team.

It is available as a free PDF download from:

http://www.cactuspro.com/succulentopia

This issue includes experience with *Toumeya papyracantha*; The genus *Acanthocalycium*; Photo Gallery; 4 pachypodiums from Madagascar; Substrates and their composition; Philately and the CactusPro Library.

I hope we see more issues soon!

Sukkulenten (formerly Avonia News)

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

From 2015, the monthly on-line newsletter has been called "Sukkulenten"

This issue, January 2018, discusses The genus *Huernia* R.BR.and other succulents in Angola, part 2; and *Crassula coccinea*.

It is very well produced with excellent pictures.

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

Essex SucculentReview

Written by growers for other growers

The Essex Succulent Review is a high quality quarterly on-line UK newsletter featuring non-technical articles on all aspects of cacti and succulents.

Issue 16, published March 2018, features 36 pages of: Epiphyte or not?; Chilean Cinderellas, *Thelocephala*; What is a well-drained growing medium?; My Stapeliad collection; The return of *Rapicactus*, reviewing a revival; Hardy bromeliads; *Puya raimondi*i.

You can subscribe to the mailing list to be notified by email when each issue is ready to download. Subscription is completely free and you can unsubscribe at any time.

Further details and back issues are available on the website:

http://www.essexsucculentreview.org.uk

or email:

sheila@essexsucculentreview.org.uk

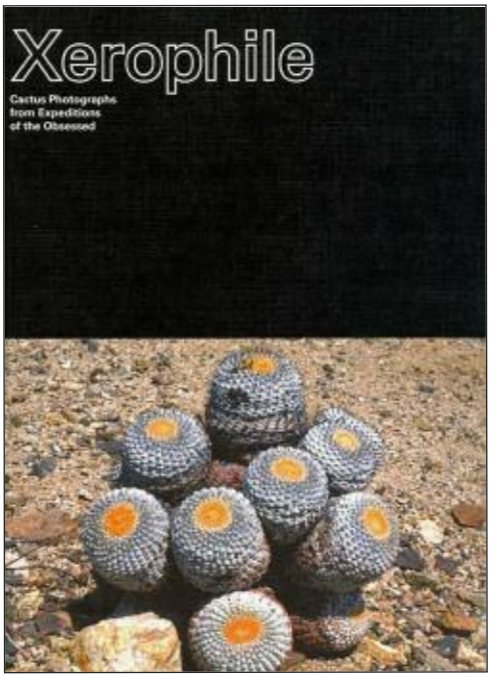
You don't have to live in Essex to read it!

The Love of Books

News of two Recent Publications from the world of Cacti and Succulents.

Xerophile

Cactus Photographs from Expeditions of the Obsessed



Jeff Kaplon, Max Martin, and Carlos Morera were fascinated by the few people in the world who travel to the ends of the earth to find and photograph cacti and succulents. To those of us that do it, the activity is not so strange, but satisfies a need for adventure and delivers satisfaction with every success.

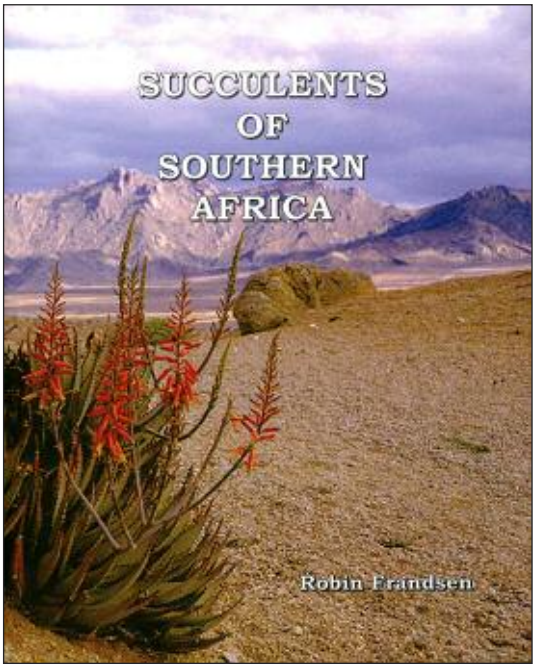
They persuaded a number of plant hunters to donate some of their pictures for a book like no other. It is not about classification nor cultivation. It is not about the hobby that most succulent lovers persue. It is about wonder, the wonder of nature and the wonder of where to look for the next thrill of a discovery.

The result is a visual treat of the strange, the exotic and the beautiful. Many pictures are full page, each with a brief caption. Whether you are already interested in the plants or not, you will enjoy this unusual book.

Softcover, 352 pages, 254 × 185mm.
Available from Amazon for £41.00.

Succulents of Southern Africa

Robin Frandsen



This is a remarkable book in many ways. It covers 113 genera comprising 1117 species with their subspecies and varieties. Each plant is beautifully illustrated with at least one colour photograph placed near to the text, amounting to more than 2,700 in total. The quality of the pictures and the excellent reproduction of them is impressive.

The author has chosen to follow personal preference when it comes to taxonomy. The book uses the recently proposed segregate genera of Asphodelaceae but for other families, he follows a more traditional approach.

The introduction includes brief biographies of people who have been involved with study of the plants. There are also a glossary, selected references and an index.

This is a large volume: hardbound with dust jacket, 259 × 210mm, 495 pages. It is printed on good quality paper and the whole book is very well produced.

Available from Keiths Plant Books for £55

Succulents on a Plate

Graham Charles tells us about the monumental botanical work *Phytanthoza iconographia* by Johann Wilhelm Weinmann, published between 1737 and 1745.

Plate 355 of *Cereus hexagonus*. Image size: 33 × 21cm

Johann Wilhelm Weinmann (1683-1741)

Weinmann's major creation was *Phytanthoza iconographia* (1737-1745), meaning something like 'Visual Description of Plants and Flowers', a massive project which comprised eight folio volumes with over a thousand hand-coloured engravings of several thousand plants. In 1722 his own garden is said to have contained more than 9000 types of plants, which he used as models for his *Phytanthoza-Iconographia*.

The first artist employed by Weinmann was Georg Dionysius Ehret (1708–1770) who would become one of the foremost floral illustrators of the eighteenth century. When he was introduced to Weinmann in 1728, he had no employment and was so poor that he had not been able to pay his river passage from Ulm to Regensburg, but had worked it off by taking turns at the oars.

When Weinmann saw examples of Ehret's

work, he hired him to draw a thousand illustrations in a year's time for which he would be paid fifty thaler. He was also given room and board and lived in the Weinmann house.

At the end of a year, Ehret had completed half of the assignment, and Weinmann, claiming that the contract was unfulfilled, gave him twenty thaler and sent him on his way. Several years later, Ehret brought a law suit against his former employer in order to obtain compensation, but Weinmann claimed that Ehret had deserted him, and the suit failed. In spite of these early difficulties, the latter's career was filled with success stories on the Continent and in England where he had many wealthy patrons.

After Ehret's departure, Weinmann hired other illustrators and engravers, and the text was the work of the Regensburg physician, Dr. Johann Georg Nicolaus Dieterichs. *Phytanthoza iconographia* was published in both Latin and German editions, and a Dutch edition appeared in 4 volumes., sometimes seen bound in 8, in 1736-1748.

Weinmann's great work has been described in various ways, not always complimentary. It has been acknowledged that *Phytanthoza* was impressive for its size and scope, but criticisms were made concerning some of the plant specimens displayed. The German botanist, Christoph Jakob Trew (1695-1769), who was a friend and collaborator with Georg Ehret for thirty-six years, wrote to a friend in 1742: "... it is really regrettable that the late Weinmann's precious work had so many untrue, even faked images which gave it a bad name with those who are knowledgeable...." It is also unfortunate that Weinmann employed a number of illustrators who, unlike Ehret, had little or no knowledge of botany.

One of these 'faked' images is shown bottom left on plate 497 (left). As Gordon Rowley pointed out in his wonderful book *A History of Succulent Plants* (1997: 222).

Plate 355 of a *Cereus* shown on the previous page was engraved by Johann Jakob Haid (1704-1767). The caption is the pre-Linnean phrase name *Cereus erectus altissima Surinamensis*, now known as *Cereus hexagonus* Miller.

Copies of the splendid four-volume set are offered for sale but the price is high. It is often possible to buy individual plates, the price depending on their aesthetic appeal. There are many pleasing prints of succulents, the ones featuring plants growing in an ornamental pots are particularly sought after for interior design and so cost more.

You can view the whole book on-line at the Biodiversity Heritage Library. If you look at the *Cereus* plate, 355, in Volume 2, you will see that the flower is coloured slightly differently from mine. This may be because they are from different editions or hand-coloured differently. GC

P.S. Following my article about the *Opuntia* in a cage from Besler's *Hortus Eystettensis* in **Cactus Explorer** 20, Roy Mottram sent me some more information which you can find on page 8.

How many Gymnos are there?

***Gymnocalycium* illustrates the way a single genus can be treated by lumpers and splitters. It depends on whether you look for similarities or differences in the many populations of these plants. Graham Evans asks a question with a range of possible answers!** Photographs by the author

Gymnocalycium has always been one of my favourite genera and so, a few years ago, I decided to prepare a talk on the subject. My idea was to use live plants in the first part to introduce the audience to all the accepted taxa (and a few variants), followed by a digital presentation covering the history of the genus and showing a number of the species in flower.

The first problem I faced, of course, was to define what was accepted. I decided I needed to base the talk around a single classification and, as luck would have it, Graham Charles' excellent *Gymnocalycium in Habitat and Culture* (2009) had not long been published and was fresh in my mind. It was a thoroughly researched, rationally considered and ultimately pragmatic review of the genus that refined and expanded on the treatment in the *New Cactus Lexicon* (Hunt *et al.*, 2006). Finding my classification, therefore, was easy and, thanks to Graham's generosity, I was also able to acquire the one species recognised by him that was missing from my collection. A few months later, I gave the talk for the first time to BCSS Bromley Branch and I have been inflicting it on various branches ever since.

So, how many gymnos are there? Well, according to Graham Charles there are 73 species and subspecies but the number is infinitely debatable and has necessarily varied over time as new species have been discovered. When Ludwig Pfeiffer first suggested the genus *Gymnocalycium* in 1843 he proposed three species but by 1922 Nathaniel Britton and Joseph Rose had accepted 23 species. The number climbed to 83 (plus innumerable varieties) in Curt Backeberg's *Cactus Lexicon* (1976 edition). In modern times, along with the aforementioned 73 (2009), Jöel Lodé recognises 78 taxa in his *Taxonomy of the Cactaceae* (2015) and David Hunt currently accepts 68 species and subspecies in the *CITES Cactaceae Checklist Third Edition*

Figure 1. *Gymnocalycium bodenbenderianum piltziorum* is not normally recognised as a subspecies but is a distinct form with heavier spination and a slightly different flower to the type.

Figure 2. *Gymnocalycium bruchii* is a popular, early flowering species that is so variable in appearance that infra-specific names cannot be justified.

(2016). Interestingly, of the names erected in the years since Charles published, only *Gymnocalycium esperanzae* Repka & Kulhanek is recognised by Hunt and/or Lodé.

The extremes, you might think, are Hunt the lumper with 68 and Lodé the splitter with 78 taxa, not an unreasonable spread, but there are two other wildly diverging views. Hunt himself suggested a few years ago in *Cactaceae Sys-*

Figure 3. *Gymnocalycium horridispinum* is aptly named but has lovely purple flowers and is quite different from *G. monvillei.*

Figure 4. *Gymnocalycium monvillei* with attractive flowers and pretty spination.

Figure 5. *Gymnocalycium rhodantherum* clearly showing the reason for its name.

Figure 6. *Gymnocalycium stenopleurum* flowering in an unusual fashion in the autumn but displaying the naked floral tubes for which the genus is named.

tematics Initiatives that *Gymnocalycium* could be reduced to just a couple of dozen species but this was intended to provoke discussion rather than as a firm proposal and he clearly has not followed this philosophy through in later publications. It does, however, show the argument is capable of being made. On the other hand, in the Austrian specialist periodical *Gymnocalycium* Hans Till, Helmut Amerhauser and Walter Till (2008) compiled a classification that recognised 167 taxa at the rank of species or subspecies and many more as varieties! This included many of their own names as well as those of fellow uber-splitter Gert Neuhuber and also makes several changes to the normally accepted relationships. For example, *G. ferrarii,* most frequently considered a subspecies of *G. glaucum,* is placed with *G. hossei;* and *G. damsii* is grouped with *G. mihanovichii* and *G. stenopleurum* rather than *G. anisitsii* (which is linked with *G. megatae* and *G. matoense*).

I have prepared a chart comparing the classifications of Hunt, Lode, Charles and Till, Amerhauser & Till, which I hope you will find interesting and perhaps even stimulating. It doesn't answer the titular question but it will go some way towards showing why a definitive answer is actually impossible. For what it's worth, I reckon around 75 is probably about right.

You can download the Excel comparison chart here. The name you choose to use is entirely up to you!

Graham Evans

Cacti near Moquegua, Peru

Natalia Calderón recounts her observations of cacti near the southern Peruvian city of Moquegua which she visited while working in the area. Photographs by the author

Introduction

A work trip took me to contemplate the desert landscapes of southern Peru again, from the road that leads from the city of Tacna to the city of Moquegua I observed the typical wavy plain desert of the coast to the arid mountainous desert of the Andes from the south of Peru. Formations of tillandsias moor the terrain against the strong erosion typical on the Peruvian coast, these plants are visible even from the Panamerican highway south in Tacna, unlike the Lima coast, where you have to get far enough from the road to observe formations so dense and continuous. After the tillandsias made their appearance in the first stretch of coast of this road, the aridity of the desert hides its inhabitants with steeper contours of the mountainous relief. At 2000m, in Moquegua, the cacti that inhabit it are camouflaged very well with the reddish brown environment, a pedestrian exploration reveals on certain slopes the vast populations of cacti in associations of typical species, highlighting the resilient *Browningia candelaris* for its size and *Haageocereus platinospinus* for its abundance. The appearance of Browningia's most long-lived individuals leaves a series of questions rather than answers about the survival of this particular species in such an arid terrain. In this brief note, I will describe some aspects of biology and ecology about these cactus species that I observed and recorded over the course of the last year in the vicinity of the city of Moquegua.

On the ground

At 2200m, near the city of Moquegua, in the rocky and reddish esplanades that are subtended between the hills, there are vast populations of cacti. These cacti are mostly not visible at first sight since they have the same height as the rocky ground, between 20 and 30cm on average. Only the sporadic Browningias are easily recognizable to those who like and know cactus. To better observe these associations it is preferable to visit these sites after the rainy season, between March and April, since the slight depressions in the rocky terrain combined with the humidity in this season allow the temporary emergence of green herbaceous patches, mainly Poaceae and other ephemerals, giving the soil a certain depth and shelter, ideal conditions for small and not so small cactus, but it is certainly in these sites where they are appreciated with greater density, diversity of species and health. *Cumulopuntia sphaerica*, *Haageocereus decumbens* and *Bougainvillea spinosa* are other members of this succulent community that together with *Browningia candelaris* and *Haageocereus platinospinus* confer a sense of living structure to the environment, allowing the superficial development of the soil and the existence of a fauna (lizards, small mammals, birds and arthropods) that is elusive and goes unnoticed, especially during the strong day-hours insolation.

Fig.1 *Browningia candelaris*

Fig.2 *Bougainvillea spinosa*

Fig.3 *Haageocereus platinospinus*

Biological characteristics of the observed populations of *Browningia candelaris* and *Haageocereus platinospinus*

In the case of the fantastic *Browningia candelaris*, the height of the individuals ranged between 1.40m and 4.80m while the number of secondary branches or properly of the "candelabra" varied between 30 and 50 branches per plant. This species, unlike other cacti that I have observed, can exhibit numerous dead secondary branches, even around 40% of the total, however this is not a sign of decay of the individual in general, on the contrary, regeneration from what apparently are dead branches (blackened or that have even lost part of the outermost tissues) is common.

The majority of Browningia individuals that I observed in the area showed signs of past infections at the level of the epidermis (most superficial part of the tissue), possibly due to the larval development of Lepidoptera or other insects whose juvenile stages are parasitic. Since the regeneration of secondary branches is common, the estimation of the age of these plants is interesting and is an obvious question when observing the diameter of the basal stem of some individuals, not only significantly robust (50cm) but with a high lignification of the tissue turning reddish orange. Some constrictions were also evident along the basal stem, although these are not part of the regular anatomy of the species but are observed in very long-lived individuals, which probably exceed 100 years.

As for the Browningia's reproductive status, observed throughout the year, I only detected one green fruit on a single plant in October, so the time of flowering and fruiting of this species would not occur strictly on an annual basis.

From the point of view of phytoclimatology, this type of long lived organism could tell us a very rich history of survival based on their adaptations in arid climates.

In the case of *Haageocereus platinospinus*, the height of the adult plants usually oscillated between 20 and 30cm with respect to the soil, although the longest branches can reach between 40 and 60cm long. As is common in Haageocereus, adult plants or the more long-lived ones, had numerous branches, between 20 and 30 and mostly alive.

The flowering time of Haageocereus was estimated between January and February, since in March some plants with ripe fruits were observed, as seen in the photographs.

Ecological characteristics of the observed populations of *Browningia candelaris* and *Haageocereus platinospinus*

The visit to this area and the observation of more than 150 individuals of Haageocereus and approximately 30 individuals of Browningia allowed me to highlight the following ecological aspects of growth:

Direction of Growth: All *Haageocereus platinospinus* that I observed showed a North-east directionality in the growth of their branches, which is very evident given the form of semi-prostrate growth of the branches on the ground, with the tips or ends curved. This sense of direction corresponds to the direction of the wind, which is very strong in the area.

Accompanying vegetation: During the humid season and at the end of this, a greenish mantle of herbaceous plants — including poaceae and others with flowers — were observed growing along with Haageocereus particularly in the areas that had depressions or hollows in the rocky soil. The herbaceous plants, which grow only during the rainy season, allow not only the capture of moisture from the air to the soil but also to enrich the latter superficially in comparison to other zones where the presence of accompanying plants was not observed.

Fig.4 *Haageocereus platinospinus*

Nodricism: The nodricism for *Haageocereus platinospinus*, a species of small size and greater abundance in the place, it is mainly given by the rocks which capture and release energy, as well as reducing the effect of high insolation and the loss of water by evapotranspiration of these plants. The rocks are present in a much greater density than the cactus (approximately 80% land cover) and also act as a wind barrier and provide support to the cactus growth.

No nodricism was observed between *Browningia candelaris* and *Haageocereus platinospinus* or with any other of the other smaller cactus species at the place. Except for some non-perennial herbaceous plants, where Browningia was growing, no other cactus grew closely or less than 3m away from this.

Anthropic Aspects

The populations of cactus and other wild plants in this area are also subject to human activities directly and indirectly. In some areas of the terrain, the marks of an old plantation project were observed, however, the great rockiness and aridity make it difficult to maintain a project of this nature in the long term without adequate irrigation technological infrastructure, which finally allows the development of some natural cactus populations that are adapted to these conditions. Also, given the intense solar radiation, there are two solar energy projects in the area which decreases the effective terrain of the cactus and restricts access to these areas. On the other hand, the effect of this type of project can be compensated in some way with environmental conservation and education activities that allow the recognition of the local flora by the nearby population.

Final annotations

The observed plants, particularly *Haageocereus platinospinus*, exhibited an excellent state of health, showing robust individuals with numerous branches and fruiting. Compared to the natural populations in the valleys around the city of Lima, near the city of Moquegua, cactus populations seem to have better conservation possibilities, probably due to less pollution and dust than in the city of Lima, which usually deposit on the plants blocking the epidermis of the cactus and reducing their capacity to carry out photosynthesis and transpiration.

Natalia Calderón

Fish River Canyon in Southern Namibia – great nature with succulent plants

Konrad Müller tells us about his visit to a very dry place where the succulents are struggling to survive.

Photographs by the author

During the last two decades I often spent my holidays in southern America but for the second time last year we travelled to southern Africa. Namibia, the "most German" country in Africa was the goal of our trip for three weeks. The main focus during this time of the year (end of September till middle of October) was to observe wild animals. Nevertheless, as a friend of succulent plants, I have looked for them too.

Coming from Keetmanshoop we used the paved B4 up to the road D463. Here we saw the sign to the Fish River Lodge (www.fish river-lodge-namibia.com). 104 kilometres of a mostly good unpaved road led us through a desert region without any people and traffic to the magnificent lodge with panoramic views at a height of 960m above sea level directly at the cliffs of the canyon. Only the last 15km we had to drive slowly. The narrow road demands great skill.

The region of the impressive Fish River Canyon, not far from the South African border, is well known for spectacular views and a number of succulent plants. The end of the southern winter in October is not the best time for searching of small succulent plants like mesembs because of the long-time drought. Easy to find are the bigger species of Aloe, Euphorbia and Hoodia. The temperatures reached a high of 32°C in the early afternoon but were much lower than they woule be in January or February.

Beginning at the Fish River Lodge, two walking excursions between rocks, sand, and dust lead me to the impressive candelabra plants of *Aloe dichotoma* Masson, the red-leaved *Aloe*

Figure 1. *Aloe claviflora* at the south-eastern edge of the Fish River Canyon after two years without precipitation.

Figure 2. A dead *Aloe dichotoma* at the plateau above Fish River Canyon.

Figure 3. *Aloe dichotoma* and *Euphorbia gregaria.*

Figure 4. Springbok (*Antidorcas marsupialis*) amidst impressive scenery with *E. gregaria.*

Figure 5. *Aloe gariepensis* in bad condition and *Euphorbia lignosa*.

Figure 6. *Euphorbia virosa* (detail).

Figure 7. *Euphorbia lignosa* with a young plant of *Aloe dichotoma.*

Figure 8. *Euphorbia virosa* (2.3m in diameter and 1.5m tall) at the border of the canyon.

gariepensis Pillans, the rings of *Aloe claviflora* Burch., the well-fortified *Euphorbia virosa* Willd., the *Euphorbia lignosa* Marloth, and *Euphorbia gregaria* Marloth.

In this very dry environment where rain was observed in a multi-annual mean between January and April in 5 to 15 days only (mean annual precipitation: 50–100mm) only a few perennial plant species can be seen. During the last two rainless years the living conditions were difficult for plants and animals as well. Some foggy days delivered minimal water amounts to the plants. Climatic changes have an important impact on the presence of plants. The future of the vegetation in this region is highly endangered.

Aloe claviflora (Figure 1) was observed only as a few plants in flat areas of the plateau. More typically this species is found around Keetmannshoop. Flowers were not seen on all plants but in Namibia the flowering period reaches from August to October. It is known that this species does not flower every year. The asymmetric and ring-like growth behaviour is observed here. The rosettes have in the dry period diameters up to 30cm and are stemless. The epidermis of the leaves is grey to red with marginal dark brown teeth.

One of the most spectacular plants of the genus - *Aloe dichotoma* - is widely seen because of their height of up to eight metres (Figures 2, 3, 7, & 9). *Aloe dichotoma* – in Africaans "kookerboom" – survives long periods of drought but in this region nowadays many dead plants can be seen. The light brown to grey epidermis of the stems is a good sunscreen for the plant but these huge plants cannot survive without water over many years of drought. Maybe that the very large number of seeds produced every year is essential for surviving in this extreme environment. Only a small number of plants had fruits in last October.

Aloe gariepensis (Figure 5) is a big short-stemmed or stemless plant up to 1m in height. The rosettes at the Fish River Canyon are smaller. The plants prefer steep rocky slopes and crevices which in extreme cases are associated with desolate and barren conditions void of other perennials. The biggest plant I have seen was about 60cm in height and diameter. This species is normally growing as a solitary plant but sometimes groups of *A. gariepensis* are found in places inhabited by hyraxes, otherwise known as Rock dassies (*Procavia capensis*); and

Figure 9. Fruits on *Aloe dichotoma.*

Figure 10. *Hoodia gordonii* on a stony hill slope.

Klipspringer (*Oreotragus oreotragus*) that occasionally eat the roots and stems of the plants. These nutritional traces are the major causes for the uncharacteristic group formation.

Euphorbia virosa (Figures 6 & 8) and *Euphorbia gregaria* (Figures 3 & 4) are well known to be able to resist long periods without precipitation. These succulent plants were found in good condition at the same places where many *Aloe dichotoma* were found dead. *Euphorbia virosa* is the most poisonous of all Euphorbias. The San people used the milky sap, which is also highly toxic to humans, as an arrow poison for hunting. Whilst *E. virosa* is an easy to identify species of the highly succulent shrub euphorbias, the pencil-like *Euphorbia gregaria* is often confused with other species of this group like *Euphorbia gariepina* Boiss. or the more north growing *Euphorbia damarana* L.C. Leach. Another often seen Euphorbia species is the basely dumose *E. lignosa* with hard and prickly sprouts.

Not far from the Canyon, on a rocky hillside, the small *Hoodia gordonii* (Figure 10) is growing. The grey-brownish epidermis without any sign of growth is a characteristic feature of long term drought. Only plants cultivated in the lodges have shown their well-known beautiful flowers.

The region around the Fish River Canyon is really worth spending more time than two days to explore – maybe I will go back again!

Konrad Müller

Ledebouria socialis

Sue Hakala tells us about her experience of growing *Ledebouria socialis* in her Phoenix garden. How nice it must be to live in such a climate!

Photographs by the author

Figure 1. *Ledebouria socialis* overflows a 26in pot in only a few years.

This perennial bulb sure is social. It has filled every pot to overflowing here in Phoenix, Arizona. It naturally grows in shaded woodlands in the summer rainfall region of the Eastern Cape Province of South Africa. For a decade or so, I kept it in a pot where I could move it to summer afternoon shade and out of winter rains, simulating the Cape environment.

This tough little beauty, related to hyacinths, has a white, sweet-smelling flower that resembles its cousin. The six-inch high leaves have a beautiful silvery green colour mottled with brown marks. Every part of the plant is poisonous if ingested, so keep it away from all pets.

As it grew, so did my boldness as to where to put it. It loved being in the ground on the west side of a mesquite tree. It was exposed to summer and winter rains, and did just great. A single bulb grew to a circle of about 24 inches, blooming abundantly in the spring. It formed an impenetrable mat, signaling time to divide and replant.

I decided to try it in the ground at the west end of my patio. It gets searing summer sun and concrete reflection to the max. It has loved it, as long as it gets 30% shade cloth when over 105°F (40°C). It doesn't like heavier shade cloth and will etiolate. It gets water about every 7-10 days in the warm months and no supplemental water in the winter.

When it grew to form a mat at the west end of the patio, I took it out in a big heap. An hour was spent pulling it apart and cleaning up the bulbs. You can see in the photos that it has lots of underground activity: runners and bulbs galore. Each bulb will form a new plant.

Figure 2. The South African bulb spreads into 24in circles in the ground under a west facing mesquite tree. It's exposed to summer and winter rains in the Sonoran Desert in Arizona and loves it. **Insert**: Underground bulbs and runners help the plant to spread. When separated, each bulb will form a new plant.

Here's what I've learned:

Fertilize in the early autumn so the bulb has food stored for spring growth. Fertilize in the spring and once more before summer dormancy so the bulb has stored food.

Too much shade and the blooms can be nonexistent and leaves etiolate.

Providing them with a dry winter dormancy helps the plant to put out more new leaves and flowers (remember this is a bulb). Plants are also pretty much dormant in the summer with leaf die back here in Phoenix, Arizona, USA.

They must be divided every 3–4 years to keep the plant vigorous, otherwise they develop a raggy look and don't bloom much.

Sue Hakala

To Belen for Toumeya's sake

Denis Diagre continues his story of looking for cacti in the USA and shows us how to involve the whole family in the adventure.

Photographs by the author

Alamogordo and White Sands had brought us some good reasons to rejoice… and some disappointments, as well. I assume we should have visited this area a couple of weeks later for flowers would have helped to locate the most interesting plants. Beachcombing the shoulders of Route 70 will certainly be on my to-do list for the years to come, I guess.

At this point of our journey we decided to pay a visit to an old friend, Steven Brack from Belen. Steven is a real gentleman and one of the greatest Sclerocactus and Pediocactus specialists in the world. He lives on a mesa, among a bunch of greenhouses that do not look like our dapper European ones. One reason is that Steven fixed them with all kind of different "stuff"; another reason is that there is much more light in New Mexico than in Belgium or Great Britain. So, Steven does not have to use glass and other transparent materials we tend to favour in cloudy Europe.

Figure 1. In Carrizozo, superb clumps of *Echinocereus coccineus* grow on old lava flows thousands of years old.

Anyway, Steven's Mesa Garden used to provide the cactus amateurs of the world with more exciting taxa than any other seed retailer I ever knew of. Those who cherish minute and temperamental Southwestern cacti were sure to find what they needed at Mesa Garden, and it always came with valuable data. Whether Steven's successor – Steven retired recently – maintains this tradition of excellence I do not know, but he sure has what it takes to do so: a huge collection of old, rare, perfectly grown and sharp-labelled Cacti.

Before shaking Steven's hand, we made a quick halt in Carrizozo (NM) to pay a visit to a couple of old friends: some *Escobaria vivipara*'s and a lovely population of Claret cup Hedgehogs – *Echinocereus triglochidiatus* or *E. coccineus*. In Carrizozo, they grow on lava flows in

Figure 2. *Toumeya papyracantha* with sixteen heads near to Mesa Garden.

Figure 3. A young *Echinomastus intertextus* grows under protection of a fierce Opuntia. Near Belen, NM.

Figure 4. A huge *Echinomastus intertextus* in a Hitchockian landscape near Belen, NM.

a place called the Valley of Fire. This looks pretty much like a huge dark grey fudge with cracks, gullies, gorges… On flat pockets of sand near the margins of the lava flow we found some Cylindropuntia species and what appeared to be a couple of isolated *Echinocereus fendleri* with flower buds. Nothing that could nevertheless compare to the Claret cups nested in the flow itself. This year, they were in full bloom and contrasting beautifully with the dark environment. This is a "must see" (Figure 1).

In a vast grassland nearby Steven's greenhouses, we spent almost two hours searching for a rarity: *Toumeya papyracantha* (aka *Sclerocactus papyracanthus*). Some years ago, I had found several plumped and flowering examples on this very spot. One of them showed some 16 heads (Figure 2)! This time, we kneeled in vain… until a handful of tiny, shrunken plants were finally located. The exciting thing about this day was a lovely young rattlesnake we found in a den and a couple of Beehive cacti – *Escobaria vivipara*.

Some thirty miles far from Belen, on Route 60, we decided to visit a big population of the Pineapple Cactus. Populations of this early bloomer are widely dispersed through Arizona, New Mexico and Texas and therefore not easy to find. A bit of luck, or a good friend with reliable data, will definitely help to locate this somewhat elusive plant. In a lonely place that Hitchock would have loved – low hills, blue yet cloudy skies, never ending fences and meadows… – we managed to find the Echinomastus population we had visited several times before (Figure 4). Unfortunately, a car had crashed through the fences and left the cattle grazing on the roadsides. As a consequence, superb Echinomastus plants were trampled or even chewed, and the once amazing plants were, for the most of them, in a sad situation compared to what we had seen some years before. Yet, young examples of this re-

Figure 5. Seedlings of Echinomastus have found a home right next to this lovely *Escobaria vivipara* clump. Near Belen, NM.

Figure 6. A Teddy Bear Cholla North of Globe, AZ. This lovely plant produces superb flowers but is also protected by a very mean spination.

putedly difficult to grow species managed to flower under the protection of barbwire or spiny Opuntioids. (Figure 3) A lovely clump of Escobaria even gave an extra harbour to a bunch of Echinomastus seedlings, as well. (Figure 5) Some kilometers later, in a juniper pinion forest, we found another population of Echinomastus. For some reason we do not know, all the plants were noticeably smaller than those we had seen on Route 60.

Figure 7. Two emblematic species of this part part of the Arizona Desert: *Carnegiea gigantea* and *Ferocactus cylindraceus*.

Back to Arizona

During the last years I had spent enough time in Southeastern Arizona to know it harbours some of the loveliest Echinocereus species. So, we dropped our bags in Globe after a few stops in the Malpaìs Conservation Area – more lava flows, more Claret cups –, a night in Springerville and a very disappointing visit to Alpine (AZ) where I had hoped to find again some superb *Echinocereus fendleri* with long, white and slender centrals. I had encountered them in the early 2000's, in some sort of a sub-alpine forest.

Even more intriguing were the globular cacti that grew with them. As far as I can remember they looked like *Pediocactus simpsonii*. Should I be right, this population could be the Southern-most one in Arizona. I just wanted to check this out and be sure that those plants were no Beehive cacti, which is a common species in this area, indeed. When all was said

and done, I was unable to find the place I had visited 15 years ago and so remains the presence of Simps' in Alpine to be checked.

The city of Globe is located next to the limits of the Tonto National Forest, and seemed a good place to drop our bags for a couple of days. From there, we made a one-day drive North up to Payson, then East to Show Low and back to Globe. We first cruised among nice populations of *Ferocactus acanthodes* (aka *F. cylindraceus*) and *F. wislizenii*, *Carnegiea gigantea* and various *Cylindropuntia* species.

Among the last genus one must mention *Cylindropuntia bigelovii*, aka the Teddy Bear Cholla (Figure 6). From a distance the plant looks like a fluffy small tree, hence its name. Do not even think about giving it a hug, though. Like some other Chollas this very spiny species tends to loose cladodes that will end rooting around or be transported by animals (zoochory) to some distant place. So, unless you wish to collaborate to this reproductive strategy, keep away from these tremendous, yet fierce, plants.

Otherwise, most Chollas produce fruits in vast numbers. Despite Cylindopuntia's unfriendliness, the most cold-hearted cactus lover couldn't do anything but surrender to the beauty of their flowers. Together with their related *Opuntia* species, the Fero's, small Mammillaria's and the huge Saguaros growing among them, they form a very typical picture of Southern Arizona (Figure 7), like in the area around the Roosevelt Dam.

Driving up North, the landscape soon changes into juniper pinyon woodland. Between Payson (ca. 1500m) and Show Low (ca. 2000m), we drive through a more or less open forest of conifers. Purple spots on the side of the road give the Hedgehogs away. These are nice examples of *Echinocereus bonkerae* (Figure 8), a species that is sometimes difficult to tell apart from *E. fendleri* and *E. fasciculatus*. It is common in this region of Arizona, but only there on the planet.

Nested in the dry remnants of some Herbaceae we will also find some big *Escobaria vivipara*'s and a nice flowering Asclepiadaceae: *Asclepias asperula* (Figure 9). The striped caterpillars of the Monarch butterfly feed on this one and retain the toxin the plant produces, making them unpalatable. On a very steep rocky area I had climbed to examine a fantastic clump of *Echinocereus bonkerae* I also made an unexpected encounter with *Mammillaria viridiflora*. This was the first time I had come across

Figure 8. Two clumps of a rather localized hedgehog species: *Echinocereus bonkerae*, near Payson and near Globe, AZ.

Figure 9. *Asclepias asperula*, near Payson. Caterpilars of the Monarch buttefly feed on this toxic plant.

Figure 10. Another Echinocereus species with a quite restricted distribution in the US: *Echinocereus fasciculatus*, Arizona.

Figure 11. *Opuntia basilaris* is a common species in western Arizona and eastern California

this frost hardy *Mammillaria* species. The reason is that, although up to 10cm across, this relatively common species remains quite inconspicuous, even in flower.

The next day, we left Globe to Phoenix and stopped several times to take pictures of flowering *Cylindropuntia*'s and *Echinocereus fasciculatus*, just another fantastic Hedgehog (Figure 10). Due to chromosome counting, a new taxa

Figure 12. On our way to California we were lucky enough to find a flowering species of *Langloisia*.

Figure 13. The Yucca species that gave its name to the Joshua Tree National Park, California.

may be one day be separated from this tetraploid species. That is what happened to *E. apachensis* (diploid) which once belonged to *E. fasciculatus*. Time will tell…

At that point in time, my son Isidore (then 9 years old) had already gathered dozens of bones... Soon, this young would-be zoologist (or paleontologist) had made the purchase of a huge bag in the Phoenix suburbs unavoidable. Dozens of ribs, backbones, teeth, skulls… of all kinds of mammals that had been victims of the traffic will soon cross the ocean in it. Who could resist such a passionate kid?

Western Arizona to California and Nevada

April 2017. Two years after our last trip to the US, we landed in Phoenix Airport… again. This time, we targeted Eastern Arizona, Western California, Southern Nevada and Utah. Although we did not make reservations – except

Figure 14a & b. Those two pictures of the widespread *Echinocereus engelmannii* were taken only a couple of miles from each other. It tells a lot about the variations that occur within this species.

for the first night, in Phoenix – and may sound a bit, say, reckless for that reason, it was far from a spur-of-the-moment journey. Actually, it never is. Collecting data about the must-see plants is one of my favourite winter occupations. So, when we finally leave Europe, our road map is always duly annotated.

So, we headed North to Wickenburg, then East to Quartzite and the Joshua Tree National Park, in California (Figures 11 & 12). The Park was established to preserve patches of two desertic ecosystems: the Mojave Desert ecosystem and the Colorado Desert ecosystem. In the first one, the star of the drama is, of course, *Yucca brevifolia* (Figure 13), aka the Joshua Tree. It grows by the hundreds only a few miles from the Eastern entrance of the park.

But, before we even encountered those magnificent plants, we stopped several times for big clumps of flowering *Echinocereus engelmannii* (Figures 14a &14b). Like many widely distributed species, this Hedgehog varies a lot in its general appearance. It makes the splitting process that ruled during most of the XXth century quite understandable. In the Joshua Tree National Park we encountered specimens with long and somewhat curved black and white spines, as well as plants with a fierce yellow dagger-like spination (the plant once regarded as var. *armatus*, I guess).

Flowers were pretty much of the same light purple colour, though. The silent colourful explosion of the Hedgehogs' flowers contrasted strikingly with the grey, kind of gloomy look of the neighbouring *Cylindropuntia ramosissima* (Figure 15). This may be one of the most heat

Figure 15. *Cylindropuntia ramosissima* is not uncommon in the Joshua Tree Nat. Park area. One wonders why this interesting species is rarely grown in amateur greenhouses.

resistant cactus species. It manages to survive even in the Hell-hot Death Valley. It is also regarded as one of the most evolved species of the genus. Despite the distinctive and beautiful diamond-looking pattern of the segments, it remains seldom seen in collections. That is why I really wanted to meet it in the field. Flowers appear during the summer, but even when

Figure 16 & 17. *Escobaria alversonii* is not an easy plant to find, but it is worth searching. This beautiful species used to be just another variety of the widespread *Escobaria vivipara*. It is now a species in its own right.

Figure 18. *Echinocactus polycephalus* is known to be temperamental in our greenhouses and big examples are rarely seen in Europe. Here, in California, it grows peacefully to big proportions in a very hostile environment.

Figure 19. Around Shoshone, my daughter Flore managed to find a nice specimen of *Crotalus cerastes*. This young lady has nerves.

sterile the plant deserves some attention for its geometric pattern. Both spination and branching habit contribute to its fascinating look.

It took me a couple of hours horsing in the rocky formations of the park to finally spot the plant that had taken us here, really: *Escobaria alversonii*. Previousely treated as a subspecies of *Escobaria vivipara*, it is now regarded as a 'good' species (Figures 16 & 17). Here this marvelous cactus is sympatric with *Echinocactus polycephalus*, not to be confused with the big *Ferocactus acanthodes* that grows in the Park, also.

The Foxtail Cactus – *E. alversoni*i, that is – seems to be just another forgotten-by-the-amateur species. One must add that it is reputedly

Figure 20. En route to Death Valley, we made a halt in the small town of Shoshone, California. The place and the diner looked like it was stuck in the 50s.

long to grow from seed and has also the reputation to be rather temperamental. Here, in California, freshly grown red and black spines were making beautiful crowns on the top of the 30cm tall plants I was lucky to meet. Light pink flowers will show later in spring or in early summer. Anyway, *Escobaria alversonii* is not an easy fellow to find and is far from widespread. Said to be endemic to California by some authors, it seems nevertheless to also grow in Northern Arizona (New Cactus Lexicon). In contrast, *Echinocactus polycephalus* is a common plant in this region, or at least, for obvious reason, much more easy to spot (Figure 18). Big examples pop up most everywhere on the rocky formations that surround the roads of this part of California and nearby Nevada, and it is even found on flat areas, as well. One wonders how this plant manages to endure hell-hot summers and cold, if not freezing winters in its native habitat while it is almost im-

Figure 21 & 22. *Escobaria chlorantha* is just another former variety of the amazing *Escobaria vivipara*. It grows on limestone ridges in California, Southern Nevada, North Western Arizona and Southwest Utah. These ones were found around Las Vegas.

possible to grow it satisfactorily in Europe… The same applies to a bunch of other Cacti from this area: solid as a rock in the (harsh) field and extremely prone to die in our (mild and comfortable) greenhouses.

The next day, we drove to the Death Valley National Park, not a trip I would advise during the summertime, to be honest. The lowest

Figure 23. The gypsum-rich claysoil is the perfect habitat for *Pediocactus sileri*. In fact, it is the only habitat of this species

Figure 24. A nice *Pediocactus sileri* near Fredonia, Arizona.

place of the US is situated in the Park, which, in passing, is a geologist dream comes true. Heading back to a small town called Shoshone (Figures 19 & 20) through the Funeral Mountains I had hoped to find some *Sclerocactus/ Echinomastus johnsonii*. No such luck. I was unable to spot any of this superb cactus that could look like a young Ferocactus from a distance. I shall have to wait two more days before being introduced to this species near a small town called Littlefield.

Figure 25. In Toroweap, the sight is fantastic. Small Phlox add a delicate touch to the awesome scenery.

Now, we are heading to Las Vegas – the kids will love it as much as the parents will not – stopping time and again when nice packs of limestone-derived soils and rocks appear. The reason is simple: in this very harsh part of the Nevada Desert grows another *Escobaria vivipara* relative, called *Escobaria chlorantha*, aka *Escobaria deserti* or even *Escobaria vivipara* var. *deserti* (Figures 21 & 22). It took me some time to locate this plant, which appears like a white ovoid to sub-cereoid 'something'. At first glance, this big and rarely branching 'Beehive' looks pretty much like the plant once known under the name *Mammilloydia candida*. Unfortunately, flowering time had not come, yet. I guess that we shall be back one day or another to meet it at its best, that is to say: with a couple of pale yellowish-pink flowers.

The Northern Arizona Treasure Trove

To me, the sometimes barren-looking Northern Arizona – the Arizona Strip – and the Four Corners area are just some of the most fascinating places on Earth. It is not only because all shades of red and yellow show in the canyons and tremendous rocky formations you encounter there, but also because it is home for some of the most exciting species of the whole cactus family, namely species belonging to *Sclerocactus* and *Pediocactus*.

Among the rarest and most temperamental – demanding as for soil type – cactus of this area, one has to mention the famous *Utahia si-*

Figure 26. Once regarded as a variety of the ubiquitous *Echinocereus triglochidiatus*, this plant is now regarded as an *Echinocereus coccineus*.

leri, aka *Pediocactus sileri* (Figures 23 & 24). It only grows on a few greyish or reddish clay layers around the Utah-Arizona border. These layers are easy to locate when you drive on the 389, from Colorado City to Fredonia. All you have to do are some "walk and try" sessions and, if you are having a lucky day, you will find some examples of this rare plant. As far as I know, this species has proved impossible to grow on its own roots. For that reason, those disrespectful people who do not care about nature preservation, about State, US Federal or international regulations, should definitely think twice before collecting this species in the field… Here, in the whitish and gypsum-rich clay, it seems to thrive almost deprived of any plant competitor.

While I was spending a couple of hours in search of Utahia's, my wife and kids had fun in the hotel pool, in Kanab. Swimming at 1800m in a place surrounded by red mountains

Figure 27a. Nested in mosses, *Pediocactus paradinei* is about to flower in the forests near Jacob Lake, Arizona.

Figure 27b. *Pediocactus paradinei* near Jacob Lake, Arizona (from a slide taken in 2004).

is a thing I would never have dreamed of, but that's exactly what they did. Put Kanab on your next trip agenda.

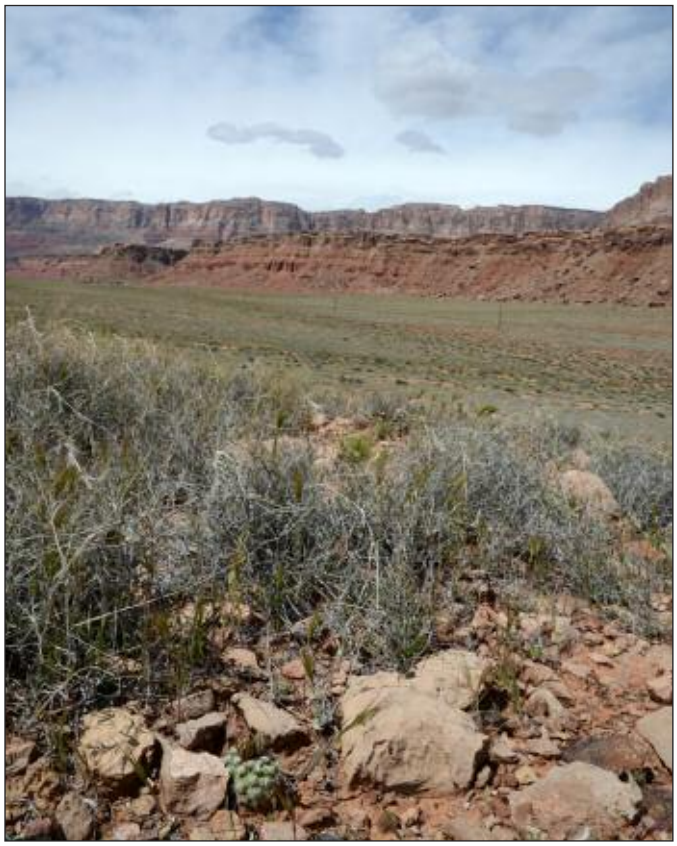
Kanab is also a place that gives an easy access to some awesome areas on the North Rim of the Grand Canyon. All you have to do is take an unpaved road and make a 2 or 3 hours long drive through the Antelope Valley to a place called Toroweap. In the gentle slopes that surrounds the road grow many fascinating cactus species we failed to find. We did not spend too much time at it, I must confess: even the most dedicated cactus lover must surrender to, say, democracy, especially when the protesters are sitting in the very car he drives

Figure 28a. Growing with *Pediocactus paradinei*, this plant may well be *Escobaria vivipara* var. *kaibabensis*. Near Jacob Lake, Arizona.

Figure 28b. Working as a team definitely eases the life of a cactus amateur. Flore locates the plants with the GPS data, while dad takes the pictures. Near House Rock Valley, Arizona.

… Among those species we did **not** see, let me mention: *Pediocactus paradinei*, *P. peeblesianus* and *Escobaria missouriensis*… The last part of the trail was tricky, even in a Jeep. I had to get out of the car several times to fill big potholes with stones or to figure the safest path to get out of a rocky jumble.

Then came Toroweap Overlook, so magnificent it could almost make you forget the massive clumps of the once-called *Echinocereus triglochidiatus* var. *toroweapensis* (Figure 26)!



Figures 29 & 30. The elusive *Pediocactus bradyi* in the Marble Canyon area. In some places, you could walk on them...

While some minor morphological features – including narrower flowers than those of 'regular' *E. triglochidiatus* – seemed to justify the description of a new variety in 1991, fifteen years later the New Cactus Lexicon downgraded it to the widespread *E. coccineus* ssp. *coccineus*. Some *Agave utahensis* were also present on this site, along with a mat-forming *Phlox* species and several Opuntioids (Figure 25).

House Rock Valley is just another place we never fail to pay a visit to. Located North of the Grand Canyon National Park, there is only one road to get there: the Route 89a. From Jacob Lake you drive through the forest of the

Figure 31. *Echinocactus polycephalus xeranthemoides* is another cactus that can be found around the Marble Canyon. Unfortunately for us, it flowers later in the summer.

Kaibab Plateau. Then, suddenly, the road and the forest seem to open and you see the awesome Valley in the distance. California condors are supposed to fly above you, but I never saw any of them.

Well worth seeing, too, are tiny *Pediocactus paradinei* (Figures 27a,b & 28a) in the woody hills that surround the 89a. They grow embedded in mosses, grasses and in a silex rich soil, as far as I can tell. Some years before, I had found huge plants – about 8cm across – of this species on a flat shoulder along the very same road (Figure 27b). They were lost in grasses and I only found them when I was getting back to the car after a long and disappointing research… a situation all field cactophiles know too well.

On this year location, though, plants were showing buds, only. It is sometimes told that poor seed dispersal strategies might be responsible for the 'patchy' distribution of most *Pediocactus* species. That could be the reason why, when you find one such Pedio' and when your brain gets accustomed to its general appearance, many new plants seem to pop up around … and why a single will not show up for hours.

Anyway, *Pediocactus paradinei* is easily confused with the seedlings and young plants of just another *Escobaria vivipara*: the taxa once called *E. vivipara* var. *kaibabensis* (Figure 28). In contrast with other Beehive cacti, the stem of this subspecies is somewhat depressed so that only the top of the plant appears above the

Figure 32. In the House Rock Valley, Arizona one can find a nice population of the plant once called *Echinocereus engelmannii* var. *variegatus*.

Figures 33a & 33b. A big example of the plant I had mistakenly identified as the very rare *Sclerocactus sileri*, and two small ones hidden in the grass. House Rock Valley, Arizona.

ground. The funny thing is this so-called variety grows with more typical beehive-shaped *Escobaria vivipara*'s. This puzzling situation might explain why the New Cactus Lexicon recognized only one, very widespread species – *Escobaria vivipara*.

One has to mention this master book also suggests that further studies may well split this highly variable taxon into several sub-

Figure 34. The "real" *Sclerocactus sileri* I met in the House Rock Valley (from a slide taken in 2004).

species, though. In the late 70's and the 80's, when Pierre Fischer was working on *E. vivipara*, and when Lyman Benson edited his masterpiece, some morphology-based and flower-based varieties – today, one would preferably use the rank 'subspecies' – were recognized. Molecular data might well resurrect some of the lost varieties in the near future. Time – and passionate researchers – will tell…

We decided to call home one of the few lodges of the House Rock Valley. In 2004, this place had a very good restaurant and my wife still remembers those moments when we sipped excellent wine there, at dusk. Today, the restaurant is not quite what it used to be anymore, but the sight remains, say, inspiring.

Anyway, we quick paid our first visit to the Marble Canyon in order to enjoy – depending on who is concerned – *Pediocactus bradyi*, reptiles or awesome landscapes… This *Pediocactus* species is easy to find, once you know the type of soil it requires. Flowering was just over,

Figure 35. We found several different *Oenothera* species during our trips in the Southwest. The same can be said for the genus *Yucca*. Jerome, Arizona

though, and all I managed to see were plumped plants crowned with vanishing flowers and unripe fruits (Figures 29 & 30). Some plants were tagged for scientific purpose, a fact that reminds anyone who walks along the canyon that this species is, like most others in the same genus, protected by Federal and State laws, and by the Cites (Annex 1). So, although we could barely walk without stepping on them in certain places, we did not even think about picking plants or even seeds of this little gem.

Some nice 'barrels' grow there, as well. Those *Echinocactus polycephalus* ssp. *xeranthemoides* (Figure 31) are in a glorious state, like many *Echinocereus engelmannii* that surround them in vast number. This Hedgehog was formerly known as *E. engelmannii* var. *variegatus* after its spines variegated in colour (Figure 32). Both taxa will flower later in spring or even later in the summer. The same goes for a poorly understood and rarely seen in collections *Opuntia* species known as *O. nicholii*

Figure 36. Around the town of Jerome, Arizona, blue Agaves grow in great numbers

whose tremendous pink (or sometimes yellow) flower opens around mid-May.

But, this time I was also on a mission in the House Rock Valley. A friend of mine who dedicates much of his life to the genus *Sclerocactus* was anxious to know more about a very rare and probably vanishing species I chanced to encounter there, some 13 years ago (Figure 34).

So, I went back to the place where I had seen what later appeared to be *Sclerocactus sileri*. I spent a couple of hours beachcombing the sandy hills that surround Route 89, but in vain. Then, just as I was going back to my car – again! – I almost stepped on a fat, white-flowering *Sclerocactus*. It looked quite unusual to me and I had no doubt about it: it must be *Sclerocactus sileri*. The next day, when I came back to show the lovely plant to the kids and Cécile, my son Isidore found two more examples (Figures 33a & b). They were small but in flower. Ecstatic, I was.

The story does not end this way, though. Two weeks later, I sent the pictures of the plants to my "Sclerophilic" friend, who quickly answered that the multicolored spination of the plants placed it in the *S. parviflorus* catch-all. Needless to say that I was bitterly disappointed. Yet, this convinced me to look at the slides I had taken in the same area in 2004 and – guess what – the 2004 Sclero's were REAL *S. sileri*! (Figure 34) So, I know my next mission (if I accept it): I shall go back there and search until I find living examples of the rare, presumably almost extinct, *Sclerocactus sileri*, again.

Figure 37. Sometimes, all you have to do to admire awesome plants is stepping out of your car. *Sclerocactus parviflorus* with a formidable colourful spination, near Page, Arizona.

Bagdad… Arizona

While heading to Page to make a short stop at the Glen Canyon Dam on the Colorado River, we were lucky enough to find some superb *Sclerocactus parviflorus* along the road (Figure 37). Those big plants showed an amazing multicoloured spination and many flower buds. All we had to do was to stretch our legs out of the car to scrutinize them. Lovely clumps of *Echinocereus triglochidiatus* added scarlet touches to the scenery. Then, we

Figure 38. Isidore in awe in front of what is said to be a T-rex footprint. Dinosaur Tracks, near Tuba City, Arizona.

Figure 39. A nice clump of the Claret Cup Hedgehog, near Jerome, Arizona. I still wonder which species it may be.

stopped in Tuba City, to visit a place called Dinosaur Tracks (Figure 38). *Sclerocactus whipplei* is said to grow somewhere near this place, but we dropped this case and left it to our next trip to Arizona.

The next day, after a couple of hours halt in Grand Canyon Village and a couple of miles long walk along the South rim – Isidore had never seen it before – we headed down to

Figure 40. Anti-Trump activists in Prescott, Arizona.

Flagstaff, Sedona and the city of Prescott on the 89 and 89a, driving through lovely valleys and gulleys.

Some hundreds of meters before the Sedona city limits, on the steep slopes along the right side of the Route 89a one can encounter some lovely *Escobaria vivipara* var. *arizonica* (Figures 46 & 47). This population tends to flower earlier – around mid-April – than many others I know. I guess it has something to do with the altitude or other local microclimatic conditions. Although I have encountered this species dozens of times in my life, and in many different places in Arizona, New Mexico, Utah and Nevada, this is the only place I had the opportunity to see it in flower. But it won't be the last…

To reach Prescott you go down a sinuous mountain road with lots of pretty bluish Agaves on the roadside (Figure 36). Around Jerome – a lovely town whith a tiny catholic church and many souvenir shops – hundreds of Claret cup Hedgehogs thrive on rocky walls (Figure 39). In some places, you will also encounter Yuccas, with flowering *Oenotheras*

Figure 41. A basaltic plateau near Bagdad. The place where Escobaria vivipara var. buoflama grows.

(Figure 35) and some small Delphiniums. Since Jerome is located in Yavapai County, chances are these Hedgehogs are the recently described *Echinocereus yavapaiensis* (2006), another new species based on ploidy level. We shall see some bigger ones on the Constellation Trail, near Prescott.

Prescott – a lovely touristic city, indeed – offers a nice historic centre and some cool places to have lunch or dinner. We loved visiting the big antique shops and having some ice creams under the trees, near the City Hall. I guess we deserved some rest after a 10 days long trip in the rocky and sandy wilderness of California, Nevada and Arizona. There, we met a flock of citizens who, on a weekly basis, demonstrate their opposition to the latest president of the United States (Figure 40). Every Tuesday, they stand on the sidewalks of one of the city main roads holding banners with "Leave planned parenthood intact", "Fix Obama Care", "Healthcare is a human right" etc. Some big pickups honked at them in disapproval, while other people honked in support…

Prescott seems embedded between two mountain formations. The small one contains the Prescott National Forest and looks like an echo of a bigger one that contains the Tonto and the Coconino National Forests. When you are almost done with the Prescott National Forest tortuous road, all of a sudden, you discover the extensive flat areas of the Sonoran Desert at your feet. Now, some Ferocactus show again and Agaves seem more numerous than they used to be at higher elevation. The sight is awesome.

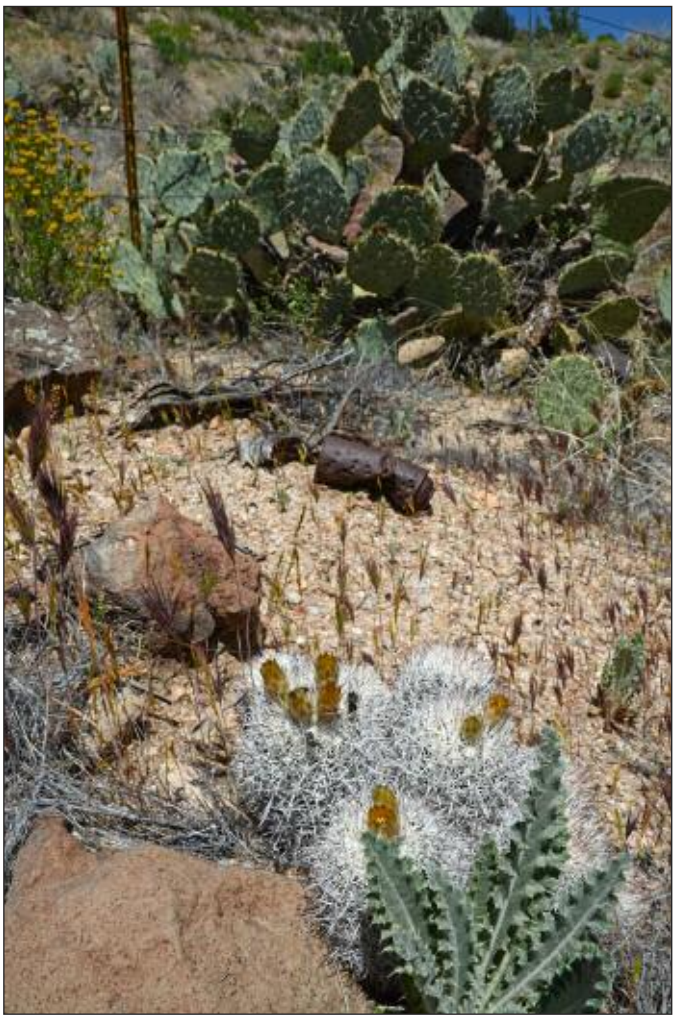


Figure 42 & 43. *Escobaria vivipara* var. *buoflama* is a sturdy plant, indeed. Note the peach to salmon pink flower.

Soon we leave the 89 to take the 96, heading to Bagdad. It is now necessary to tell the reader a funny story. Travelling with a cactus-lover is never easy if one does not share his/her enthusiasm. That is why he, or she, has to plan other activities than cactus-seeking, cactus-hiking, speaking about cactus, reading books about cactus and even eating cactus burgers... As a historian by profession myself, it is not too dif-

Figure 44. *Echinocereus engelmannii* is a common plant in the desert that surrounds Wickenburg, Arizona.

ficult to me to guess what my wife – who teaches modern history at the Free University of Brussels – will enjoy: old towns, art museums, old factories, mines… anything one would call heritage or traces of past human activities. In such situation, Bagdad – a place I HAD to visit – sounded like a dream comes true to me. The reason was I thought Bagdad, Arizona, was the place where the movie Bagdad Café was shot. So, I told my wife I was driving to that very special place, thinking to myself: "Waow, call it luck: they shot a famous movie in the very town where *Escobaria vivipara* var. *buoflama* grows!" However, things were not that easy, since I had mistaken Bagdad Arizona with Bagdad *California*… Although my wife doubted her husband's honesty for a while, this situation gave me the opportunity to assess Cécile's high tolerance to both her man's distraction and fiery passion.

Life in Bagdad relies on mining activities, mostly. People who live there either work for the company that runs the local big copper mine or provide the employees of the company with goods and facilities that come with modern life: food, education, football etc. This place seems so rarely visited by tourists that we were unable to find any hotel, though. We still managed to land for a while in a lovely old-fashioned diner with homemade food and welcoming locals. In passing, it is my pleasure to mention that locals in Bagdad, like in all the places I visited in the US, are very welcoming and eager to know where you come from, where you are heading to and if you have had a pleasant stay. Anyway, a nice diner would have been nothing without an exciting cactus hunt. Call it a prerequisite.

I guess few people, even among cactus amateurs, remember the "buoflama event". In the late 70's-early 80's Pierre Fischer was busy with a thorough study on the *Escobaria vivipara* complex. He was the Beehive cactus undisputed expert of this time. By then, several varieties – a commonly used taxonomic rank, at this time – had already been described, like it used to happen with many other cactus species with a large distribution – in this case: from Canada to Mexico!

In 1980, Fischer added a new one. *Escobaria*

vivipara var. *buoflama* that was named after the Bureau of Land Management whose survey of the Bagdad area caused the discovery of the new taxon. It tends to favour some local basaltic crests and their close proximity. That is why the hunt began with a climbing session to a dark basaltic cap. The temperature was awfully high up there and it first seemed to me that "buoflama" did not grow in this hodge-podge of dark grey rock I had chosen. Some Opuntioids did their best to survive the harsh conditions that prevailed there, though, along with some *Agave utahensis* (Figure 41).

Then, I saw a white, pineapple-tall and somewhat globular thing in the rubble: there it was! It took me some more minutes to find a couple of other examples and some more to take pictures. Unfortunately, time was running out and I thought that Cécile and the kids were anxiously waiting in the car. So, I rolled down the big slopes bitterly frustrated, again. Yet, as I was taking pictures of the few examples that I had found on the plateau, the kids and Cécile were beating the bush at the foot of it in order to find some bones for Isidore's collection. That is exactly where they found huge, flowering examples of *Escobaria vivipara* var. *buoflama*.

With an almost pure white spination and salmon-pink flowers they fitted perfectly in the frame of the original description (1980) (Figures 42 & 43). Some clusters were about 80cm wide and 50cm tall, if not more. Anyone who grows *Escobaria vivipara* from seed will wonder how many years it took them to achieve such size. I also wondered if this local "Beehive cactus" population intergrades with others or if it is isolated and morphologically really distinctive. If so, the "buoflama" may well deserve resurrection at subspecific rank. The taxonomic story of *Escobaria vivipara* is not a cold case, I am quite sure of it.

The end of our 2017 journey in the Southwest was near and so was my to-do list. Yet, I was told the yellow-flowering form of *Sclerocactus/Echinomastus johnsonii* grew along Route 93, North of Wickenburg. I would definitely not leave the country without visiting this plant. Like many other cactus species of the Southwest, this species responds by quick

Figure 45. This plant was on my to-see list for a while: the yellow-flowering form of *Echinomastus johnsonii.* North of Wickenburg, Arizona.

death to any error in cultivation while it would survive many "abuses" in its natural habitat.

This also applies to *Sclerocactus mesae-verdae*, for instance. Near Shiprock (NM), I saw a small example of this rare plant that had been crushed by the wheels of a 4WD vehicle. Despite this, new heads were strongly sprouting from the flattened original stem… while even the most experienced and skillful cactus growers would agree on the point that it is nearly impossible to grow on its own roots! Think about the 16-stemmed *Sclerocactus papyracanthus* I met in Belen. While it probably resulted from severe wounds due to grazing animals, I strongly suggest you do not try this at home with your own sickly lil' Toumeyas… In a nutshell, *Sclerocactus johnsonii* is a proud member of the "diva cactus squad" and, as a consequence, remains quite uncommon in our European greenhouses.

Figures 46 & 47 Escobaria vivipara var. arizonica (?), near Sedona, Arizona.

A first attempt to find the Johnson Fishhook Cactus near a parking lot proved not too satisfactory: we spotted remains of dead plants in the form of spines cages here and there, and even a living, though ugly, example, but that was all. Dry remains, big Yuccas, huge *Ferocactus cylindraceus* and lovely *Echinocereus engelmannii* (Figure 44) were no compensation for my disappointment. Even worse, successive stops along the road for plant sake had got on the nerves of the kids and they were now anxious to jump in the pool of our next hotel, in Wickenburg. All I could do was sit behind the wheel and drive to the next destination, bitten by frustration. I was driving for 10 minutes, or so, when Flore warned:

-"Dad, I have seen a yellow-flowered cactus on the roadside!"

Like always, in this situation, I asked:

- "Was it an Opuntia?"

- "No, it was definitely not", she answered.

A quick u-turn on the 93 and we were back to place Flore had pointed. Since the road was built right through a somewhat undulating terrain, the flattened tops of the bumps it crossed were easy to survey from the car seats. That's what Flore had carefully done. She made my day, for this was home of a big population of healthy yellow-flowered *S. johnsonii* (Figure 45)! Old examples, mostly hidden in dry grasses, reached about 60cm or even more. They were easily overshadowed by the presence of huge *Ferocactus cylindraceus* – some, so big that their roots were unable to secure them in the ground, had fallen and were lying in agony –, by old Joshua trees and by big clumps of flowering *Echinocereus engelmannii*. One hour later, the kids were playing by the pool, in Wickenburg. Our odyssey in the Southwest had come to an end, but plans were already made for the next one, with many more elusive species to find, many more remote towns to visit, many more bones to collect and many more pictures to take.

Denis Diagre

Travel with the cactus expert (20)

Zlatko Janeba continues his popular series of articles about exploring the American South West.

Photographs by the author.

After a breakfast in the Border Inn we headed towards the Great Basin National Park. We drove from Baker towards the park and later we took a dirt road heading to the North. We passed a ranch and then stopped near low rolling hills at the base of the mountains. The landscape was covered mostly with sagebrush. According to Josef Busek that was the place he had visited back in 1980 and *Sclerocactus pubispinus* from there had been given his field number JB 01. Josef also told us about his visit to the same place in 1989, but that time he did not find any scleros there, claiming the hill he had visited before was washed away by torrential rains. Hardly believeable, but anything can happen, right?

Anyway, we could not find any scleros either. There were four of us and no success. I had seen numerous localities of *S. pubispinus* and of the closely related *S. spinosior* before and, for some reason, I did not like this habitat too much. The soil seemed to be too gravelly and too solid. After the initial failure I decided to explorer a larger area around. I walked quickly across several low hills and suddenly I felt I was in the right biotope. I slowed down and start to search for plants and in a couple of minutes I discovered my first sclero. Excited by the finding, I beckoned to my friends and after some time we altogether saw some 10 specimens of *S. pubispinus* in that area (Figure 1). It was at an elevation of about 1840m and some of the scleros were still in flower. Yet, the flowers were not fully open as it was still quite early in the morning and it was cloudy. We also observed *Escobaria* (or *Coryphantha*, as

Figure 1. Gerhard Häslinger and Eric Binder at the locality of *Sclerocactus pubispinus* JB 01 at an elevation of 1840 m, West of Baker, near the Great Basin National Park in Nevada

Figure 2. Habitat of *Sclerocactus pubispinus* near the camping site on the Silver Creek, Nevada. Notice the snowy peaks of the Great Basin National Park in the background and a flowering sclerocactus specimen in lower left corner.

Figure 3. *Sclerocactus pubispinus* with yellow flowers, near the camping site on the Silver Creek, Nevada. It is the same specimen as in Figure 2.

treated mostly by American botanists) *vivipara*, *Echinocereus engelmannii*, and *Opuntia polyacantha*.

To our big surprise, we could not enter the Great Basin National Park later that day. The road heading towards Wheeler Peak (3,982m), the tallest mountain in the Snake Range (White Pine Co, Nevada), was still closed. Although it was May 16th, it was quite warm weather and everything was in flower in the valleys, up in the mountains there was still a lot of snow, as we could judge form a distance. It was a disappointment since I had planned to show my companions nice population of *Pediocactus simpsonii* in the park, growing at an elevation above 2,600m. Furthemore, we could not visit the outstanding groves of Great Basin Bristlecone pines (*Pinus longaeva*), the famous longest-living trees that are able to survive in a harsh environment of high mountains. Luckily for me, I had visited the park several times before our visit.

The snow in the mountains was especially surprising since the year 2006 seemed to be relatively dry. Gerhard Häslinger told us that it

Figure 4. A specimen of *Sclerocactus pubispinus* bearing flower buds near our camping site on the Silver Creek, Nevada.

Figure 5. Beautiful *Escobaria vivipara* at the camping site on the Silver Creek, Nevada.

was quite difficult to look for *Sclerocactus pubispinus*, his main interest during their expedition that year. The plants were not fully hydrated, and were often sunken in the soil and one could find only several specimens at places where usually the cacti are quite common.

So, instead of going up into the mountains, Gerhard brought us to their favourite camping site not too far away from here. It was NW of Baker near the Silver Creek, some 5 miles on a dirt road taken from US highway 6. It was a very nice place to camp, next to a creek among aspen trees. And on the surrounding low hills we were shown by Gerhard a rich population of *Sclerocactus pubispinus*. The landscape was just gorgeous. One could shoot a photo of flowering *S. pubispinus* in its habitat with snowy mountains in the background (Figure 2). The sclerocacti were bearing funnelform yellow flowers with brownish outer tepals (Figure 3). But not all flowers were fully open (Figure 4).

Figure 6. *Micropuntia barkleyana* (or *Grusonia pulchella*, if you are a lumper) with flower buds at the camping site on the Silver Creek, Nevada.

Quite common were also *Escobaria vivipara* (Figure 5) and my favourite cactus species, *Opuntia* (*Micropuntia*) *pulchella* (Figure 6). To my surprise, I also discovered a tick attached to my leg sucking my blood. It must have travelled with me for a day or two already. I quickly got rid of it.

The plant was described as *Opuntia pulchella* by Engelmann already in 1863. Although it was later treated as a member of the genus *Corynopuntia* or *Grusonia*, its placement in *Micropuntia* has recently been favoured again, based on both morphological and molecular evidence. Because of its quite large distribution range (mostly in Nevada, but also in Utah and California), the plants are quite variable and from various places various morphotypes can be recognized. This also led to a description of several other species within the genus *Micropuntia*, as *M. barkleyana*, *M. brachyrhopalica*, *M. gracilicylindrica*, *M. pygmaea*, *M. spectatissima*, *M. tuberculosirhopalica*, and *M. wiegandii*. It is clear these interesting dwarf opuntias need more attention from botanists so that the relationships among the potential taxa within this group can be finally solved.

If we were "splitters" we could refer to the plants from the Baker area as *Micropuntia barkleyana.* This name was originally used for the plants from the Snake Valley. The majority of the micropuntias near Silver Creek were loaded with numerous flower buds (Figure 6). It would have been a great experience to come there several days later and enjoy the full flowering peak of this special miniature opuntia. Unfortunately, there was no time for such an adventure.

We had a lunch together at the Silver Creek campsite and then we said goodbye to each other. Gerhard and Eric went to check their sclerocactus localities near Lund and Beryl (UT) and Panaca (NV), and we headed further West along the US highway 6 (or US highway 50). We stopped again in a while, about a mile or so before a place I used to visit regularly in the past. I wanted to see also some new spots,

Figure 7. A flowering specimen of *Sclerocactus pubispinus* along US highway 6, NW of Baker, Nevada, at an elevation of some 1915m.

of course. There, next to the road at 1915m elevation we discovered another population of *Sclerocactus pubispinus* (Figure 7) and saw some five flowering specimens at that spot.

We passed by my old place with *S. pubispinus*, where I used to camp (at an elevation of some 2015m). Later we stopped at Majors Place, the intersection of US 6 (leading further West to Ely) and US 93 (leading South towards Panaca), and tried to search for scleros there. It was a nice and promising landscape but we succeeded in finding only few specimens of *Escobaria vivipara* and the very common *Castilleja angustifolia* var. *flavescens* (Orobanchaceae) with flowers of various colours (from almost pure white to various hues of orange or pink).

We drove further to the West on US 6 (US 50) which is very well-known as the "Loneliest Road", crossing nearly the whole state of Nevada, from Baker and the Great Basin National Park at the Utah borderline to the Montgomery Pass at the borderline with California. Within the distance of some 300 miles across desolate deserts of central Nevada, there are (or used to be) only three towns having more than 100 people. Those are Baker, Ely, and Tonopah.

In Ely we stopped to get some supplies for camping (mostly food and beer) and I filled the gas tank up. When passing the intersection of US 6 with state highway SR 318 (leading South towards Lund and eventually to Las Vegas), we saw low rolling hills covered sparsely with sagebrush and juniperus trees. We tried our luck there, but I only found two specimens of *Pediocactus simpsonii* (Figure 8) and red-flowered castillejas (probably *C. chromosa*). It was just South of the highway US 6, at 1850m elevation.

Figure 8. *Pediocactus simpsonii* along US highway 6 (or US 50), Nevada.

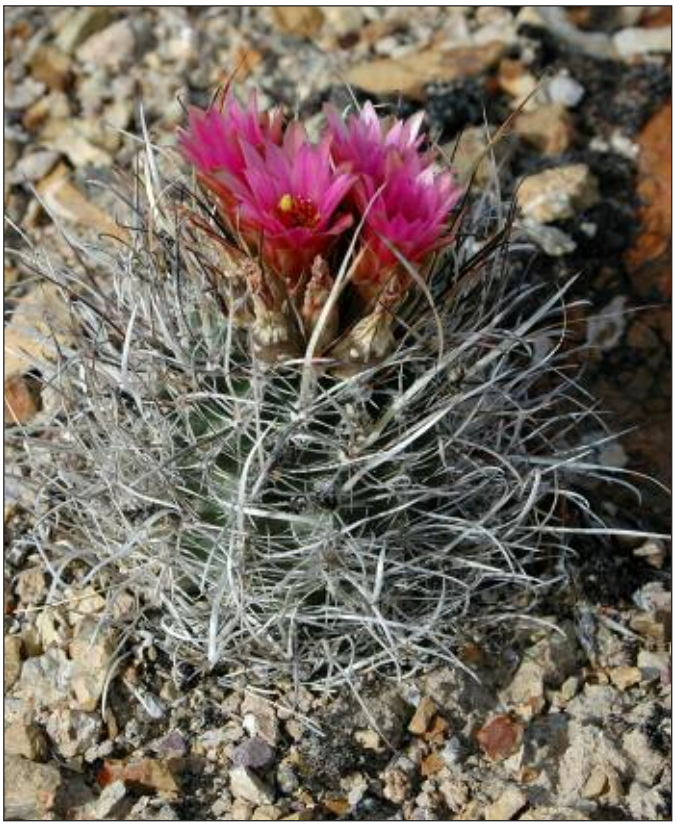


Figure 9. A flowering specimen of *Sclerocactus* (*spinosior*) *blainei* is quite easy to spot. Locality NE of Currant, Nevada.

Gerhard Häslinger had given us information where to look for *Sclerocactus blainei* just Northeast of Currant. We quite easily managed to find five of those sclerocacti at an elevation of some 1600m, but without the precise information it would be almost impossible task to do. When not in flower, this very spiny form of *Sclerocactus spinosior* is very difficult to find

Figure 10. A habitat of *Sclerocactus* (*spinosior*) *blainei* NE of Currant, Nevada. Notice the well-camouflaged sclerocactus specimen in the foreground.

Figure 11. *Echinocereus engelmannii* with a flower bud and excellent spination, NE of Currant, Nevada.

since it looks like a tuft of dry grass (Figure 10). The flowering season was almost over, only the largest plant was still in flower, bearing four campanulate violet-pink flowers (Figure 9). Thanks to this, it was an unforgetable experience and we took numerous pictures there. On the way back to the car we also found *Escobaria vivipara*, *Echinocereus engelmannii* with buds (Figure 11), and *Opuntia hystricina* with buds. In the plains there was also supposed to grow micropuntias, but excited about finding the sclerocacti, we did not care about them anymore.

Sclerocactus blainei was described in 1985 (other later name used for these plants was *S. schlesseri*). The specific level of this taxon is not usually accepted and the plant is either treated as *S. spinosior* subsp. *blainei* or as mere synonym of *S. spinosior*.

The motel and bar standing at the intersection of US 6 and state highway SR 379 (leading North towards Duckwater) was closed and had all doors and windows broken. Evidently, it had not been used for a long period of time. Probably there were not enough visitors passing by, not enough customers staying overnight. Josef told me, that while passing this area in 1989, there was no hotel yet, but the bar was open that time. Long time ago.

We headed along US 6 further to the West and in the plains we tried to look for more micropuntias, but without any success. Meanwhile we at least managed to consume a water melon we purchased in Ely. We only discovered *Escobaria vivipara*, opuntias, and several horned lizards (*Phrynosoma* sp.). Horned lizards are a genus of relatively tiny North American lizards well-adapted to arid and semiarid areas. Their colouration represents an excellent example of camouflage (Figure 12). There are some 22 species of horned lizards and, unfortunately, some of their populations are in severe decline.

Figure 12. Well-camouflaged lizard *Phrynosoma* sp. (probably *P. platyrhinos*) found along US 6 about 20 miles SW of Currant, Nevada.

We passed Black Rock Pass and just before Warm Springs we took a dirt road leading into the wild. We reached a hilly area where we decided to set up our camp. As there was still good light for some time, I went to search the area around our campsite. The terrain there looked nice and promising but I did not find anything interesting. The night was calm and warm. At 9 p.m. it was still about 19°C.

Zlatko Janeba

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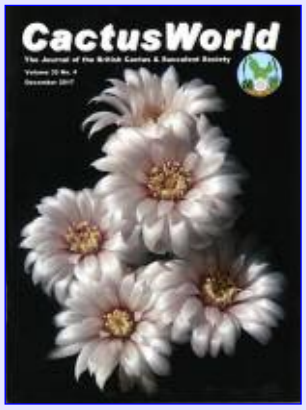

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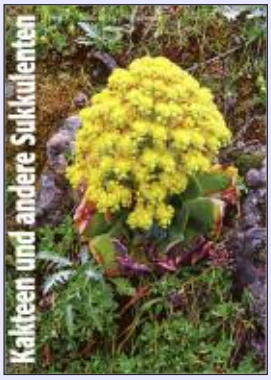

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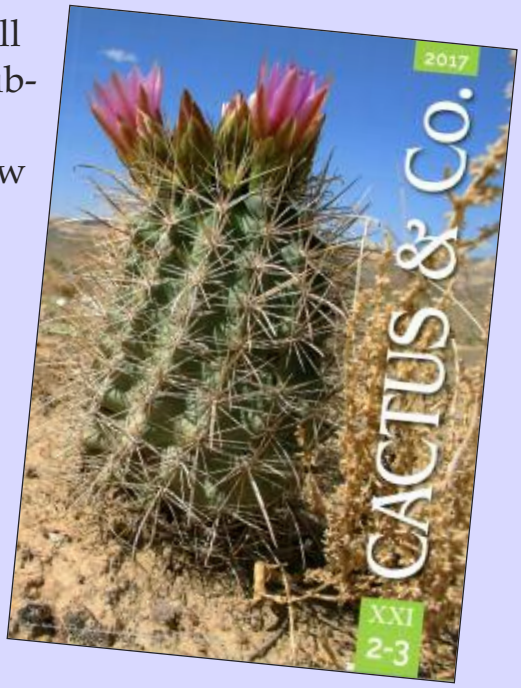

An online and offline cactus journal

While the Internet era naturally made production of cactus journals much easier in all the multitude of aspects, at the same time one could have started thinking at which point the ever growing wealth of information in the Internet would in the end make cactus journals seem obsolete. It is not a secret that in recent times many cactus journals, both printed and online ones, excluding mainly the few with the really large numbers of subscribers, either lowered their number of issues per year or just ceased to be published, so one might think that the time has just come. But the cactus and succulent journal should live on!

As the troubles came also to the Polish journal *Kaktusy i Inne*, left it due to various reasons with some 3 years' break in publication. So after its reactivation in March 2017 the editors decided to make the journal also part of the 'online cactophile's world'. At the same time the journal continues to be published also 'offline'. Yes, the 'offline' publication is essential, as - contrary to some 'modern' views – we think that there is not and never will be anything better to read than printed matter!

This is not the only one of our experiments in the cactus world, another one is that the online version is optionally paid. Time will tell if this could help the journal (we didn't loose our faint hopes for that yet!). The online version can be downloaded from our new website http://kaktusy-sukulenty.pl/joomla16 or from the website of French cactophiles https://www.cactuspro.com/biblio/en:kaktusy_i_inne , where the previous issues are also available. However, that which we most encourage you to, is to subscribe to the 'offline' version, which can be done either through our website, or by email: mrcactustommy@yahoo.com .

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The journal is back again, is alive, it fares well, and welcomes new readers, a well as your support and contribution! Tomasz

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Publishes articles principally about the smaller South American Opuntias, including such genera as *Cumulopuntia*, *Punotia*, *Maihueniopsis*, *Tephrocactus* and *Pterocactus*. The smaller North American Opuntias are also sometimes included.

Since 2013, the journal has no longer been printed but articles may be viewed free on the new website. An annual meeting is also held.

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Tel: +44(0)1636 707649

johnbetteley@another.com

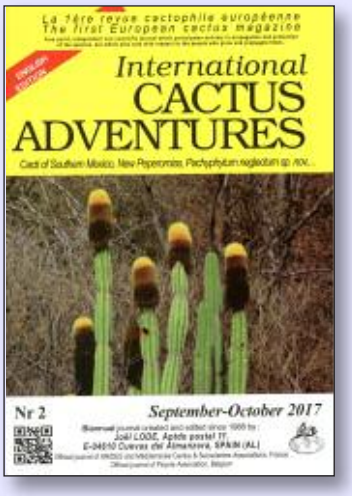
http://www.tephro.com

Succulenta

First published in 1919, this is the journal of the Dutch Cactus Society, Succulenta.
Now published 6 times a year, this journal has a long distinguished history.
Dutch with English summaries.

http://www.succulenta.nl

International Cactus Adventures



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http://www.cactus-adventures.com

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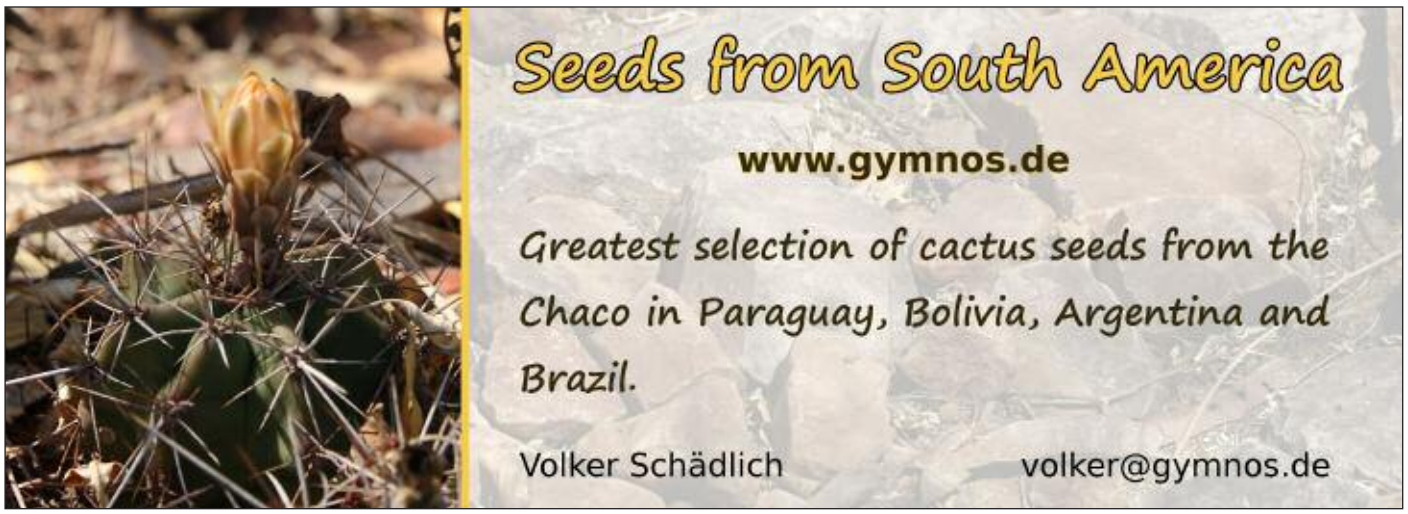

Books for Sale

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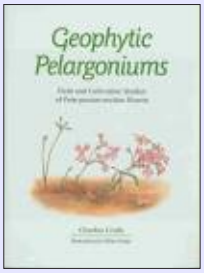

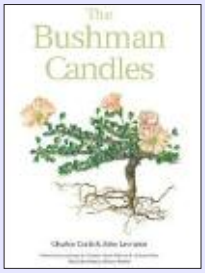

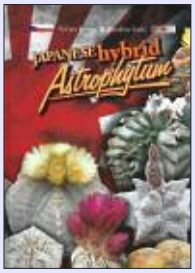

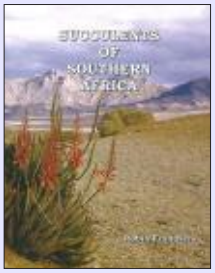

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An Important Library for Sale

Details can be found on Page 11

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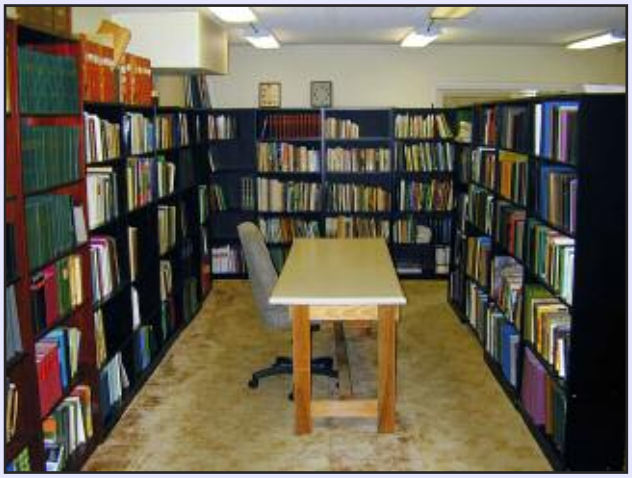

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