

The Cactus Explorer

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



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March 2019

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Cover Picture: *Echinopsis (Trichocereus, Lobivia) huasha* north of Chilecito, Argentina. Photograph by Graham Charles. See [page 33](#).

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 final copy deadline is just a few days before the publication date. There will usually be three issues per year, planned to be published in March, September and December. 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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Opinions expressed in the articles are those of the authors, and not necessarily those of the editorial team.

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INTRODUCTION

So much to look forward to!

This is my favourite time of the year. Even though it is windy, the sunshine has been making my glasshouse warm. I have given some of the plants a light overhead watering and already a few are showing flower buds. I am pleased that the winter has been mild. Heating bills have been reasonable and the plants are looking good.

I have raised before the phenomenon of genera being fashionable or not. In this issue of the Cactus Explorer you can read an article about *Rebutia margarethae*, a free-flowering small species from the mountains of northern Argentina. It has a lot in common with *Sulcorebutia* species but is rarely seen in collections. I am really enjoying re-discovering the fun of growing some of those currently unfashionable plants such as *Notocactus*, a genus that was my first speciality back in the 1970s. Perhaps the latest book from John Pilbeam about *Parodia* in the wide sense, due for publication soon, will rekindle interest in these rewarding plants.

I always enjoy the growing season with lots of opportunities to participate in shows, buy plants at Marts and attend events. You can see adverts for some of these events starting on [page 4](#). All the events connected to the BCSS can be found in their [Calendar of Events](#).

An innovation this year will be *CactusWorld LIVE!*, a succulent adventure. It will be the major BCSS promotional event for the year, taking place over the weekend of 21–22 September at Lullingstone Castle in Eynsford, Kent. There will be a competitive show and plant sales.

There will also be free family entertainment including face-painting, balloon artistry, foam-clay, colouring and prize quizzes, which along with guided tours of the World Garden by Tom Hart Dyke, access to the castle and outlets selling Mexican food will make a great day out for the whole family. [See page 6](#).

As you may know, I am the editor of *Bradleya*, the yearbook of the BCSS. The edition

for 2019, Number 37, will be published in the first half of the year and I expect that subscribers will receive their copies early in May.

This edition of the Cactus Explorer includes the last in the long-running series *Travelling with the Cactus Expert* written by Zlatko Janeba. If there is a demand, I will put all the parts together to make a single downloadable, printable PDF. Please encourage me and tell me if you think it would be a good idea.

Also in this edition is a first: An article not directly concerning cacti or succulents! Clara Tan went to Peru for the first time and has written an entertaining piece about her impressions. It has been more than 20 years since I first visited Peru and I have been many times since. So, I cannot remember what I thought of it when I was first there. I love the place and the people and am now used to what to expect. Prospective travellers often ask me what it is like, so if you want to know, read Clara's article!

We also see the return of our occasional feature about famous people in the world of cacti and succulents, I am very pleased to publish an account of the life of Helia Bravo-Hollis contributed by Morales-Sandoval J. Jesús, Reyes-Aguilar Berenice & Scheinvar Léia. She was clearly a remarkable woman!

I must finish with sincere thanks to all the contributors for choosing the Cactus Explorer as the place to publish their writings. If you have only recently discovered this journal then I urge you to download the earlier issues where I am sure you will find lots of interesting reading.

It is particularly pleasing that there will be a meeting of the Cactus Explorers Club this year. With many first time attendees, it promises to be a fun weekend. I already have 50 bookings so, if you want to come, please let me know soon.

Have a good growing year!

Graham Charles

NEWS AND EVENTS

The Cactus Explorers Club 14th Meeting in 2019

August 16–18th 2019

The Conference Centre
Stamford Court, Leicester.

I am pleased to tell you that this event is back in 2019, this time in August.

It will be the usual mix of talks from invited speakers and attendees. Zlatko Janeba and Thomas Guerry will be the invited overseas speakers.

The price for the weekend is **£230** which includes two nights in en-suite single rooms, all meals, refreshments, and wine with the evening meals.

There will be sales of plants, literature and seeds, free for vendors.

Enjoy a relaxed environment, a good place to meet old friends and make new ones. The bar offers real ale, popular with Cactus Explorers.

Send me an [email](#) to book.

Graham Charles

Fritz Hochstätter E-books

There is an impressive series of books available to read on-line at:

<https://issuu.com/search?q=fhnavajo>

They include titles about *Sclerocactus*, *Pediocactus*, *Navajoa*, *Toumeyia*, *Agave*, *Beaucarnea*, *Nolina*, *Dasyliirion*, *Ferocactus*, *Echinocereus*, *Manfreda*, *Polianthes*, *Yucca*, *Hesperaloe*, *Coryphantha*, *Furcraea*, *Escobaria*, *Ancistrocactus*, *Echinocactus*, *Echinomastus* and *Glandulicactus*.

The 13th Spalding Cactus Mart

Saturday 27th April 2019

10.00am–3.00pm



Holbeach Community Centre,
Fishpond Lane,
Holbeach, Lincs P12 7DE

15 nurseries and growers in attendance

Ample free parking
Free admission to the Mart

Refreshments available all day

For further details please see the
BCSS Spalding Branch website:
www.spalding.bcsc.org.uk

Old and Rare Books for Sale

I am selling a major part of my botanical library.

Download the booklist [here](#)

My email: Bockemuehl@gmx.de

Dr. Jochen Bockemühl,
D-97273 Kürnach, Germany.

Bristol Cactus Societies

Incorporating The Bristol Cactus Society
(66th Annual Show) and
the Bristol Branch
of the British Cactus and Succulent Society

Show and Exhibition of CACTI & SUCCULENTS



Saturday 25th May 2019

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

Information: 0117 950 3604

Tephrocactus Study Group

The Annual Meeting will be held on

Sunday May 12th

at Coddington Village Hall
Coddington, Newark NG24 2PN

**Two talks by Norbert and Elisabeth
Sarnes (Germany) about
Maihueniopsis and *Pterocactus*.**

Free Admission!

All issues of the TSG journal are now
available as free PDF downloads at
[the Cactus Explorers website](http://theCactusExplorers.com)

BRITISH CACTUS AND SUCCULENT SOCIETY OXFORD BRANCH OPEN SHOW HAWORTHIA SOCIETY SHOW

Old Mill Hall, School Lane, Grove OX12 7LB
Saturday 20th July 2019



Haworthia dekahni (white leaf form)

Light refreshments and plant sales will be available

Details from Show Secretary Bill Darbon
william.darbon77@btinternet.com

EMERGENCY PHONE: 07760 119983

Zone 9 Convention

Sunday 28th April 2019
10:00am – 5:00pm

Shurdington Social Centre
Bishop Road, Shurdington,
Cheltenham, GL51 4TB

Hazel Taylor
Cactus highlights
in North-eastern Mexico

John Hughes
Cool customers
(plants to grow with minimum heating)

Bob Potter
Zimbabwe

Tickets £15 each (including lunch),
available from Zone Rep
or any Zone 9 Branch Secretary

www.zone9.bcss.org.uk/#convention

British Cactus & Succulent Society

in collaboration with Lullingstone Castle's annual Mexican Celebration Weekend



CactusWorld

LIVE!

A succulent adventure

Saturday & Sunday 21 & 22 September 2019

Lullingstone Castle, Eynsford, Kent DA4 0JA

FEATURING

Competitive show with 40 cactus and succulent classes

Plant sales from 12 nurseries (plus members) | VIP guests | Book sales

Specialist plant society displays | Talks and demonstrations

Family entertainment | Guided tours by Tom Hart Dyke

Mexican street food – or bring a picnic! | Ample parking



Alan Graham LRPS

ENTRY: £10 for adults (free for children under 15)

£5 for BCSS members (£10 for couples)

SIGN UP TO OUR EMAIL NEWSLETTER: <https://tinyurl.com/bcss-cwl>

Le Couleurs Cactus Club présente la 12^{ème} édition de

Couleurs Cactus

Le salon des cactus et plantes succulentes

Découvrir . Apprendre . Collectionner

25 - 26 mai 2019
Église neuve près Billom

ENTRÉE GRATUITE

9h - 12h30
13h30 - 18h

Photo sp. par Brandon Blachère

12^{ème} édition du salon Couleurs Cactus

Venez découvrir en famille la beauté et l'extraordinaire diversité de ces plantes adaptées aux milieux arides. Les exposants et les bénévoles de l'association seront heureux de partager leur passion avec vous.

Foire aux plantes : nombreux stands
Exposition de plantes de collection
Buvette sur place

Tirages de la tombola :
~ Samedi 16h30
~ Dimanche 16h
(Les gagnants éventuels seront avertis par téléphone)

Conférences :

- ~ Samedi 15h : Découvrir les plantes succulentes, par Jacques Brun
- ~ Samedi 19h : Namaqualand en fleurs 2011, par Marc Mougin et Christophe Assalit
- ~ Dimanche 15h : Découvrir les plantes succulentes, par Jacques Brun

Plus d'infos :
www.couleurs-cactus.fr
contact@couleurs-cactus.fr

Éditions des Bilions Le Centre Franco-Belge

Photo sp. par Brandon Blachère

Don't miss this free UK Event!

BCSS ANNUAL GENERAL MEETING

Winstanley High School and Community College, Braunstone, Leicester, LE3 3BD.

13th April 2019

Plant and Book Sales

Two Lectures:

Wiebe Bosma (Holland)
"Mountains High, Valleys Deep in North and North-East Ethiopia with scenery and a variety of succulents inc. Stapeliads, Aloes and Euphorbia"

Graham Charles
"Let's see what we can find in Peru - based on ten visits to the country"



ELK 2019
6-7-8 september

lectures/ plant sales
free admission

corsendonk duinse polders
a. ruzettelaan 195 / 8370 blankenberge / belgium

www.elkcactus.eu
info.vragen@elkcactus.eu

Layout K. Neirinck / photos P. Rosenberger

Zone 6 International Convention

Sunday 31 March

Weston Turville Village Hall, School Approach, Main St, Weston Turville, Bucks HP22 5RW

11:00 to 17:00.

Doors open from 10:00 for plant and book sales.

(Entry is by pre-purchased ticket only)

An Introduction to the succulent Euphorbias of South Africa.
Succulents of the Benguela Current Coast.

Rikus van Veldhuisen

Matucana in habitat and culture.
Graham Charles

Sales by Plantlife (Stuart Riley), William's Cactus and Keith's Plant Books (Keith Larkin).

e-mail: secretary@berkhamsted.bcss.org.uk



Kaktus 2019

9. Exhibition & Sale
Sa. 1. So. 2 Juni

Cacti from around the world

daily open from 9 o'clock
Sport Center Eugendorf
near Salzburg -Austria
Hammermühlstraße 7, 5301 Eugendorf



Invitation

37. Annual Meeting of the Fachgesellschaft andere Sukkulenten

in Parkhotel & Restaurant Borken
34582 Borken (Hessen), Europaplatz 3, Germany

Lectures on hot spots of succulents by internationally renowned experts (Sierra Mixteca, Sokotra, Südafrika, etc.)

Additional short lectures on cultural and other topics
Big sale market for other succulents (no cacti!)

Admission free!

Program and further information: President of FGaS Dr. Jörg Ettelt, Mozartstraße 44, D-59423 Unna, phone +49 2303 968196, E-Mail: praesident@fgas-sukkulenten.de

1st International Congress
of Cacti and Succulents
 Conservation and Management under Global Change
 Saltillo, Coahuila, Mexico / September 23 – 27, 2019

Second call

Calling institutions



In collaboration with



Contact
 cicys.salttillo@gmail.com
 www.cicys-salttillo.info

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.

BEF Pots are Back
 Britain's favourite pots for cacti & succulents are now available again from the BCSS Manchester Branch
Prices from 15p each.



Sizes 2" to 7" diameter square and 3½" to 6" diameter round.
 In Terracotta or Black.
 Also a selection of larger non BEF bowls.



For prices, other details and ordering go to:
<http://manchester.bcsc.org.uk/home/b-e-f-pots-enquiries>
 or contact Peter by email:
peter@bint.myzen.co.uk
 Please note orders can only be delivered to addresses in mainland UK at this time.
 See us at the [North West Cactus Mart](#).



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.

Sussex Zone 12 Convention

Sunday May 12th 2019

NOTE: CHANGED VENUE!

Plumpton
Village Hall,
1 Westgate,
Plumpton Green,
East Sussex, BN7 3BQ.

**Hunting Matucana and other Cacti
in northern Peru:** *Paul Hoxey*

The European Succulents:

Ray Stevenson

Plant Sales

Tickets: £10.00

(Includes buffet lunch and
afternoon tea)

from Suzanne Mace

Brenfield, Bolney Road, Ansty,
West Sussex, RH17 5AW

suzanne@paperweight-mall.com

South East Cactus Mart

Saturday April 6th 2019

10:00–15:00.

Swalecliffe and Chestfield
Community Centre, 19 St Johns Rd,
Whitstable, CT6 2QU.

Mammillaria Society Annual Meeting

Sunday May 5th 2019

10:00–16:30.

RHS Wisley, Glasshouse Balcony,
Woking, GU23 6QB.

Rick Gillman & Ian Woolnough will
give talks about Mexico.

Plant Sales, Plant Q & A.

Free entry for Mamm. Soc. members.

This is a great day out, a chance to
enjoy this spectacular garden!

BRISTOL CACTUS SOCIETY



Special Meeting 6th July 2019
at 2.30pm

The Tom Mogg Memorial Meeting

Speaker – Mr Graham Charles
“Gymnocalyciums”

**We would like to extend an invitation to
anyone to join us at this special meeting**
(A Visitors Meeting Charge of £3.00 will apply, unless joining as a New Member)

**Venue:- St. Stephens Church Common Room,
St. Stephen Street, Bristol, BS1 1EQ**

BCSS Showing and Judging Weekend

Moulton College, Moulton,
Northampton, NN3 7RR.

August 30th – 1st September 2019

A residential weekend where you can
enjoy in-depth talks about plants, how to
exhibit them and how to judge them.

Exeter Branch Convention

**Lympstone Village Hall, School Hill,
Lympstone, Exeter, EX8 5JY.**

9:00–17:00.

Derek Tribble 'What's new with
Cotyledon, *Adromischus* & *Tylecodon*'
and 'Eight days in Namibia 2007'.

Graham Charles '*Matucana* in habitat and
culture' and 'Columnar cacti of Peru'.

Tickets £15, including lunch.

Details from [Branch Secretary](#).

North West Cactus Mart

This annual Mart will be held at the usual venue:
**St Thomas More Church Hall, Kirkway,
 Alkrington, Middleton, Manchester. M24 1PP**

Entry is free with the mart opening from 10.15am till 2.15pm
on Saturday May 4th 2019

(This venue is just under 1 mile from junction 20 of the M60)

Refreshments until 1.30pm

The following vendors will be selling plants: Graham Charles;
 Ralph Nortcott, Cactusshop; Tony Irons Cacti; Williams Cactus;
 Woodside Cacti; Keith Larkin (books); Harry Mays; Gordon Foster;
 The Edgintons; Ian Robinson; Anthony Clarke; John Henshaw; Dan Roberts;
 Rob Stevenson; Royston Hughes; & Manchester Branch.

BEF pots At last we can offer pots for sale again, many at discounted prices as we sell off new stock that has been in store for some time. Don't miss this opportunity to restock as you prepare to repot plants this spring.

This is a great day out! mark the date in your diary.
 Peter Bint. Manchester Branch Organiser. Information available from
peter@bint.myzen.co.uk

Duke Benadom's Books

\$58.95	\$78.95	\$74.95	\$89.95	\$89.95
				
\$42.00	\$56.00	\$52.50	\$63.00	\$63.00

Payment may be made by cheque, credit card, or PayPal to duke-kaz@sbcglobal.net

All five books are 30% off for this event

All of Duke's books are printed on high-quality 150 GSM, Lumi Silk Art paper, and all are high-quality hardcover bound.

Collector's editions of *Superb Succulents*, *Echinocereus*, & *Southwest Deserts* are available at www.SuperbSucculents.net for an additional \$30 each. The Collector's edition is essentially the same as the standard edition, but with foil stamping on the spine and on the front & back and with 135gsm Egyptian Dynic Saifu cloth over 3mm Graphic Board on the book. There is also a slipcase with 4-color gloss laminate on 130gsm art paper. In summary, it's the hardbound edition with a special cloth cover, gold or silver foil imprinting (depending on the cloth color), and with a quality slip case. These sets also come individually shrink wrapped.

IN THE GLASSHOUSE

Cussed Echeverias

John Pilbeam tells us about some plants that have proved troublesome in culture and how he has tried to propagate some so that we can try our luck.

Some years ago when I was fortunate to have Myron Kimmach's blessing and some of his originally collected plants, a few arrived with warnings about their cultivation on the lines of 'You'll have difficulty with this one' and the like.

How right he was, and although a many obliged me in my early days of growing them, it has since emerged that a few were gently but cussedly leading me down the path of over-confidence to disaster, and sure enough Myron's words proved prophetic.

Inevitably self-doubt overcame me and I tried different mixes of growing medium in

the hope that the sulking plants would raise their heads, grow and apologize. With some it worked, and with gratitude both from me to the plant and from the plant to me, we became good friends again.

But some still defy my efforts to win their trust, and not having the means of communication, just regard me with scorn as I try to cater for their needs.

Other enthusiasts it seems have similar trouble with some of those I struggle with, and I frequently get asked for plants or cuttings of these malcontents.

The most difficult by far is one which grew



Figure 1. *Echeveria strictiflora*.

Photograph: Bill Weightman

lustily when first obtained, and flowered obligingly for a photo for the book I produced on the genus in 2006 (was it really 13 years ago?). Since those balmy days it has been very sick, but not quite to the stage of departing in spirit back to the cliff from which it originates. I have it in a tray which earlier in the year was full of leaves rooting from various plants, most of which have been removed and potted on successfully, but there sits a handful of *E. pruinosa* leaves, with no roots and a sulky expression every time I gently probe to see if the unlikely has happened. I'd be delighted to hear from any *Echeveria* buffs who grow this species successfully with a view to diagnosing my failings.

Another I have trouble with is the Mexican form of *E. strictiflora* (Figure 1), with more regularly shaped leaves than that which grows in the US, and with maroon edges to the leaves. Again, when first obtained it grew beautifully, flowered to prove its identity which I had severely doubted, and posed smiling for a photo for the book. Again, as though it felt it had done its thing it went into

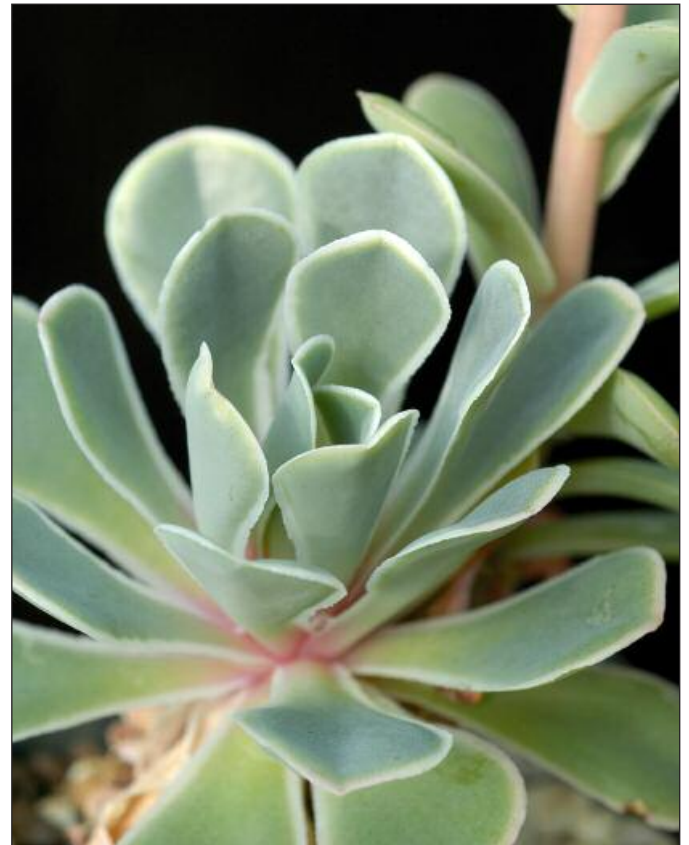


Figure 2. *Echeveria chazaroi*.

Photograph: John Trager



Figure 3. *Echeveria cante*.

Photograph: Martin Kristen & Julia Etter



Figure 4. *Echeveria uhlii*.
Photograph: Jim Peck



Figure 5. *Echeveria xichuensis*.
Photograph: Martin Kristen & Julia Etter

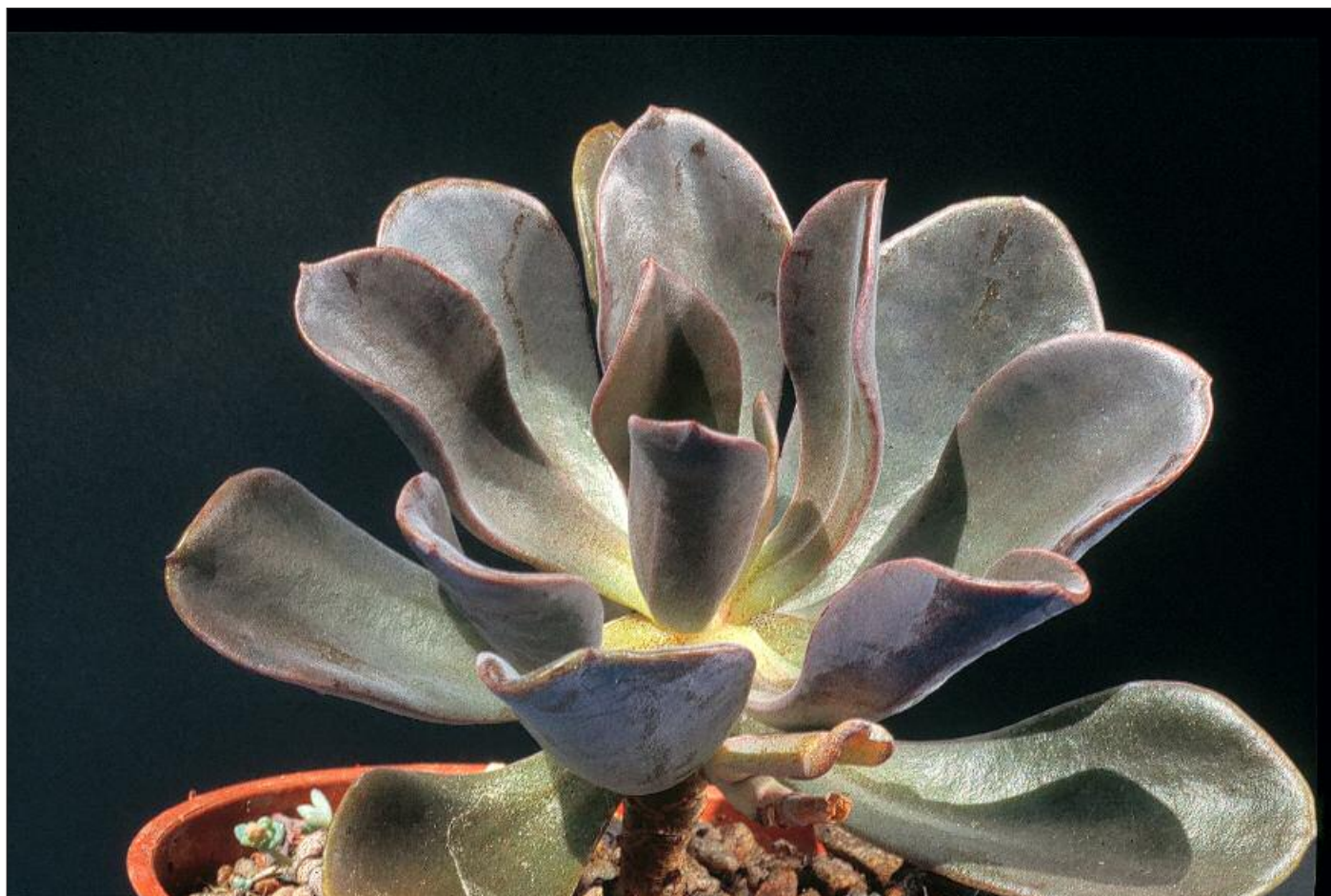


Figure 6. *Echeveria prunina*.
Photograph: Bill Weightman

decline, and for the last several years has refused to grow at any other than a snail's pace and in the winter months seems to want to go into hibernation.

The third species I have trouble with, *E. chazaroi* (Figure 2), grows well until it reaches about 10cm across, but then the centre dries up and it goes blind. It will then sprout new shoots from below the dried growing point, and I have had no trouble rooting leaves and passing the resulting plants on. Similar experience however has been reported from a couple of the recipients, so it seems to be something to which this species may be prone, and not something it is showing as its disapproval of my cultivation - I hope.

Others which I have heard give trouble to their owners, like *E. uhlii* (Figure 4), *E. laui*, *E. cante* (Figure 3), *E. humilis*, *E. xichuensis* (Figure 5), *E. racemosa* and var. *citrina*, I have sometimes struggled with, but not to the point of despair as in those mentioned above. The main problem with the first mentioned is propagation, as with only one clone I am perforce committed to propagation from cuttings, or rooting leaves. Cuttings I have occasionally taken, but while leaves root readily, they have been reluctant to follow this up with

producing plants at their base. And floral stem leaves (a good source of plants without risking damage to plants by denuding them of the rosette leaves) with this species just dry up rapidly. I have rooted the floral stem leaves of several of the others, even a few of those tiny leaves produced by *E. xichuensis*, but *E. cante* gives me very limited success thereby, but *E. laui* and *E. racemosa* var. *citrina* are obliging.

Rosette leaves of *E. humilis* and *E. xichuensis* will root, but refuse to transpose into plants, although one of the latter has just proved me wrong, after at least six months of frustration and near demolition in despair.

I continue to experiment with the various methods of propagation with hope springing eternal, and have even made a few possibly interesting crosses with the idea of producing something extraordinary. At present I have tiny seedlings of *E. laui* X *E. longissima* var. *longissima*, and vice versa, whose maturity I impatiently await. Perhaps if I cursed them less they might be more obliging.

[John Pilbeam](#)

P.S. Since writing this article John has lost most of these cursed plants but hopes to replace them if a more clever grower has any spares!

John Pilbeam's Book List 2019

The following books are available from John Pilbeam, 51 Chelsfield Lane, Orpington, Kent, BR5 4HG, England, to whom cheques should be made payable. Terms: cash with order. Payment from overseas by PayPal (his PayPal account address is jpilbeam@tiscali.co.uk) or in sterling cheques drawn on a London bank.

Pilbeam, J. Mammillaria - Now & Again	£40 UK; £45 EU; £50 overseas
Pilbeam, J. A Gallery of Agaves	£39 UK; £42 EU; £45 overseas
Pilbeam, J. Cacti & Succulents of Baja California	£43 UK; £45 EU; £50 overseas
Pilbeam, J. & Bowdery, D. Ferocactus	£32 UK; £35 EU; £35 overseas
Pilbeam, J. & Weightman, B. Ariocarpus et cetera	£37 UK; £40 EU; £45 overseas
Pilbeam, J. The Genus Echeveria	£43 UK; £48 EU; £52 overseas
De Kock, Dennis The Genus Ceropegia	£30 UK; £35 EU; £38 overseas
Pilbeam, J. Stapeliads (refreshed) (2nd Edition)	£39 UK; £42 EU; £45 overseas
Pilbeam, J & Hunt, D. Sulco Gallery	£10 (postage UK £3, overseas, £10 airmail)
Pilbeam, J. Echinocereus	£35 UK; £38 EU; £42 overseas
Pilbeam, J. & Partridge, M. Small Opuntias	£38 UK; £43 EU; £48 overseas
Pilbeam, J. Rebutia, Sulcorebutia & Weingartia - unravelled	£40 UK; £45 EU; £50 overseas

John's new book about Parodia/Notocactus is expected to be published in April.
The price will be £40 UK, £45 EU, £50 Rest of World.

CACTUS PEOPLE HISTORIES

Who is Helia Bravo-Hollis?

Morales-Sandoval J. Jesús, Reyes-Aguilar Berenice & Scheinvar Léia.

Correspondence. Morales Sandoval J. Jesús. International Documentary Center in Cactaceae, Apartado Postal 70-174, Ciudad Universitaria UNAM, CP.04511, Coyoacán, Mexico City, Mexico. E-Mail: jesusbosco@comunidad.unam.mx

Leia Scheinvar. E-Mail: leiascheinvar@gmail.com

Helia Bravo-Hollis was born on September 30, 1901, in what is nowadays Mixcoac in Mexico City (Figure 1). She was characterized by being always a person dedicated to study since a very young age, which is how she entered the National Preparatory School of the National University of Mexico after finishing her studies of elementary school at the end of 1918, obtaining the first place of her generation and because of this she obtained a diploma signed by the president Porfirio Díaz.

It was there in the National Preparatory School where she had her first contact with biology, with which she would spend the rest of her life. She had as friends the Mexican painter Frida Khalo, the writers, Octavio Paz (Nobel Prize) and Salvador Novo among many other prominent Mexicans. Her teacher, Dr. Isaac Ochoterena, introduced her to biology during her time in high school, and she was a collaborator in the realization of the first book about cacti in Mexico, we refer to *Las Cactáceas de México* by Ochoterena edited in 1922 (Figures 2 & 3).

Her first approach to cacti was during an expedition to "El Risco" hill in north of Mexico City around 1919, where she saw cacti such as *Mammillaria rhodantha*, *Ferocactus latispinus* and even *Echinocactus horizonthalonius* (an extinct species in this locality now) for the first time. (Figure 4). However, other expeditions in Xochimilco and Texcoco led her to become interested in aquatic flora and protozoans of the area, about which she published a series of 9 works entitled *Contribuciones para el conocimiento de los Protozoarios Mexicanos* in the *Revista Mexicana de Biología* from 1922 to 1925 and also published a work about aquatic plants titled *Las Lemnáceas del Valle de México* in 1930 at the *Annals of the Institute of Biology*, all these works were the bases of future studies



Figure 1. Helia Bravo-Hollis in childhood.



Figure 2. Helia Bravo with her companions of the National Preparatory School. In the centre Isaac Ochoterena, on the left side Helia Bravo.

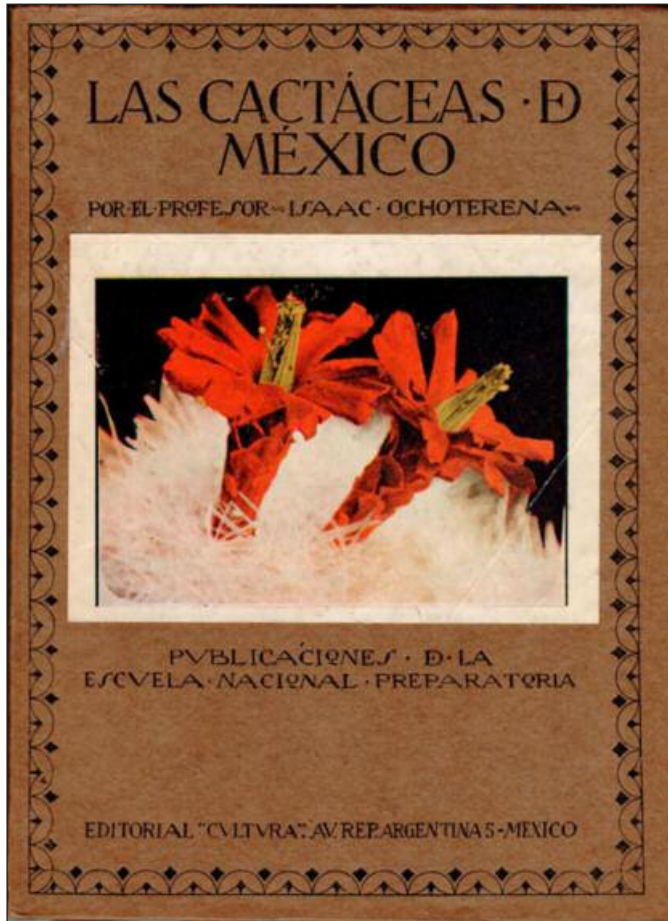


Figure 3. Cover of the book *Las Cactaceas de Mexico* written by Isaac Ochoterena in 1922, with the help of Helia Bravo. It is the first book on the subject in Mexico.

in these areas (Figure 5).

At the end of high school, she entered Medical School in 1923, where she spent the first two years of her career because that was the profession that her family wanted her to follow. During this time in Mexico, there did not exist a biology degree, but fortunately, the following year was inaugurated the degree of biology at the School of Higher Studies (nowadays Philosophy and Letters Faculty). In 1925, Dr. Bravo took the decision to change to biology even though her family did not agree with it (Figure 6). The course took her 4 years but in 1929 she fulfilled all the credits, then she became the first Mexican biologist to graduate. She graduated as a Master of Science in Biology from the Faculty of Philosophy and Letters of the UNAM in 1931 with her thesis *Contribución al conocimiento de las cactáceas de Tehuacán* (Figures 7 & 8).

After the National University got its autonomy in 1929, the Institute of Biology was created with Dr. Isaac Ochoterena in charge.



Figure 4. Helia Bravo with her companions of the National Preparatory School, on the hill "El Risco".

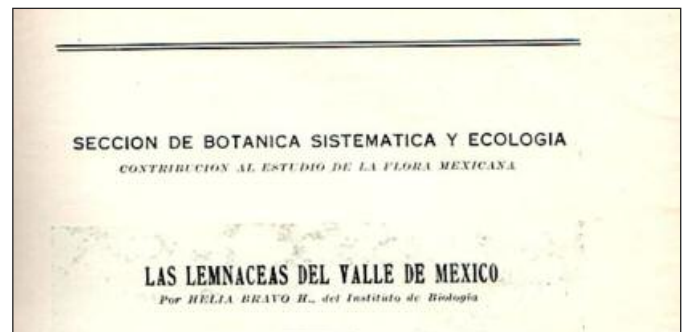


Figure 5. Article *Las Lemnaceas del Valle de Mexico* published in the Annals of the Institute of Biology in 1930.

He invited Dr. Bravo to be in charge of the National Herbarium. The Mexican government wanted that all the research that was carried out at UNAM would concern national themes so Dr. Ochoterena asked Dr. Bravo to take charge of the *Cactaceae* family. She began to get updated about it, because several new species had been described since the last publication of a book in 1922. Then she made many expeditions to various parts of the republic and as a result of her arduous and painstaking work she published the book *Las Cactáceas de México* in 1937 (Figure 9).

Helia Bravo was married for 13 years to Dr. José Clemente Robles, an eminent physician, and precursor of neurosurgery in Mexico. During this time Dr. Bravo moved away from biology, but after her divorce in 1950, she returned to her professional life and for two years she worked at the National School of Biology Sciences of IPN.



Figure 6. School of High Studies, today Palace of the Autonomy (Museum of the National University of Mexico).

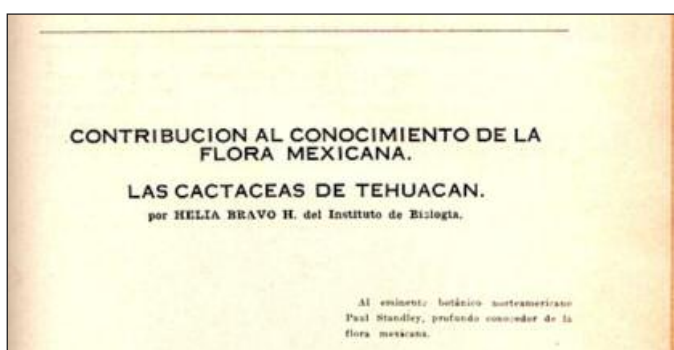


Figure 7. *Las Cactaceas de Tehuacan*, work published as a requirement for a master's degree in biological sciences.

It was also in this year, 1950, that Bravo with Hernando Sánchez-Mejorada, Jorge Meyrán, Eizi Matuda, Carlos Chávez, and Dudley Gold founded the Mexican Society of Cactology, one of the oldest botanical societies of Mexico. Their first formal meeting was on May 2nd, 1952, with Bravo as president, Sánchez-Mejorada as secretary, Mr. Dudley Gold as treasurer with Eizi Matuda and Carlos Chávez as members. Meanwhile Dra. Bravo assigned to Dr. Jorge Meyran the foundation and direction of the magazine that would go by name *Cactáceas y Suculentas Mexicanas* that has been published quarterly up to the present day. The first number of this magazine appeared in July 1955 (Figure 10). The Mexican Cactus Society began its activities with about 50 members, but years later they tripled the number of members not only from Mexico but from all over the world. Originally, they held a meeting every third Thursday of each month.

One day, while Dr. Bravo was working in the Herbarium of the Institute of Biology, Dr. Ignacio Chávez, rector of UNAM and eminent



Figure 8. Helia Bravo-Hollis Master of Science

Mexican cardiologist, called her to tell her that her book of Mexican cacti (1937), was sold out and that there was no more in the bookstores of the university, and that also it was being requested abroad, so he asked her to prepare a second edition.

It would take about 40 years to publish the second edition of *Las Cactáceas de México*, which for many of us is not a second edition but something totally new, the first volume of this magnificent and important work saw the light of day in 1978, and for purely political and non-authoring reasons, volumes II and III were published in 1991, even though the originals had been finished for publication in 1982 (Figure 11). This work has as co-author Mr. Hernando Sánchez-Mejorada who was an eminent mexican cactologist (See Cactus Explorer 14).

Towards 1959, Helia Bravo and a group of cactophiles from the Mexican Society of Cactology discussed the importance of having a botanical garden where the Mexican cacti could be represented. To achieve this objective, the society committee spoke to Cueva Aleman an engineer and also a member of the same Society and chief of the gardens of UNAM. He agreed to assign land around the current



Figure 9. Book *Las Cactaceas de Mexico*, published in 1937 by Helia Bravo-Hollis.

Greenhouse Fausto Miranda, thus obtaining the necessary space to initiate this project that today is one of the most important botanical gardens in Latin America. In 1960 Dr. Bravo was placed in charge as director of the botanical garden.

Her publications are diverse, both in national and international magazines, about 175 works relating to several subjects. Concerning Mexican cacti, she proposed 57 new taxonomic ranks (genera, species, and varieties), 61 nomenclatural combinations, 9 reviews of genera or groups of species and 27 regional floristic contributions.

In her last years, she coordinated the work on the taxonomic study of cacti within the Mesoamerican Flora project, as well as the publication of a book about spreading cacti in co-authorship with Leia Scheinvar, called *El Interesante Mundo de las Cactáceas* which already has two editions and several reprints. (Figure 12)

In 1992, theatrical artists Jesusa Rodríguez and Liliana Felipe wrote and composed the music of the song "Las Suculentas" in honor to Dr. Bravo. ¹



Figure 10. First number of the Journal *Cactaceas y Suculentas Mexicanas*, published in 1955.



Figure 11. Covers of the book *Las Cactaceas de Mexico* second edition 1978 (Vol. I) -1991 (Vols. II & III).

Some publications in numbers.

Publications on cacti	121
Publications on protozoa.....	9
Miscellaneous (botanical)....	31
Biographical.	9
Books	6

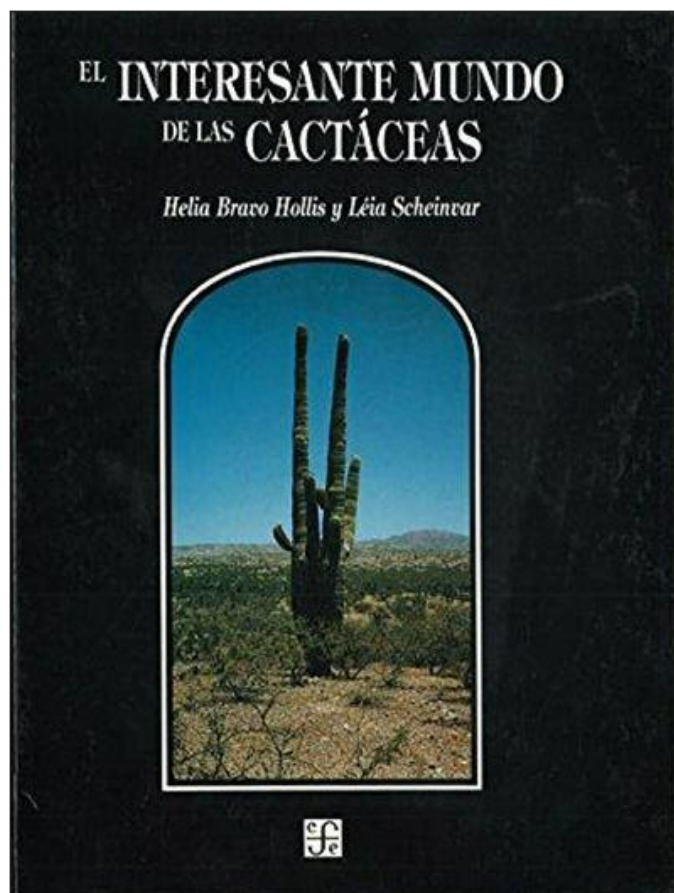


Figure 12. Cover of the book *The Interesting World of Cactaceae* written by Helia Bravo and Leia Scheinvar.

Some acknowledgments and positions she held.

- Diploma granted by President Porfirio Díaz. 1908
- In charge of the National Herbarium of the Institute of Biology 1950
- President of the Mexican Society of Cactology 1955
- Technical Advisor of the Botanical Garden 1959
- Medal to the merit botanical granted by the Botanical Society of Mexico AC. 1963.
- Interim Director of the Institute of Biology 1969
- Honorary President of the Mexican Society of Cactology 1971
- Cactus d'Or awarded by the IOS and the Princess of Monaco. 1980
- Doctor Honoris Causa by UNAM 1985
- Researcher emeritus by UNAM 1989
- Diploma awarded by President Ernesto Zedillo. 2000



Figure 13. Helia Bravo on her 90th birthday with her sister Margarita Bravo.

Some places and distinctions that bear her name.

- Special stimulus "Helia Bravo" for academic technicians of UNAM. 1988
- "Botanical Garden and Nursery of Cactáceas Helia Bravo Hollis", in Zapotitlán of the Salinas Puebla, Mexico. 1989.
- "Helia Bravo Desert Garden" Botanical Garden UNAM. 1989.
- "Cactus Garden Dr. Helia Bravo Hollis" Los Reyes Acozac, Tecámac, Estado de Mexico, Mexico. 1998
- Botanical Garden of cacti "Dr. Helia Bravo Hollis" Mexican Center of the Turtle. 2002

Species dedicated to Helia Bravo.

- Conopsis nasus heliae* Cuesta, 1930.
- Opuntia bravoana* Baxter, 1933.
- Mammillaria bravoae* Craing, 1945.
- Commelina bravoana* Matuda, 1955.
- Opuntia heliae* Matuda, 1955.
- Heliabravoia* Backeberg, 1956.
- Opuntia heliabravoana*. Scheinvar, 1975.
- Acourtia bravohollisiana* Rzedowski, 1984.
- Bravothrip*. Jonansen, 1987.
- Ariocarpus bravoanus* H.M.Hern.



Figure 14 &15. Coining process of Helia Bravo Hollis medal, by the sculptor Lorenzo Rafael. On heads Helia Bravo. On tails *Heliabravoa chende*. Photographs by Estefania Gomez Counahan.

& E.F.Anderson, 2002
Turbinicarpus heliae García-Mor., Díaz-Salim & Gonz.-Bot. 2015

After a hard work dedicated to the study, diffusion and conservation of cacti, Dr. Bravo retired from UNAM at age 90 for health reasons, and during her last 10 years she was not inactive because she was dedicated to her new passion of painting and in 1998 began to write her autobiography that she finished in 2001, for those who had the joy of knowing her and the honor of working with her will remember her as a person dedicated to work, teaching and research, always ready to help, and as a friendly and warm woman. (Figure 13)

In 2017, a medal was coined in her honor, by the outstanding Mexican sculptor Lorenzo Rafael to commemorate her birth, the medal was coined on pewter with the die-cutting technique. On heads appears the portrait of Helia Bravo, while on tails you can appreciate

sculpted the species of *Heliabravoa chende*, dedicated in her honor by the German Cactologist Curt Backeberg (Currently this species is recognized within the genus *Polaskia*). (Figures 14 & 15). In 2018 the medal was presented at the congress of the International Art Medal Federation (FIDEM) held in Ottawa, where the theme for that year was *Women in the Natural Science* obtaining honorable mention.

On September 30, 2018, the famous search engine of the internet, Google, dedicated its home page to Dr. Bravo, for the 117th anniversary of her birth, with a drawing of the eminent biologist along with diverse cactus species. (Figure 16)

Today, 17 years after her departure on 26th September 2001, the people that lived with her are left with a deep emptiness, but her legacy is great and continuous, with deep roots. (Figure 17)

With these words, we seek to make a small tribute to Dr. Bravo and let people know a



Figure 16. Home page of Google Search on September 30, 2018 to mark the 117th birth anniversary of Helia Bravo.

little of what her prolific life was like, one of the most important botanists on the subject of cactology.

“Through two great branches of biology we can know each other and trace our destiny: evolution allows us to know where we come from and the ecology where we are going. I sincerely hope that the generations of biologists who succeed me and all those who love life will know how to preserve it “

“Mediante dos grandes ramas de la biología podemos conocernos y trazar nuestro destino: la evolución nos permite saber de dónde venimos y la ecología a dónde vamos. Espero, sinceramente que las generaciones de biólogos que me sucedan y todos aquellos que aman la vida sepan conseroarla”

Helia Bravo-Hollis, 2001.

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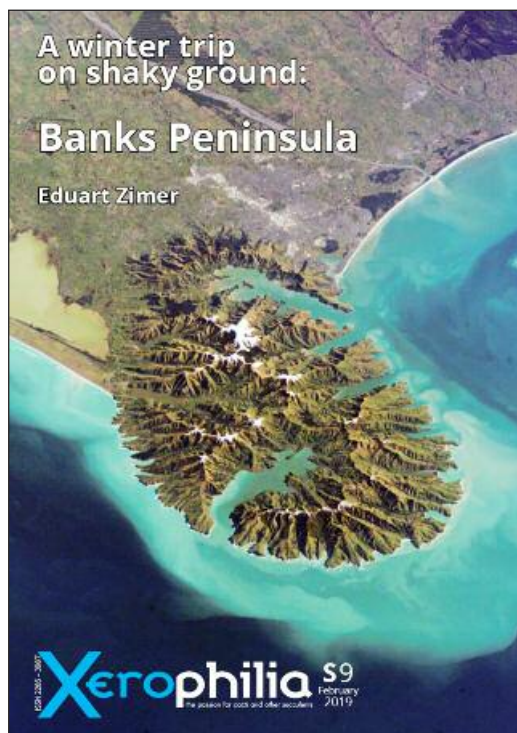
Figure 17. Helia Bravo in 2001.

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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

The latest special issue of *Xerophilia* appeared in February 2019. It is published in English and gives an in-depth account of the Banks Peninsula in New Zealand.

It is written by Eduart Zimer.

Eduart is a cacti, succulents and xerophytes enthusiast born in Romania. He discovered *the world of the cacti* only at the age of 40, but this was to become in a short time his main area of interest. He moved to New Zealand 17 years ago, which allowed him a different approach and better understanding of nature and ultimately contributed to the diversification of his interest: plant naturalization (especially of succulent plants), vegetation successions and ecology of coastal habitats.

The magazine may be downloaded free as a pdf from

<http://xerophilia.ro>

Contact: xerophilia@xerophilia.ro

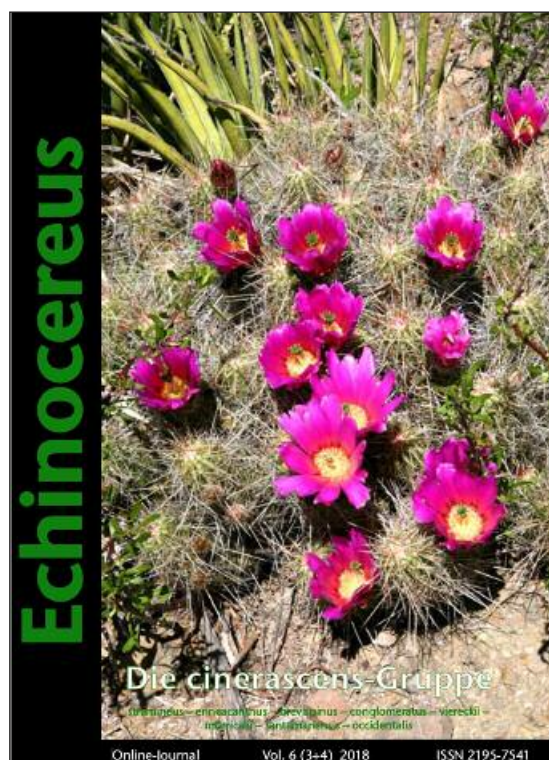
ECHINOCEREUS Online-Journal

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.

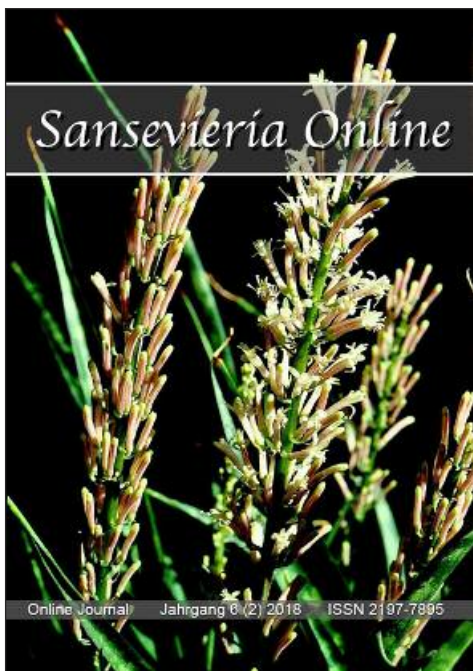
This issue, published in October 2018, concerns the Echinocereus cinerascens group: *E. stramineus*; *E. annaeanthus*; *E. conglomeratus*; *E. viereckii* and *E. occidentalis*.

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.

Issue 6(2) includes: *Sansevieria dooneri* and *Sansevieria parva* -two species in the valley of Lebens; Observations on *Sansevieria* flowers; *Sansevieria* in the botanical garden of Bochum; A botanical rarity and its culture -*Sansevieria pinguicula*; From historical descriptions (2); Cherished *Sansevierias* presented. **Issue 7(1) due in May 2019!**

There is a cumulative index published for 2013–18.

Download the PDF from www.sansevieria-online.de where you can also find a special issue containing field

Schütziana

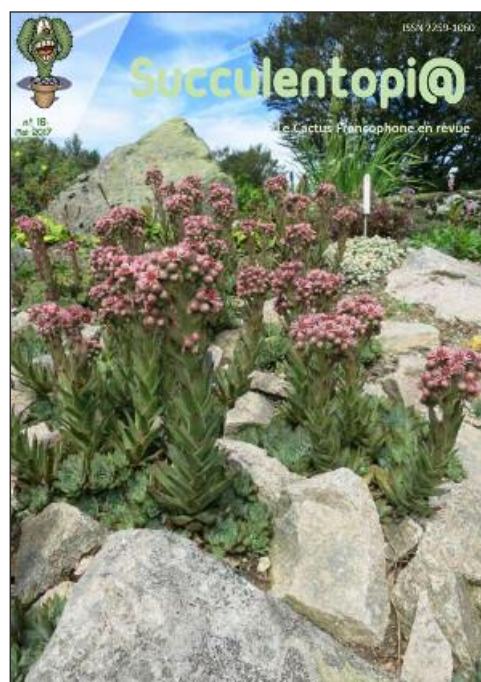
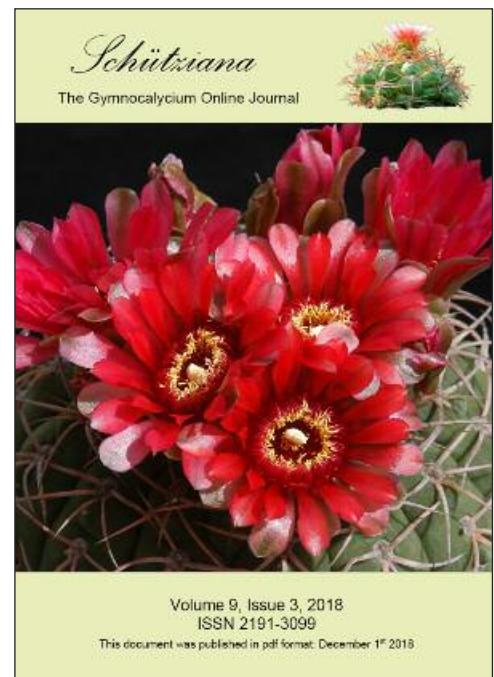
The latest issue of *Schütziana*, the specialist on-line journal for *Gymnocalycium* enthusiasts, was published in December 2018 and features 2 articles:

1. About the nomenclatural status of *Gymnocalycium carminanthum*.
2. The seeds of the genus *Gymnocalycium*.

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

You can download free all the issues from:

www.schuetziana.org



Succulentopi@

More than a while since the last *Succulentopi@* was published, 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 *Toumeyia 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, No. 3 of 2018, discusses The genus *Huernia* and other succulents in Angola, part 4; *Crassula muscosa* – The Wolf claw Crassula and *Sempervivum ciliosum*.

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 Succulent Review

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 20, published March 2019, features 46 pages of: Conservation – What does it mean?; *Othonna cremnophila*; Growing aztekiums from seed; Ceropegia; The beauty of hybrids – revisited; *Massonia*; and Building a garden.

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.

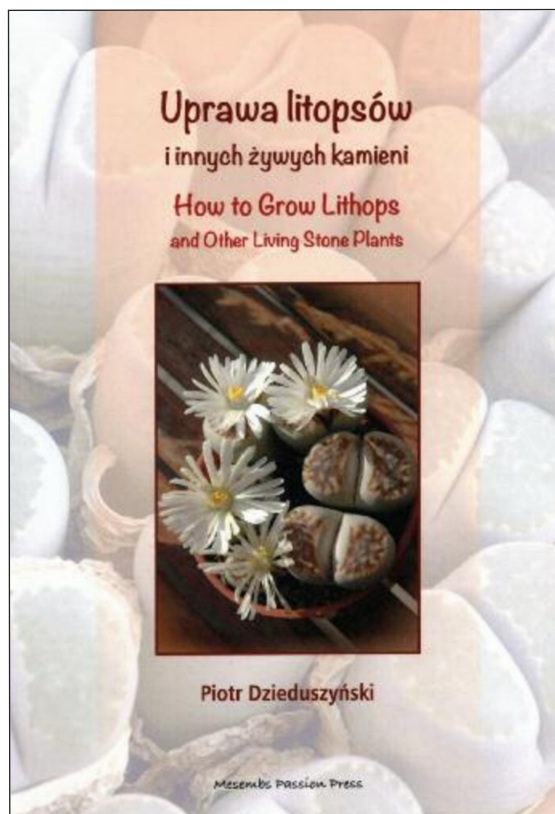
Further details and back issues are available on the website:

<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

There have been very few new books recently but the German Society (DKG) continues with its series of publications exclusively for its members.



How to Grow Lithops and Other Living Stone Plants

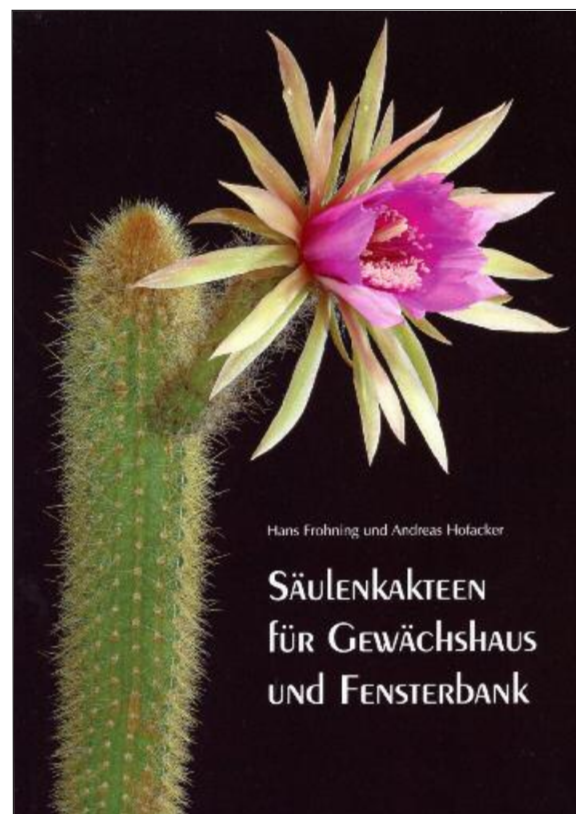
Piotr Dzeduszyński

Here is a well-produced little book that gives detailed information of how to grow these popular plants in northern Europe. It is bilingual, Polish and English, illustrated with good quality pictures of plants in cultivation and in habitat. It is suitable for beginners as well as those with more experience.

There is also a botanical description of the family as well as information of where and under what conditions these plants occur naturally. An overview of selected genera of mesembs describes their characteristics and principles of their cultivation.

130 pages, 160 x 235mm, soft bound, 181 colour pictures, 4 maps, and drawings.

You can buy the book for \$24 at <https://lithops-book.com/en/>



Columnar Cacti for the Glasshouse and Windowsill

Hans Frohning & Andreas Hofacker

The 21st title in the series of books published by the German Cactus Society (DKG) exclusively for their members. It features a collection of good quality pictures depicting flowering columnar cacti, many of which are rarely seen in collections. They have been chosen for their suitability for cultivation in a limited space. There is brief text about each genus and general information about cultivation and propagation. German language throughout.

144 pages, 170 x 240mm, soft bound, with 182 colour pictures.

Excellent value at 12€ but available for sale only to members of the DKG.

http://www.dkg.eu/cs/index.pl?navid=1153#sop_saeulen

LONG LOST JOURNAL FOUND

Gottfried Unger contacted your editor to tell him about Anton Hofer's discovery of an obscure botanical journal containing early descriptions of cacti.



Ferocactus pilifer. Photograph: Ian Woolnough

Lemaire's long lost original description of *Echinocactus piliferus* has been found in the journal *Herbier Général De L'Amateur, Miscellanées botaniques*: 43 (1843). You can see it for yourself at:

<https://www.biodiversitylibrary.org/item/53977#page/57/mode/1up>

As it is now evident that Ehrenberg's description of *E. piliferus*, which he attributed to Lemaire, in *Allgemeine Gartenzeitung* 16: 268 (1848) was not the actual first publication of this name. The correct author citation for *Echinocactus pilifer[us]* belongs to Lemaire (1843) all alone. Whereas the first valid publication of the name *Echinocactus pilosus* Galeotti ex Salm Dyck was, as far we know, 7 years later in 1850.

The epithet *piliferus* was corrected to *pilifer* (see Unger: *Kakt. and. Sukk.* 66(11): XLIV, KT

22, 2010).

So the correct name and citation for this beautiful species is now *Ferocactus pilifer* (Lemaire) G. Unger, *Kakt. and. Sukk.* 37(2):45, 1986. Neotype: *Lindsay* 2588, 1955.3.22. (DS 374959, Barcode 2429) designated in G. Unger *Kugelkakt. Nordamer.*: 163 (1992).

There are other interesting descriptions in this journal. You can read the story of a *Gymnocalycium*, first described as *Echinocactus ourselianus* Monville also in *Herbier Général De L'Amateur, Miscellanées botaniques*. Wolfgang Papsch explains the history in the free online journal *Schütziana* 9(1): 3–17 (2018).

It makes one wonder what else is hiding in some obscure publication, just waiting for somebody to find. Thank you Gottfried for telling me, and Anton for finding it! GC

SUCCULENTS ON A PLATE

Joseph Shaw, jshaw@opuntiads.com, Germantown, MD; Nancy Hussey, nancy@opuntiads.com, Meadview, AZ and David Ferguson, davef@opuntiads.com, Albuquerque, NM tell us about *Curtis's Botanical Magazine* which has featured many cacti over its long life.



Figure 1. *Cereus leeanus* Plate 4417.

Botanical Art: Cacti and Succulents in Curtis's Botanical Magazine

Long before the advent of photography, there was a strong interest in Europe to learn about the plants of far-flung places. The wealthy grew them in conservatories as conversation pieces and status symbols. Physicians explored their curative properties. Scientists studied them to understand and classify them. Naturalists explored far away places for plants of all kinds and reported what they found, but they could not provide illustrative photographs. This was the heyday of the of the botanical illustrator.

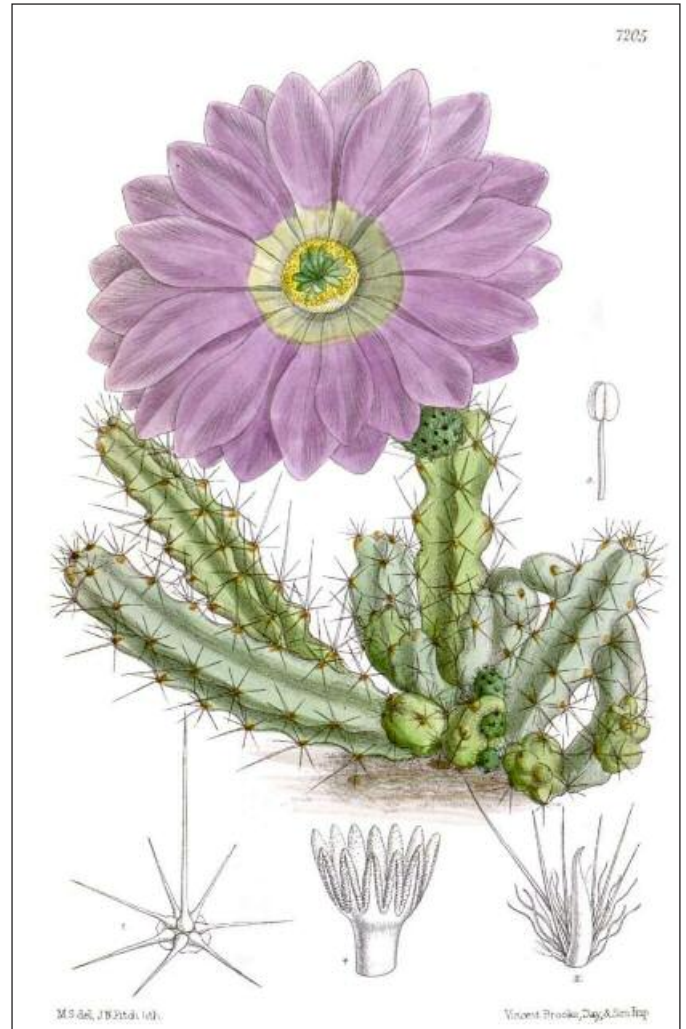


Figure 2. *Cereus procumbens* Plate 7205.

Botanical illustrators created paintings and drawings of plants to be published in scientific and lay publications. They translated living and dried plant specimens into lifelike depictions of plants. The drawings and paintings were anatomically correct, exquisitely coloured, and often life-sized, especially when used in scientific communications. Botanical art was often created with the input of scientists and plant collectors to ensure that details were correct. Some scientists were artists by necessity, and some paintings created by them served as type specimens for newly described species.



Figure 3. *Cereus macdonaldiae* Plate 4707.



Figure 4. *Cereus fulgidus* Plate 5856.

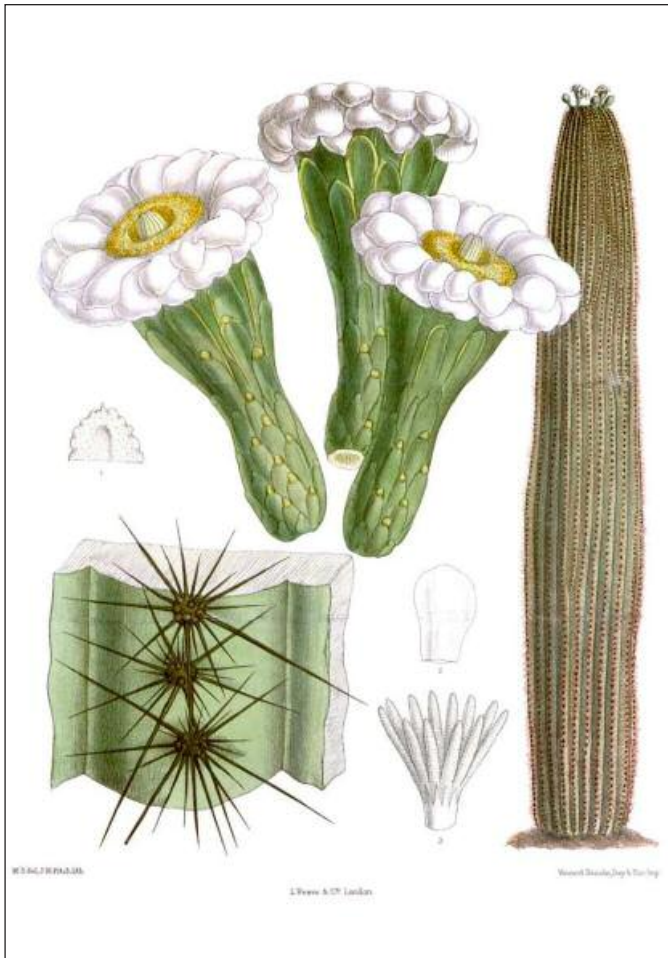


Figure 5. *Cereus giganteus* Plate 7722.

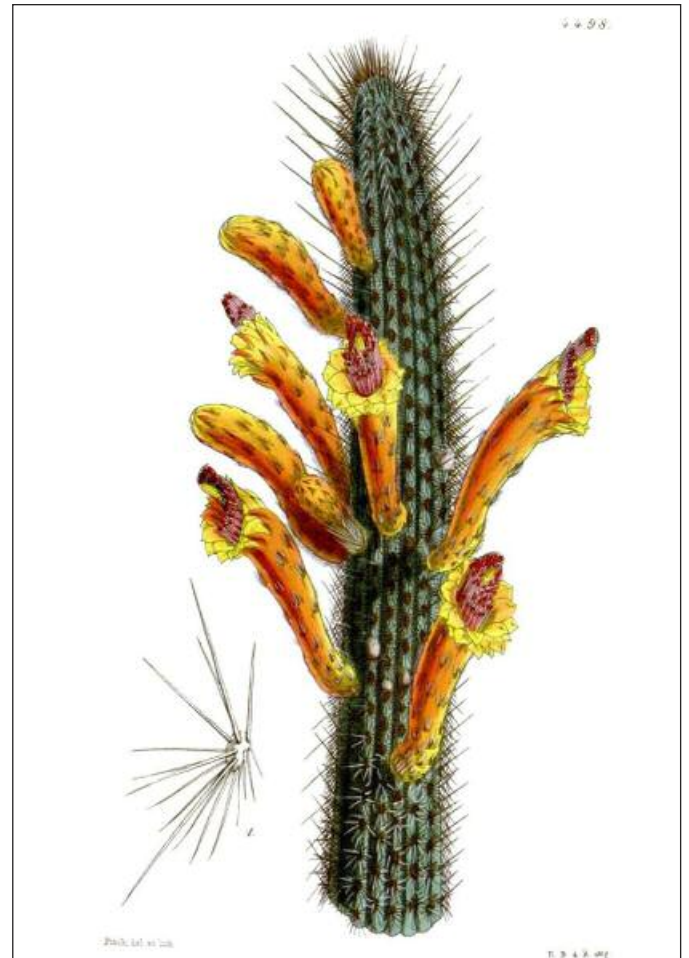


Figure 6. *Cereus tweedei* Plate 4498.



Figure 7. *Wittia panamensis* Plate 8799.

The illustrations of plants were used by scientists of all kinds as well as gardeners to identify, characterise, and classify the multitudes of plant species that were discovered in the 17th, 18th, and 19th Centuries. Though their purpose was for education and science, they were often beautiful works of art that can still be appreciated.

Curtis's Botanical Magazine, started by William Curtis, has an unbroken publication history, from 1787 until the present day, though it has been published under several names. Early work employed copper engravings that were subsequently hand painted. Later, other more automated methods were used to reproduce the paintings. Over time some of the most famous botanical artists have contributed to the magazine including Sydenham Edwards, Lillian Snelling, and Stella Ross-Craig [1]. There is more than art in the magazine. A page or two describing the



Figure 8. *Cactus flagelliformis* Plate 17.

plant, its history, and other details accompanies each image.

In the 19th Century there was great interest in cacti. Accordingly, *Curtis's Botanical Magazine* published much information about them. The paintings are exquisite and reliable illustrations of the various species, even today. Twelve examples from the more than 100 published are reproduced here. The first 14 issues (1787 to 1801) were published under the name(s) of The Botanical Magazine or Flower Garden Displayed. Later issues were published under the eponymous *Curtis's Botanical Magazine*. Issues from 1787 to 1920 are out of copyright and are available online, free-of-charge at the Biodiversity Heritage Library [2,3]. If you know the year, the name, and the plate number, you can look up many cactus paintings. But you cannot search the old magazines by text because optical character recognition has not been performed on them.

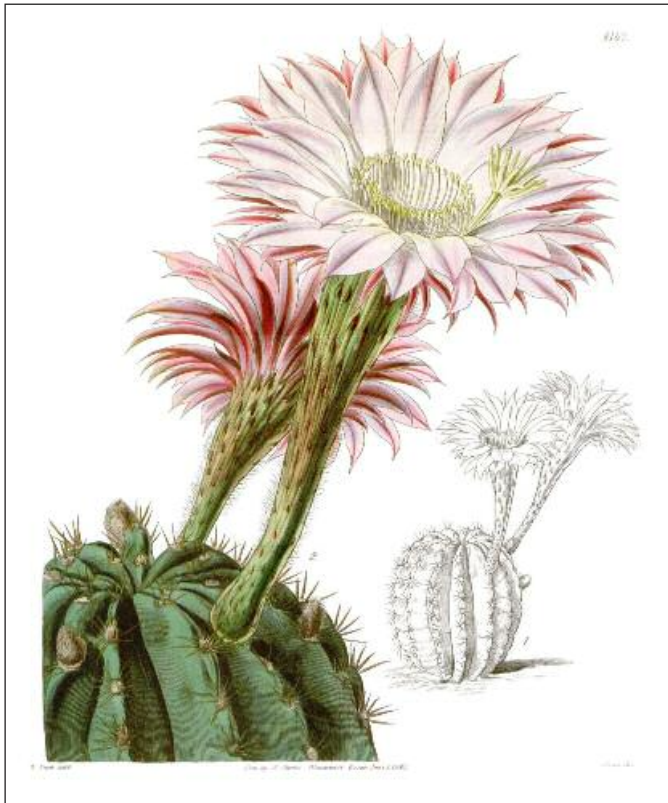


Figure 9. *Echinocactus oxygonus* Plate 4162.

However, materials from the Biodiversity Heritage Library have been interpreted and reformatted by the Cactus and Succulent Digital Library where they are available for free download [4]. The interpreted volumes have the advantage that the paintings seem sparkling new because the yellowed backgrounds have been removed, and the colours are fresh and lifelike. Additionally, optical character recognition has been performed, and the PDF files are easily searchable.

A special collection of cactus and succulent paintings prepared over the years is available at the Cactus and Succulent Digital library. The cactus genera include *Cactus*, *Cereus*, *Echinocactus*, *Echinopsis*, *Epiphyllum*, *Lepismium*, *Leuchtenbergia*, *Mammillaria*, *Melocactus*, *Opuntia*, *Pereskia*, *Phyllocactus*, and *Rhipsalis*.

A second part describes succulents. About 45 succulent genera are represented that cover a vast and varied constellation of plants including: *Adenium*, *Aechmea*, *Agave*, *Aloe*, *Anacampseros*, *Apteranthes*, *Asclepias*, *Beschorneria*, *Billbergia*, *Boucerosia*, *Brachystelma*, *Bryophyllum*, *Caraguata*, *Caralluma*, *Centrostemma*, *Ceropegia*, and *Yucca*.

The species names are mostly from the 19th Century and thus many are not in common use



Figure 10. *Leuchtenbergia principis* Plate 4393.

today. However, they are synonymous with modern names, and a short visit to Tropicos can help sort out the various names [5].

Notes on the names:

Cereus leeanus is usually considered to be a synonym or variant of *Echinocereus polyacanthus*.

Leuchtenbergia principis remains the same.

The illustration of *Pereskia bleo* is not the true *P. bleo* (which has mostly solitary orange-red flowers), but is *P. grandifolia*, which for many years went incorrectly under that name.

Echinocactus longihamatus is *Ferocactus hamatacanthus*.

Cereus procumbens is currently usually called *Echinocereus pentalophus* var. (or ssp.) *procumbens*.

Cereus macdonaldiae is *Selenicereus macdonaldiae*.

Cereus fulgidus is an intergeneric hybrid ×*Disoselenicereus fulgidus*.

Cereus giganteus is *Carnegiea gigantea*.

Cereus tweedei is considered to be a synonym of *Cleistocactus baumannii*.

Wittia amazonica is now usually called *Pseudorhipsalis amazonica*.

Cactus flagelliformis is *Aporocactus flagelliformis*.

Echinocactus oxygonus is *Echinopsis oxygona*.



Figure 11. *Pereskia bleo* Plate 3478.

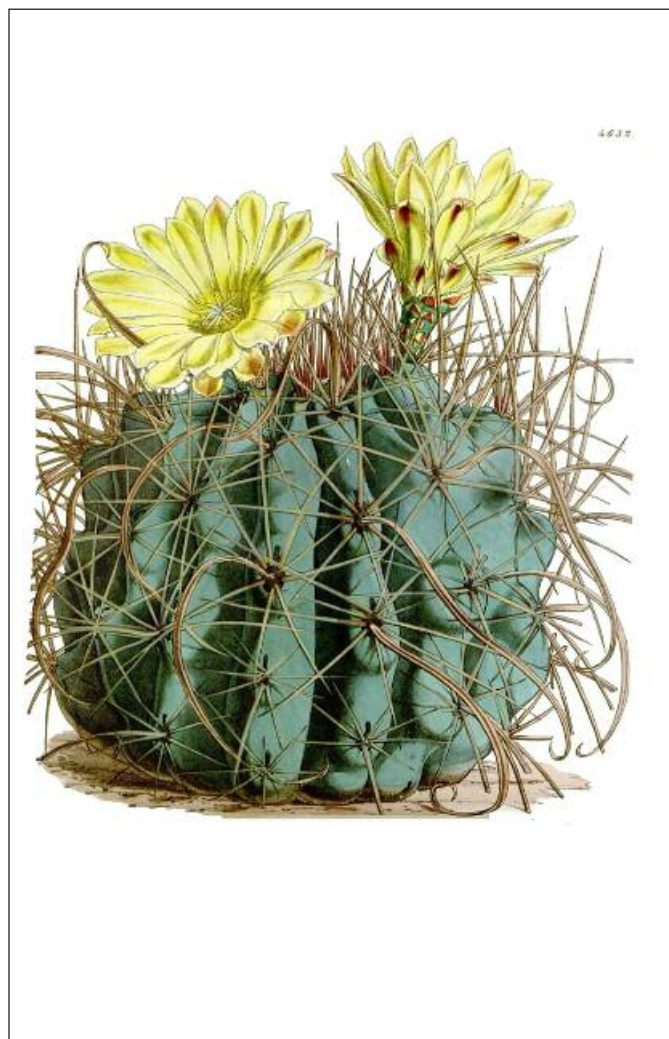


Figure 12. *Echinocactus longihamatus* Plate 4632.

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TWO OLD MEN WANDERING IN NORTHERN ARGENTINA

Roberto Kiesling and Daniel Schweich share their observations and feelings along their trips.

Text by Daniel, Photographs by Roberto and Daniel except two from E. and N. Sarnes.

Figure 1 shows us, Roberto Kiesling (77) and Daniel Schweich (68), on either side of our friend *Trichocereus*⁽¹⁾ *atacamensis*. The older and taller of us is the mentor, the younger and smaller is the novice.

Roberto knows *Trichocereus* for a long time, and he introduced me to the genus which is poorly known and hard to grow to flowering size in our greenhouses. Figure 2, below, shows the white-flowered and giant brothers, *T. atacamensis* and *T. terscheckii*. The former grows at high altitude in the northern provinces (Salta, Jujuy), the latter at low altitude in the more southerly provinces (La Rioja, San Juan). In the overlapping area (Tucuman, Catamarca), some forms are difficult to distinguish from each other,



(1) We do not use “this” or “that” nomenclature, either old or recent, either based on modern concepts like DNA or old ones like the flower structure; we use “familiar names” that are “valid”. Names change periodically, the plants do not, and the article is focused on plants not names! Nomenclatural synonyms can be found from IPNI.



and there can even be hybrids. Figure 2 helps to distinguish the plants: On the left, *T. atacamensis* with its “white hairy” top (except on young and small plants, see top insert), flowers less than 20cm long, and numerous ribs. On the right, *T. terscheckii*, no hairy top, often more branched, longer flowers, less and thicker ribs than *T. atacamensis*. Both produce flowers along the upper half of the stems. If an unidentified giant shows second degree lateral branches on first degree lateral branches of the main stem, then it is most probably *T. terscheckii*; if it shows only (or mainly) first degree lateral branches on the main stem, then it is most probably *T. atacamensis*.

The third giant is *T. tarimensis*, illustrated in Figure 3. It grows in Jujuy province mostly north of the Tropic of Capricorn. As tall as the other two giants, the stem is almost invisible, hidden by the numerous, long and flexible spines. The flowers, red-purple, only apical, are alluring and the younger author felt in love with this young plant, about one meter high and yet flowering.

Trichocereus are “large” plants, giant (up to 15m tall) or medium sized (0.5 to 1.5 m long), often erect, more rarely creeping. This is why they are easily seen and found, but often ignored. The flowers are generally large (15–25cm long), trumpet-shaped (funnelform, infundibuliform) similar to those of *Echinopsis* (see flower section at the top of the *T. terscheckii* picture).

The clan of the low growing *Trichocereus* display flowers that are easier to observe. Figure 4 shows *Trichocereus huascha* that grows essentially in Catamarca province. The flowers are yellow and “short”, 10–12cm long, reminiscent of a *Lobivia*. And we are now facing the problems of flower characters that are at the origin of the various and numerous names, nomenclatural changes, etc... whereas the plants do not change. We will not discuss these problems, but will only focus on the plant using “possible” (accepted and valid) names. Left of the picture, there is a ripe fruit and a couple of flowers. Right, possibly *T. huascha* var. *robusta*: the size of the flower is the



same, but the plant stem is much thicker (20–30cm). In the middle, a cultivated *T. huascha* in a place of religious significance (stones painted white; various small objects hanging from the trees). This illustrates the importance of cacti for some Amerindians.

T. pseudocandicans is the “multicolored” *Tri-*

chocereus that is illustrated in Figure 5. Almost any flower colour can be found; the yellow flowered *T. pseudocandicans* is distinguished from *T. huascha* by its fewer ribs, stronger and fewer spines, more spaced areoles, and larger flowers.

T. strigosus is the third nice low growing *Trichocereus* (Figure 6). It has large flowers more



than 20cm long, always white, and a rather "thin" stem ($\leq 8\text{cm}$). The white-flowered *T. pseudocandicans* is thicker. Along our trips we met columnar cacti other than the "echinopsioid" *Tri-*

chocereus. First we found, near the Bolivian border, an *Oreocereus celsianus* "forest" (Figure 7). Then, on the way to Amblayo is a "forest" of *Denmoza rhodacantha* (Figure 8). The "young"



man in the upper right corner suggests the size of the mature plants. The flowers appear at the apex in a bunch of spines and white hairs. Young non-flowering *D. rhodacantha* (lower right of the Figure) are perplexing: spherical plant, thick spines, no top white hairs; most of the time, when I find this young plant, I wonder what it can be, and Roberto smiles at my ignorance...

And sometimes a surprise is discovered: a *Tri-*

chomoza. This is a hybrid, plant and name, between *Trichocereus atacamensis* and *Denmoza rhodacantha*, which is shown in Figure 9. On the left, the parents: a double stemmed giant *T. atacamensis*, and two small *D. rhodacantha* at the base; this is the beginning of the love story. Many years later, the child is mature and looks more or less like a *T. tarijensis*, but with lateral flowers along the upper half of the stem (like *T. atacamensis*),



and not apical (like in *T. tarijensis*). The flower section shows something intermediate between the flowers of *T. atacamensis* (no protruding style) and of *D. rhodacantha* (colour and almost cylindrical).

Columnar cacti are easy to find but we wanted to find smaller ones, like *Lobivia* or *Rebutia* or *Blossfeldia*. For training purpose, we began with medium size plants. In Tafi del Valle,

Lobivia bruchii is easily found in... a garbage dump (Figure 10). We guess that within a few years this site with hundreds or thousands of plants will have disappeared. The flower colour is slightly variable from orange-red to purple-red. This obese *Lobivia*, according to Britton & Rose, and the flower size prompted Backeberg to create the genus *Soehrensia* where he finally put the “overweight” or “towering” plants with



small *Lobivia* flowers. Among them is found *Lobivia* (or *Soehrensia*) *korethroides* initially described as an *Echinopsis* by Werdermann. This again proves the complexity of this group of echinoip-soid plants. *L. korethroides* is found at high alti-tude, about 4000m. The red-flowered plants in Figure 11 were found near Abra de Lipan, the or-ange-flowered ones north of the Cachipampa. The flowers, about 5–7cm long, are typical of *Lo-bivia*.

Figure 12 shows another troublesome plant: the “prodigal son” *Lobivia walteri* together with its father, Roberto, north of the Cachipampa. In

the 70’s–80’s, this plant was considered as scarce. We have found several occurrences that show that it is probably more common than supposed. And again, we have a problem: small yellow flowers on a rather “big” *Lobivia*, and Rausch proposed the name *Lobivia huascha* var. *walteri*... Why not?

We have already spoken of “echinopsioid” plants and of *Echinopsis*. Figure 13 illustrates this genus; from left to right *Echinopsis mamillosa* v. *kermesina* from Iruya , *E. ancistrophora* from Cuesta El Cebilar and *E. obrepanda* somewhere between Santa Victoria and Trigohuaico. *E.*



mamillosa v. *kermesina* and *E. obrepanda* are the largest, up to 20–25cm in diameter, and easy to find at this size; *E. ancistrophora* is smaller (5–12cm) and it is less visible, unless there is a flower. The latter *Echinopsis* is another nightmare with flowers from 7–10cm (*Lobivia* like) in lower Quebrada del Toro to about 20cm in the lower Quebrada de Humahuaca.

Let us have a break and look at some landscapes and human testimonies. The small and nice villages of Iruya (left) and Santa Victoria (right) are illustrated in Figure 14. The roads to reach these awesome places are not recommended to those suffering from acrophobia. Bottom left is the monument of the “Dia de la

Dignidad del Pueblo de Humahuaca” at the entrance of the city. It is an homage to Pato (Luis) Condori killed by members of the “Organización Barrial Túpac Amaru”. The murder was at the origin of a violent battle between the Túpac Amaru members and the Humahuaca citizens who finally won. The monument is made of the relics of destroyed cars and it represents a condor in reference to Luis Condori. Bottom right are two pictures of pre-Inca petroglyphs. I was driving the car while Roberto was dozing. Suddenly, he shouted “Stop! Drive backwards!”... and we found these stones along the trail. In the extreme right picture, one recognizes a man, a solar symbol (concentric circles) and two Cameli-



dae. The stones are so close to the trail that I fear they will disappear one day or the other and finally land somewhere in a private collection...

Back to the obese *Lobivia* with *L. chrysochete* v. *minutiflora* illustrated in Figure 15. Only ripe fruits were found; the typical small flower of the *Lobivia* genus is implicit according to the name of the variety.

The last medium-sized plant is *Lobivia ferox* or *longispina*. Both names are equivalent since the two plants were described successively by Britton and Rose in the same volume of *The Cactaceae*

(Vol. 2, p. 30–31, 1922). Although collected at different locations (500km away from each other), it is the very same species. And again we face a nomenclatural problem: which of the two names has priority? Presently, nobody knows! So, back to the plants that ignore their names and that are illustrated in Figure 16. *L. ferox* is easily found in Salta and Jujuy provinces. Most of the time, it shows “disappointingly white” flowers. Nevertheless, at some spots (La Quiaca for instance) they are multi-coloured.

Looking for small sized and well-hidden



plants is like searching for mushrooms: first, you do not see and find anything; then, you discover the first specimen and finally you realize that

you are among a dense population... We begin with *Lobivia marsoneri* (Figure 17) found east of Humahuaca where essentially yellow-flowered



plants seem to grow. In Aparzo, they grow together with *Rebutia pygmaea* (Figure 17, right). Another couple *Lobivia-Rebutia* is found in upper Quebrada del Toro: *L. chrysantha* and *R. einsteinii*, that are both very variable plants. Figure 18 shows that these plants become difficult to distinguish from the soil gravels and stones: can you find among the 4 pictures where *Gymnocalycium spegazzini* is living?

When flowers are present the job is much simpler as shown by *Lobivia scheiteri* near Tafi del Valle. In Figure 19 the upper three pictures and the lower left (orange flower) are from El Mollar near Tafi. These plants are called *L. schreiteri* v. *herzogii* by Walter Rausch who earlier considered that it was a variety of *L. grandiflora*. It is a “large” *schreiteri* (diameter up to 7–8cm), when

compared with the standard plant of Castellanos (3–4cm) found at La Cienaga and shown in the bottom middle and right pictures of Figure 19. Both plants have flowers of the same size. It is remarkable that when the flowers are not fully open, the plant is more difficult to see (upper right picture).

Going towards Amblayo, three *Lobivia* can be found not so far from each other: *L. kuehnrichii*, *L. zapallarensis* and *L. amblayensis*. When we were near Piedra del Molino, the weather was foggy and we were looking for the plant while keeping each other in sight. Suddenly *L. kuehnrichii* appeared, not the plant, only the flowers! (Figure 20). When leaving the Cachipampa to Amblayo, one crosses the Sierra de Zapallar where *L. zapallarensis* comes from (middle row of pictures). It is



again easily found when in flower, less easily otherwise (left picture). Arriving at “the end of the world” in Amblayo (Figure 21), no *Lobivia* were found. Suddenly, Roberto shouted “hey, guy, here it is!”. And many *amblayensis* (Figure 20, bottom row) were found: this was the “mush-room syndrome” due to the lack of flowering plants. In the past, there were trails from Amblayo towards Quebrada de las Conchas (east-erly direction, left of Figure 21) and towards Rio Calchaqui (westerly direction, right of Figure 21). There is no doubt that other plants could be found along... It is said that *Chamaecereus sil-vestrii* could be there...

In 1975 Walter Rausch made a revolution when he merged together *Lobvia densispina*, *re-butioides*, *pectinifera*, *sublimiflora*... He was right when lumping together these species, but less convincing when reducing them to the variety level of *L. haematantha*. The plants are illustrated

In Figure 22, *L. densispina* (near Tumbaya; red or yellow flowers); middle, *L. rebutioides* (near Vol-can, any flower colours); right, *L. pectinifera* (near Tilcara; yellow flowers only).

Backeberg’s confusion about the *L. rebutioides* group and *L. famatimensis* was pointed out as early as 1938 by Bruno Dölz. The latter plant was then rediscovered by Buining, Ritter and Rausch and it is now well known. Various varieties have been described, but only *L. bonnieae* seems really different because of its root system. Figure 23 shows, on the left, *L. famatimensis* (s. str.) together with an ammonite of the ordovician period (from near Jachal), and two pictures of *L. bonnieae* (Fi-ambala). The root system is clearly distinctive. Frequently, the soft plant is grazed by guanacos; the “energy” stored in the thick tuber allows the plants to be reborn at the next rainy warm season.

The most northern *Lobivia* visited was *L. pu-*



gionacantha. Figure 24 illustrates first the standard *L. pugionacantha* found in La Quiaca city. It will probably be soon eradicated from this location. Not so far from La Quiaca downtown, we found *L. pugionacantha*. v. *corrugata*. A long time was necessary to find the plant. The dagger-like spines are typical and revealing. The middle picture clearly show the corrugated (hence, the variety name) or wavy structure of the ribs. The flower is again yellow.

Also, near to La Quiaca, a jewel is found: *Yavia cryptocarpa* (Figure 26). This rare plant is really the king of shyness and camouflage. The top row shows clearly the plants (more or less in the right

picture!). The bottom large picture is an exercise for the reader: where are the four *Yavia*? The wooden stick may help for finding the first plant...If necessary, the solution is given on the next page.

When we arrived at the *Yavia* spot, Roberto was a little bit anxious: were there plants remaining after the visit of some Eastern-European enthusiasts? He was quickly relaxed and told me "Yes, there are!", and he sat on the soil looking at me. I was looking everywhere, often kneeling painfully among these sharp pebbles, and I did not find anything... After a while, Roberto told me, from time to time, "you are cold", "you are

warm”, rarely “you are hot”; this was a little annoying, but also stimulating and funny. And suddenly, I understood: I had to find circular patterns among angular patterns! The “mushroom effect” had occurred again, and I found many *Yavia*.

The opposite picture shows the four *Yavia* among the pebbles, as coloured plants. Comparing the original picture of previous page with this modified image is full of consequences: 1) Lamas, goats, donkeys, etc. were the “armed wing” of Darwin’s natural selection that has probably eliminated any “odd” forms (coloured, odorous, tall-growing,...) of the soft *Yavia*; the plant has never “adapted” to its environment, a wrong interpretation of Darwin’s selection law; selection is elimination not adaptation! 2) Animals have only 5 senses to find their food. Human beings have 2 senses more: cupidity, and intelligence that allows one to use geometry (cir-



cular vs. angular) as a predated tool (in addition to cupidity).

We finish our vagrancy with some small plants of the Opuntioid group. Two of my obsessions are *Puna subterranea* and *Puna bonnieae*. In the northern hemisphere, under the former name is distributed a plant also named *Tephrocactus variiflorus*, which comes from the surroundings of La Quaica up to Iturbe. Figure 27 illustrates the plant from La Quaica (upper row, pink





Figure 28. *Rebutia wessneriana*, *Mimulus* cf. *depressus*, *Rebutia pygmaea*. Second row: *Viola beckeriana*, *Rebutia kieslingii*, *Calceolaria luxurians*. Third row: *Blossfeldia liliputana*, *Adesmia subterranea*., *Anacampseros vulcanensis*. Bottom row: *Maihueiniopsis glomerata*, *Senecio* cfr. *crithmoides*, *Tephrocactus geometricus*.

flower) and of Iturbe (middle row, left, red flower). *Puna subterranea* from El Moreno, its type locality, is shown at the right side of the middle row. It has a strange brown-coloured flower and a rather long receptacle.

Knowing whether *P. subterranea* and *T. variiflorus* are different species, subspecies, varieties, or a single variable species is a matter for further studies. The bottom row shows *P. bonnieae* from Fiambala.

Many other cacti have been observed during our trips, but this article is already far too long... Let us finish with some pictures (Figure 28) of

various and delicious plants, cacti included, like the grand finale of a firework display.

Acknowledgements

Diego Gurvich and Gonzalo Montenegro of Córdoba University are thanked for having driven us along arduous trails and participating in some plant search. Norma is gratefully thanked for having prepared numerous cups of Mate in the car along the boring and chaotic trails (my shirt has often been drenched!).

Thanks to Norbert and Elisabeth Sarnes for pictures of the plants we failed to find.

As usual Graham Charles is thanked for his stylish translation of my Frenglish to English.

[Daniel Schweich](#)

References for further readings

Below is a list of various documents that may help the reader to discover deeper studies of the plants illustrated in this article. Since Daniel is the librarian of the e-library of "Au Cactus Francophone", web links are also given, when available.

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Editor's Note: The plant identifications made in this account are the responsibility of the authors.

News from the regions of Cajamarca and Amazonas in northern Peru

Holger Wittner resumes his account of a visit to northern Peru when he went via Balsas to the Utcubamba Valley, a tropical valley with an amazing variety of plants. Archaeology and natural wonders attract tourists to this remote area of Peru. Photographs by the author.

In continuation of the journey in Northern Peru reported in **Cactus Explorer 23** (p. 23) I would like to report here about further news from the regions of Cajamarca and Amazonas.

For the onward journey from Laguna Sausacocha near Huamachuco a four-wheel drive vehicle is absolutely necessary. Even if the road is asphalted at the beginning, it quickly changes into a sand road, which is often only single lane. On the way you have to master steep passages in narrow serpentines on sandy ground. Fortunately, new prefabricated bridges have been laid over the rivers that cross again and again along the entire stretch to Cajabamba, so that the old wooden bridges have disappeared. Nevertheless, we have to be careful, as these new bridges were often only laid down and a real road connection as we know it is missing. If there is too little ground clearance to the vehicle, it could be damaged at every bridge crossing.

Our planned intermediate destination had actually been Aguas Caliente at the Rio Crisnejas crossing. I still remember well the small shop at the bridge (Puente Crisnejas), where one could get everything necessary and also buy bus tickets. This and the old wooden bridge are no longer there. Also the wonderful thermal swimming pool has no longer got water. In the village there is only cold water! Everything was nearly destroyed and the remnants of the buildings were cleared away for columns of the new modern steel-concrete bridge. Further downstream there is now a hydroelectric power station (19.9 MW capacity); see Central Hidroeléctrica Potrero <https://www.aluzcleanenergy.com/chpotrero.html>

This is quite shocking for a cactus lover to know that important cactus sites have been destroyed. In November 2010 I was there together with Steffen Janke and we couldn't get enough of the natural rock gardens full of

Peperomia dolabriformis (Figure 1) and *Thrixanthocereus cullmannianus* (Figure 2)! *Matucana intertexta* and *Melocactus onychacanthus* var. *albescens* also grew here. In addition *Sinningia* spec. (Figure 3) and further *Peperomia*. But when man needs electricity for a modern life, nature has to give way.

This time we went on to Cajamarca and from there towards Balsas down to the Rio Marañon. Here already the more humid weather indicated itself, because for a July it should actually have been hot and dry in the northern Peruvian mountain summer here. So we drove down to Balsas under a cloudy sky. The road is asphalted since a few years. However, the applied layer was so thin that now only a bumpy road with many pot-holes was left. Partly the asphalt had been milled off again. This shows that a modern road (= asphalted) in such a steep and always somehow moving terrain does not necessarily represent progress. I could hardly believe it when there were actually a few raindrops on the wind-screen of the vehicle! Yes, the vegetation was not dead! On the contrary: *Espostoa mirabilis* was blooming, *Browningia pilleifera* had fresh buds. *Armatocereus balsasensis* had new spines (Figure 4). Arriving in Balsas we searched for a place to stay - in vain! As expected, it was super-hot (over 35°C with a cloudy sky) and there was no water! We could have got a room after a lot of persuasion. But there was no shower and no water toilet. For the toilet flushing we would have had to draw the river water of the Rio Marañon stored in a barrel. Already with the lifting of the lid innumerable mosquitoes met us. So it was clear: We couldn't stay here. We had to go on and had already wasted a lot of time. The drive up on the other side of the Rio Marañon from 900m to 3600m became a challenge. The higher we went the darker it became. Thick fog came up, we had arrived in the clouds. It began to rain,



Figure 1. *Peperomia dolabriformis* HFW 17.01, Rio Crisnejas valley, 1970m, now lost habitat.



Figure 3 *Sinningia* spec., Rio Crisnejas valley, 1970m, now lost habitat.



Figure 2. *Thrixanthocereus cullmannianus* HFW 17.02, Rio Crisnejas valley, 1970m, now lost habitat.



Figure 4. *Armatocereus balsasensis* west bank of Rio Maranon above Balsas.



Figure 5. Calla Calla pass, 3600m, rain, fog, cold.



Figure 6. Mummies museum above Leymebamba.



Figure 7 The new cable car to Kuelap.



Figure 8. The new *Melocactus utcubambensis* n.n. HFW 21.04, spotted in 2010 at 1609m in the Rio Utcubamba valley.

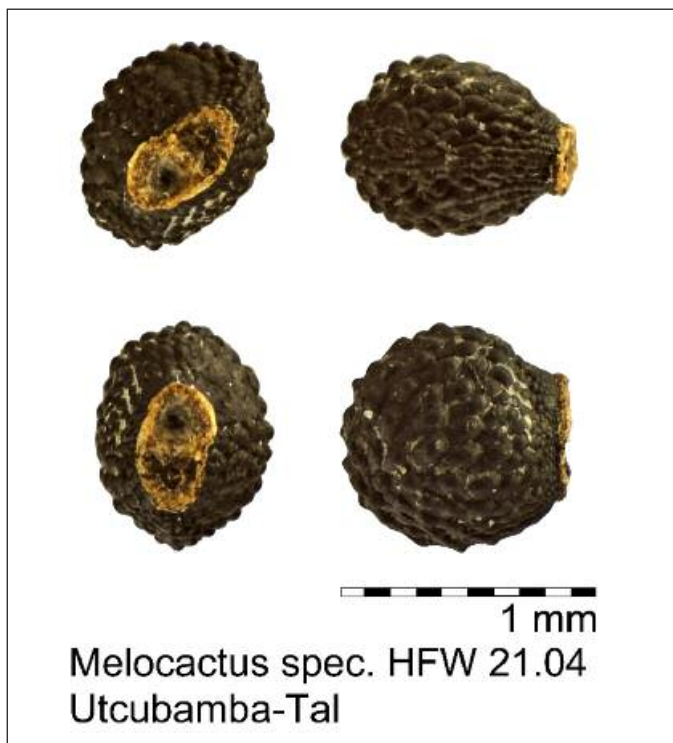


Figure 9. Seeds of *Melocactus utcubambensis* n.n. HFW 21.04, very distinct from those of *M. bellavistensis*.

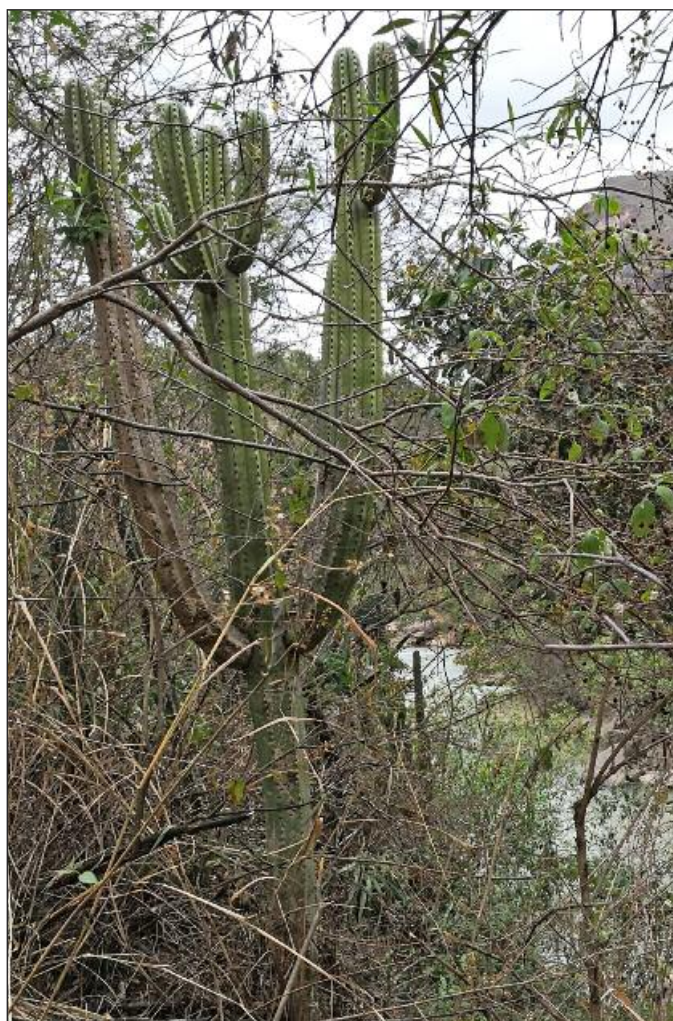


Figure 11. *Browningia utcubambensis* directly on the bank of the river.



Figure 10. *Espostoa utcubambensis* is the most common cactus species in the Utcubamba valley and all its side valleys.



Figure 12. *Rhipsalis baccifera* HFW 43.01, North of Caclic, 1639m.



Figure 13. *Rhipsalis baccifera* HFW 43.01, North of Caclic, 1639m.

at first only drizzle, later uninterrupted strong continuous rain! In addition the visibility got worse and worse and at the top there was only 10–20m visibility. Of course the track had become more and more wet, potholes were full of water; you just didn't know how deep they were. At an average speed of about 30km/h it was almost 16:00 when we crossed the top of the pass Calla Calla (Figure 5). There was no time for cacti now!

Now we went down to Leymebamba; we were happy! Out of nowhere a truck appeared in the fog in front of us. It stood! The cab was folded up. There was a technical problem. With cold, rain and fog I had to get out and explore the situation. Sometime the driver came and showed me I could drive past. I folded both mirrors on the vehicle, because on the left was a deep rain ditch but also a high edge. With only one centimeter distance to the truck I drove very slowly with support of the driver to get passed. Our car was hanging threateningly, leaning to the left into the ditch. Only thanks to the sufficiently high ground clearance and the good tyres I passed happily.

When we arrived in Leymebamba it was already after 17:00 o'clock. We spent the night in the lodge of the famous mummy museum (Figure 6) and still had the whole evening time to admire the herbs, bromeliads, orchids and other plants of the mountain rainforest region which were lovingly collected there by Mrs. Sakuta (CASA MALLQUI - <https://www.casamallqui.com>) and cultivated in the garden.

On the way to Chachapoyas the next day we quickly realized that we had been lucky, be-



Figure 14. *Peperomia ferreyrae* is widespread in the Utcubamba valley.

cause it continued to rain all night long. The Rio Utcubamba swelled up to 10–20cm below the level of the road. Numerous construction teams were active to keep the road passable and so the earth was piled up on the asphalt road to raise the level.

From Chachapoyas there is of course already a lot to explore for normal tourists. The absolute favourite destination of all Peruvians here is now the first and only cable car of Peru that takes the tourists up to the fortress Kuelap (<http://telecabinaskuelap.com>), Figure 7. During the ride with the cable car it is noticeable that *Espositoa utcubambensis*, the most widespread cactus here, also populates all side valleys of the Rio Utcubamba, as we could find out later during further excursions. It is almost always limited to altitudes between 1700 and 1800m.

During another excursion in the valley I had actually planned to find *Melocactus utcubambensis* n. n. discovered there in 2010. (HFW 21.04, 1609 m, Figures 8 & 9). But also here there is a lot of building activity in the meantime. The old pumping station no longer exists as a landmark. Instead, a large hydroelectric power station is being built here. Access to the *Melocactus* habitat is no longer possible. A house has been built there. At another place



Figure 15. *Hylocereus megalanthus* in the morning between the road and river.



Figure 16. *Rauhocereus riosanensis jaenensis* growing directly on the bank of Rio Ucubamba.



Figure 17. Dense mountain rainforest on the way to Gocta waterfall.



Figure 18. The second step of Gocta waterfall at the end of the track.



Figure 19. *Armatocereus* spec. at around 2000m (bright circle), Utcubamba valley.



Figure 20. View to Gocta waterfall from Pueblo de las Muertos.



Figure 21. Maybe *Lymanbensonia brevispina*.



Figure 22. Maybe *Lymanbensonia brevispina*.



Figure 23. Bosque de Palmeras Molinopampa.



Figures 24 & 25. Small plant collections, always with succulents, we see everywhere.

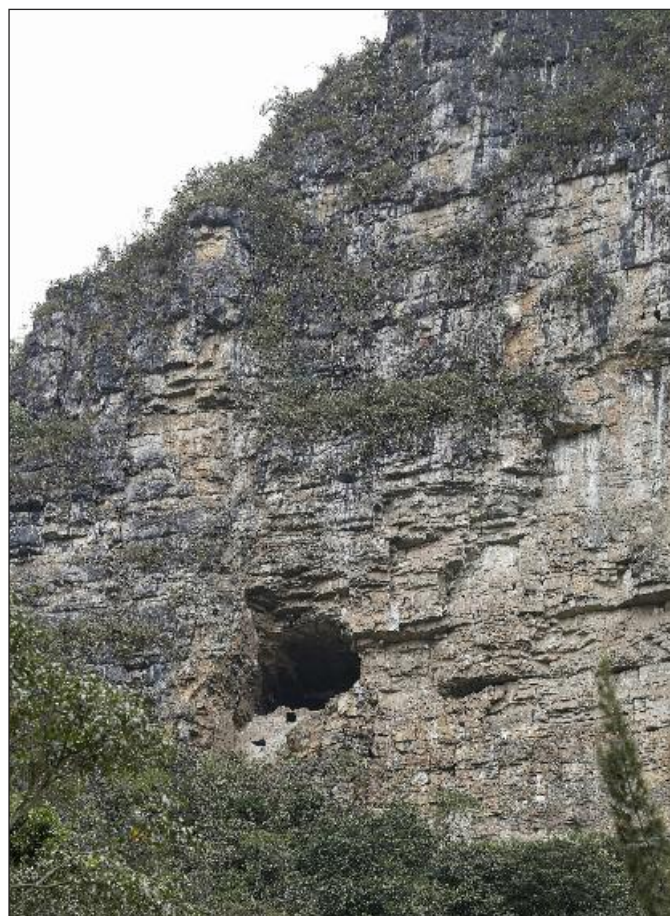


Figure 26. Entrance to cave "Cueva de Mito".



Figure 27. Dragon fruit production (*Hylocereus spec.*) at Finca La Aurora, Omia district, province Rodriguez de Mendoza, region Amazonas.



Figure 29. Another big *Hylocereus spec.* in a private garden

there is hardly the possibility to climb the steep rocky hill with large blocks of rubble and blocked by dense shrub and cactus vegetation. So I was content with a few photographs of *Espostoa utcubambensis* (Figure 10), *Browningia utcubambensis* (Figure 11) and *Rhipsalis baccifera* (Figures 12 & 13).and *Peperomia ferreyrae* (Figure 14).

Almost back at the vehicle, my wife suddenly discovered large flowers in the middle of shrubbery on the banks of the Rio Utcubamba: Yes, it was *Hylocereus megalanthus* (Figure 15), which showed half-open flowers in the morning. What a wonderful find! The plant was huge, about 5m wide and up to over 2m high. The specimen branched in the dry bush. Hardly a meter beside it the river roared. Now I discovered *Rauhocereus riosanensis* (Figure 16) at the same place. I hadn't expected it so close to the river. We had found huge, impenetrable



Figure 28. Yellow dragon fruit.



Figure 30. Another big *Hylocereus spec.* fruit in a private garden



Figure 31. *Echeveria* spec. in culture at Finca La Aurora.

thicket-forming specimens of this species already in 2010 near Bagua Grande and also here around Utcubamba valley. A short glance further along the river brought more and more *Hylocereus* specimens into view.

The next trip was the tour to the Gocta waterfall (Figures 17 & 18). During the trip to the waterfall, shortly before the departure to Cochachimba, I saw *Armatocereus* surprisingly high in the rocks at approx. 2000m altitude (Figure 19). So far nothing has been reported about *Armatocereus* in the upper valley of the Rio Utcubamba. The rocks are facing northeast and get a maximum of sun and warmth. However, the rock is so steep that the plants seem inaccessible.

I had already seen Gocta waterfall from high up at the archaeological burial site Pueblo de las Muertos in 2010 (Figure 20). From there the water falling in two steps over a total of 771m can be seen well and was only discovered in the year 2002 by Stefan Ziemendorff from Greifswald (not far from my hometown Neubrandenburg in the northeast of Germany). He still lives today in Chachapoyas.

The way down into the gorge of the canyon to the foot of the waterfall is difficult, even more difficult is the way back. Here I made the discovery of a *Rhipsalis* aff. spec. (Figures 21 & 22). A closer identification was not possible, since the plant hung at approx. 5m height from a tree directly over the way and neither flowers nor fruits were recognizable. Possibly it concerns *Lymanbensonia brevispina* (Barth.) Barth. & Korotkova. If this is right it is a new site for this species.

Now we had already explored many highlights of the region. Usually it is the unplanned things that bring the biggest surprise. Thus we got the offer for a tour into the rain forest, more exactly into the province Rodriguez de Mendoza.

We started before sunrise. Our guide had ordered a taxi driven by his school friend. The road towards Molinopampa was asphalted at first, but later resembled the road already known from Balsas. In countless serpentines it went slowly deeper and deeper into the side valley of the Rio Utcubamba. *Espostoa utcubambensis* also grew here. When it became light,



Figure 32. Beautiful view into the fertile valley of Mendoza.

the sun did not come out as hoped. Instead it started to rain. That would be the weather for the day, with drizzle and bucketing rain. We were lead into the mountain rain forest. In Molinopampa we had to stop. As it turned out, on the wet and slippery terrain downhill at a bridge construction site at a narrow place a truck had slipped into the ditch and blocked the way. A traffic jam of many vehicles had formed. We used the almost one hour here to visit the small exhibition of the women of the local association for the protection of the wax palm forests of the surroundings (*Ceroxylon* spec., Figure 23). In 40 years such a palm grows just 1m! In these regions live different kinds of monkeys, birds and snakes, which are endemic here. In the distance we could see the impressive *Ceroxylon* forests - like in a picture book! Just opposite me, at a brick house, there is a large "exhibition" of all kinds of plants kept in pots. Here *Crassula* spec. and *Echeveria* spec. were actually kept as ornamental plants! Everywhere in other places of this tour I saw this picture. The people here love plants and often care for orchids in pots (Figures 24 & 25).

It was almost 11:00 when we arrived in Mendoza. Our guide showed us various public gardens where beautiful tropical plants were cultivated with bright colours. Everywhere there were orange and mandarin trees full of fruits. They simply fell down and lay in the ditch. No one could eat so much fruit. We visited a butterfly collection. It is said to be one of the largest in Peru. Then we drove to the mother of another school friend. Their property could only be reached only over a roofed suspension bridge over one of the numerous rivers and several hundred meters of footpath. The woman had her own oven and a small coffee plantation. Later we drove past the central coffee collection point of the cooperative. In several warehouses coffee bags were piled up to the roof. This coffee is mainly sold under the Faire Trade brand in Germany and Switzerland.

Our journey continued past the archaeological site of Cueva de Mito to the Omia district (<http://cuevasdelperu.org/amazonas-rodriguez-de-mendoza/cueva-de-mito>, Figure 26). The Cueva de Mito is a former burial place of

the Chachapoya people similar to the Pueblo de las Muertos in the valley of the Rio Utcubamba. There are still many unsolved puzzles about the huge empire of the Chachapoya, which dominated an extensive area in the regions of Cajamarca and Amazonas long before the Incas.

Arrived at the end of the road there was a finca (Finca La Aurora, 1300m; <https://www.facebook.com/Finca-La-Aurora-919675971501687>): It was a huge estate on which there was a restaurant under the open sky, only covered by a huge high roof like a bus station. Now it rained strongly with around 25°C. Before the meal we looked around. All kinds of plants were cultivated in pots, orchids with huge flowers, cacti, *Crassula* spec. On the way to the big coffee plantation we crossed a narrow wobbly bridge over the now raging stream. The coffee plantation was located directly on a mountain. Peanuts were also grown here. Besides the dragon fruit cultivation interested me of course. A thicket of *Hyllocereus* spec grew on large racks on wooden posts (Figures 27–30). There was always fruit to harvest. Here they were yellow. Elsewhere there were orange or pink fruits. The dragon fruits are mainly exported to the USA. Further on, the path went to large fish breeding ponds, in which Tilapia are fattened. At the edge of the ponds enormous *Echeveria* spec. struck me (Figure 31). They were so big and bulging here in the rain that it seemed impossible for me to determine them. In the late afternoon we

stopped on our way back at probably the most beautiful view of the whole valley around Mendoza (Figure 32). Then we quickly went back to Chachapoyas, where we arrived in the dark.

Our return journey went again through Balsas. This time we had nice weather. The sun was burning at noon in Balsas and many *Browningia pilleifera* and also *Armatocereus balsasensis* had fruits. With the *Browningia* the problem is that only a few fruits really reach maturity, because they are almost always infested by insect larvae that eat the fruits from the inside. It is probably the insects that lay the eggs in the blossom during pollination. The fruits of *Armatocereus* are cut up immediately by ants after they fall, but they only eat the flesh and leave the large, heavy seeds. So I had no trouble removing the seeds from the sticky sweet flesh.

In Cajamarca we were happy about the super sunny warm weather and we still had time to relax there. For lovers of orchids here you can see more: Orquídeas de la selva de Rodríguez de Mendoza -

<https://www.youtube.com/watch?v=efbHZ1XtVa4>

The trip was definitely a great experience - not least because of the experience of the unbelievable biodiversity in the rainforest, the love of the locals for the plants of their region and the local support. Thank you very much!

[Holger Wittner](#)

<https://www.sclerocactus-aventures.com>

Site internet en langue française consacré aux cactées du genre

Sclerocactus :

les espèces,
leurs morphologies,
leur culture,
leurs milieux naturels,
l'histoire du genre, ...

~.-.-.-.-.-Sclerocactus Aventures~.-.-.-.-.-



REBUTIA MARGARETHAE RAUSCH

Victor Gapon (Moscow) tells us about an unusual species of *Rebutia* and describes its characteristics and home in northern Argentina.

Photographs by the author.

During a trip to Argentina in 2004 with Gert Neuhuber we came across some unknown cacti growing on the eastern slopes of the Sierra Santa Victoria. What could they be?

At home it was not difficult to identify our find. *Rebutia margarethae* was published by Walter Rausch back in 1972. Nevertheless, it is still quite rare in collections.

The ecotope and napiform root are similar to those of lobivias and mediolobivias, but the flowers and ovary have neither hairs nor spines. Its habit is similar to *Sulcorebutia steinbachii*, but that grows almost 800km to the north. Elongated areoles and broad scales on the receptaculum of these plants are also similar to those of sulcorebutias and also weingartias. A long upright pistil permits us to speak of aylosteras. The shape of the flower

and seeds more than anything resemble *Rebutia*, but these plants grow much higher than other species of rebutias (Figures 1–9). It is a unique species!

Its stem is spherical, slightly flattened, often with a purple-violet tint, up to 6cm in diameter and up to 3cm in height, with age overgrown with shoots, with a fleshy thickened root. Small low but distinct bumps form 14–17 ribs. Spines (7–11) are light brown with dark tips; all are radial as a rule, thin, needle-shaped, later turning grey. There are also specimens with more powerful and longer (up to 3cm) spines, also central spines may be present. Flowers are of a rare bicoloured scheme for rebutias – they are red usually with an orange or yellow throat, up to 5cm in diameter (Figures 10–18).



Figure 1. On the top of the Sierra Santa Victoria. If you want to see *Rebutia margarethae*, you have to go to the clouds.



Figure 2. Road to Santa Victoria Oeste. In December-January you have a lot of rain here.



Figure 3. Typical place for *Rebutia margarethae*, VG-156.



Figure 4. Plants of *Rebutia margarethae* in the western part of the distribution area.



Figure 5. Plant of *Rebutia margarethae* in the western part of the distribution area.



Figure 6. Plant of *Rebutia margarethae* in the western part of the distribution area.



Figure 7. Plant of *Rebutia margarethae* in the western part of the distribution area.



Figure 8. A place for *Rebutia margarethae* in the northern part of the distribution area, VG-1206.



Figure 9. *Rebutia margarethae* VG-1207.



Figure 10. *Rebutia margarethae* has unusually strong taproots for a *Rebutia*, here VG-155.



Figure 11. *Rebutia margarethae* has unusually strong taproots for a *Rebutia*, here VG-157.



Figure 12. Spines of *Rebutia margarethae* VG-1208



Figure 13. Spines of *Rebutia margarethae* VG-155



Figure 14. Flower of *Rebutia margarethae* VG-157.



Figure 15. Flower tubes of *Rebutia margarethae* VG-155 and VG-157.



Figure 16. Flower of *Rebutia margarethae* VG-157.

Rausch discovered the plants at an altitude of 3500 metres and named the species after his wife Margarethe, who died prematurely in 1972...

These very unusual rebutias stand apart in their own genus. The features listed above gave reasons for various cactologists later to try and include this species also into such genera as *Aylosteria*, *Mediolobivia*, *Weingartia*.

Study of *Rebutia margarethae* in its habitat was continued during another expedition in 2011. The ridge of Sierra Santa Victoria is the border between Jujuy and Salta provinces. We found these plants only on the eastern slopes of the mountain range, not further into the ridge or on the western slopes (Figure 19).

But the natural habitat of the species is not small, neither in its total area nor in its vertical extent. For example, *Rebutia margarethae* was discovered during a sortie to the north, about 5km from Ruta 7 (the road between Santa Victoria Oeste and La Quiaca). Further searches in that direction were hopeless because of the fall in altitude. The distance between the extreme points of our findings (VG-1204 and VG-1206) was more than 10km in a straight line, or more than 25km by the road. Altitude range was more than 700m, from 2970m (VG-1207) to 3695m (VG-1204). Field studies are significantly complicated by weather conditions, absence of roads and extreme inaccessibility of the area on the whole. However, these factors together with complete unsuitability of the region for any



Figure 17. Fruits of *Rebutia margarethae* VG-157.



Figure 18. Fruits of *Rebutia margarethae* VG-157.

Table 1. Locations for Victor Gapon's discoveries.

Field Number	Location	Altitude (m)
VG-155	Rodeo Pampa, Salta	3530
VG-156	Rodeo Pampa, Salta	3310
VG-157	Rodeo Pampa, Salta	3270
VG-1204	Rio Chaupimayo, Salta	3695
VG-1206	Rodeo Pampa, Salta	2990
VG-1207	Rodeo Pampa, Salta	2970
VG-1208	Rio Chaupimayo, Salta	3542

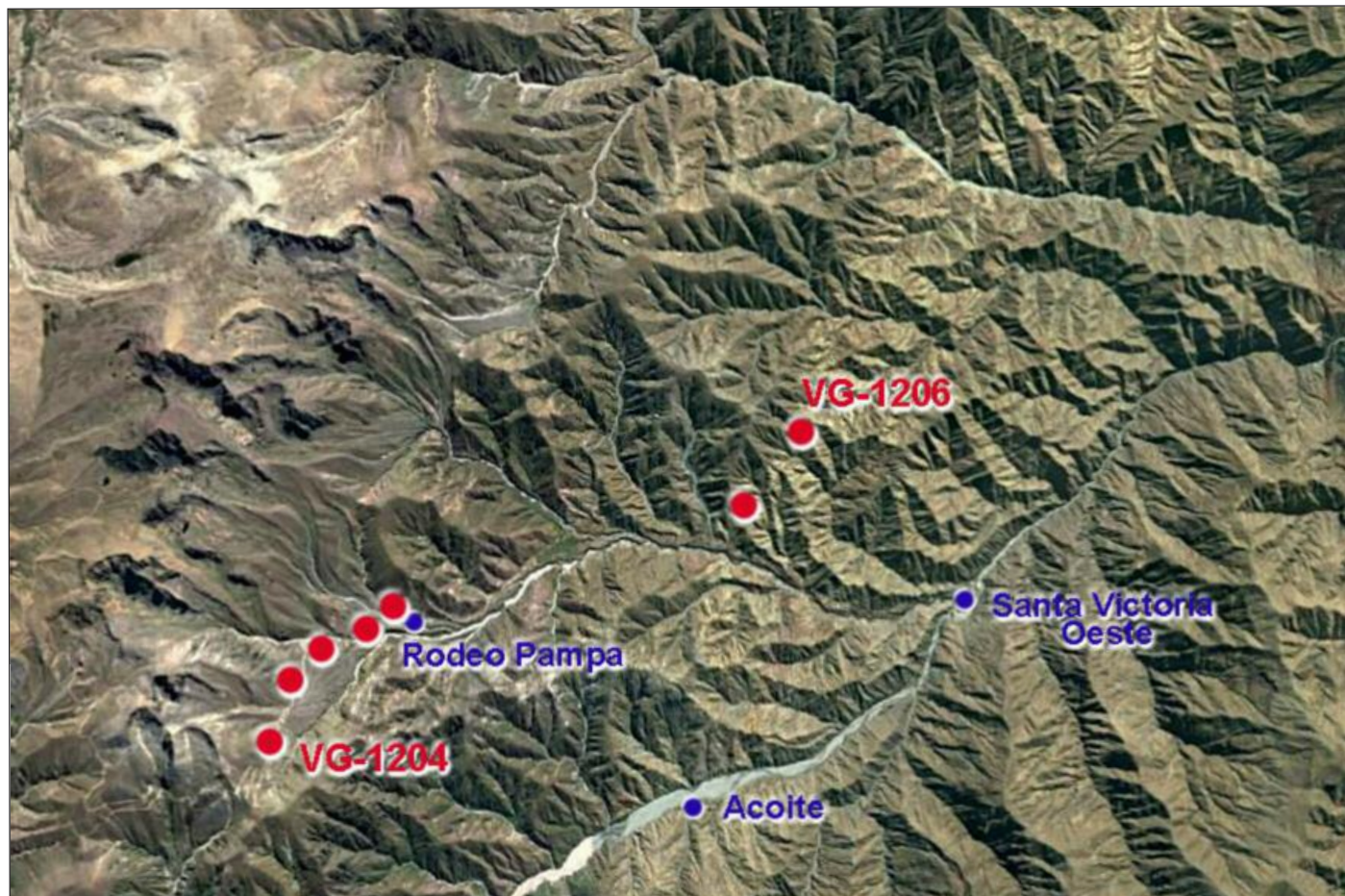


Figure 19. Google map fragment of north part of Salta Province. VG-places are marked by red points.



Figure 20. Palette of flower colours of *Rebutia margarethae* VG-157.

economic activity allow us to confidently assert that this species is not threatened.

Some modern specialists believe *Rebutia margarethae* to be a synonym of *Rebutia padcayensis*. The latter was described two years earlier, and also by Walter Rausch. Some morphological similarities between these two species are definitely present. However, one should take into account the difference in altitudes for both species – populations of plants attributable to *Rebutia padcayensis* are located at 1950–3000m. The distance between the distribution areas is also very significant (more than 30km between the nearest points as the crow flies). Lastly, there exists a serious geological barrier between the areas – deep canyons of the Rio Bermejo tributaries at 2300–2700m.

Cultivation of *Rebutia margarethae* is not difficult, but one should take into account its mountain origin (above 3000 meters). The plants need good light, regular watering during the growing season and a constant flow of fresh air. In winter the plants should be kept at 5–7°C, with possible decrease down to zero



Figure 21. Abundant flowering of *Rebutia margarethae* VG-1206 in culture.



Figure 22. Abundant flowering of *Rebutia margarethae* VG-1206 in culture.



Figures 23 & 24. Variability of spines and flower colour of *Rebutia margarethae* from the same place (VG-1206).

provided the plants are kept absolutely dry. In summer they thrive outdoors. Flowering in collections usually happens in May and June (Figures 20–24).

The author expresses his gratitude to Gert Neuhuber (Austria), Natalia Schelkunova (Moscow) and Larisa Zaitseva (Chelyabinsk) for assistance in preparation of these notes for publication.

[Victor Gapon](#)

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TRAVEL WITH THE CACTUS EXPERT (23)

Zlatko Janeba concludes his series of articles about his adventures with Josef Busek, the Cactus Expert. Thank you Zlatko for taking us to spectacular places and showing us wonderful plants!

Photographs by the author, desert-flora@seznam.cz

In the morning (19th May 2006) I got up early. I roamed around Beatty (Nevada) and enjoyed taking pictures while the place was still quiet. Then we got a breakfast in the Death Valley Nut & Candy Co. shop and, before just leaving Beatty, we also visited some kind of a street market. There, just next to the main road, one can buy anything imaginable as well as unimaginable, from used clothes, old armchairs, large wall paintings, furniture, bicycles, spare parts from and for almost anything, even a washing machine or a boat (Figure 1).

Surprisingly, we did not buy anything. I guess we did not find anything really useful there.

Later we made a stopover in Shoshone, a small town in Inyo County in California. It was founded back in 1910 and nowadays only a couple of dozen people live there (the

population was 31 inhabitants in 2010).

Although small, Shoshone is an important southern gateway to the very popular Death Valley National Park. And since it offers the last services available before Furnace Creek in the park, the services are often pricey. During our visit, for example, the gas price in Shoshone (a gallon of regular unleaded for US\$ 3.99 and supreme unleaded for US\$ 4.13 at Chevron) was almost double compared to those in other places.

Near Shoshone we saw *Echinocactus polycephalus* growing at an elevation of some 500m. We also took a dirt road heading west from Shoshone towards low hills, passing the Shoshone Cemetery. We visited the Dublin Gulch, a historic mining camp, where caves in the soft hills used to serve as housing for miners



Figure 1. A street market of a kind in Beatty (Nevada) where you can find everything you probably don't need. Josef Busek (in the background) is looking for something useful.

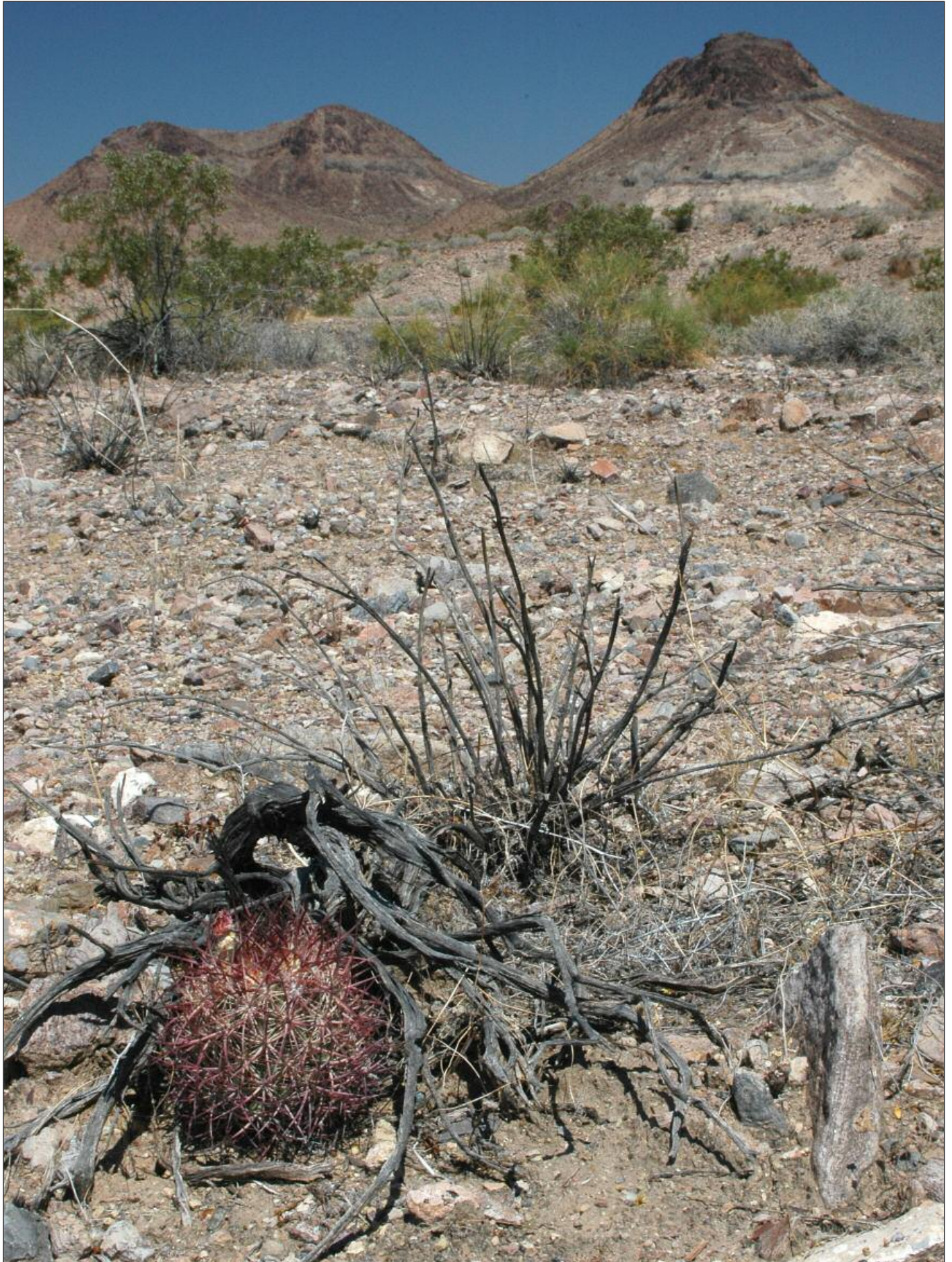


Figure 2. A view of the habitat of *Echinomastus johnsonii* just west of Shoshone (580m), Inyo County, California.



Figure 3. Detail of an older specimen of *Echinomastus johnsonii* with fruits, west of Shoshone (580m), Inyo County, California.



Figure 4. A street view of Jürgen's house in El Cajon, California (May 2006). The mere look from the spot where we parked our car told us that we could expect a very interesting desert garden in the backyard.

from the early 1900's through to the 1960's. A little bit further we discovered two specimens of *Echinomastus* (*Sclerocactus* if you prefer) *johnsonii* growing in rocky washes at an elevation of



Figure 5. This huge *Aloe* aff. *dichotoma* had been actually planted in the garden as a small seedling about 6-7 years before our visit (May 2006). That fact really left me astonished and also a little bit jealous. Such an example will clearly tell you about the luxurious conditions growers have in southern California.

580m (Figure 2). Although these cacti did not seem to be very common there, both plants were bearing unripe fruits, suggesting the population is healthy and able to reproduce (Figure 3). It was exactly noon and the temperature was skyrocketing (36°C the air temperature, 44°C and 50°C at the soil surface in the shade of the plant and at direct sun next to the plant, respectively). These cacti must withstand really high temperatures in the most inhospitable places like that one near Shoshone.

Echinomastus johnsonii is a very popular species among collectors, but it is considered quite difficult to cultivate. Thus, grafted specimens are usually kept in collections. It was described as *Echinocactus johnsonii* Parry ex Engelmann back in 1871 and later was transferred into genera *Echinomastus* (by



Figure 6. A view of the Jürgen's garden in El Cajon, California. A nice mixture of various cactus and succulent species is grown freely in the ground. And all the plants were in perfect condition, often in bloom or bearing fruits.



Figure 7. A perfect fruting specimen of *Echinocereus lindsayi* that is grown freely in the ground in the Jürgen's garden in El Cajon, California (May 2006).

Baxter), *Neolloydia* (by Benson), and even *Sclerocactus* (by Taylor). Currently, the genus *Echinomastus* is accepted by some authors, while it is included in the genus *Sclerocactus* by others.

We passed Baker and stopped for lunch in Barstow (California). There we decided to contact Bob Kirkpatrick, whom Josef had visited back in 1989. Thus, we were searching in the telephone book and tried to call every Kirkpatrick we found in it. And there were several of them. After several calls we succeeded and we reached some of Bob's relatives. Unfortunately, we were informed that Bob Kirkpatrick had passed away some 15 years before our visit, but his wife Laurine was still around at the age of 81 years. Kirkpatrick's used to have a cactus nursery in Barstow (De Anza Street) with a special interest in plants of genera *Echinocereus*, *Ferocactus*, *Mammillaria*, *Opuntia*, and *Agave*.

We headed further south along the highway I-15. Along the road at an elevation between 800m and 900m we noticed numerous *Yucca whipplei* in flower. But we did not stop. Since the



Figure 8. Josef Busek and Jürgen Menzel busily talking about their beloved plants in Jürgen's garden in El Cajon, California (May 2006).

traffic became quite heavy we reached our destination, El Cajon (San Diego area), at dusk. We arrived at the house of Jürgen Menzel too late to enjoy his large outdoor collection of cacti and succulents. Our host was, however, very hospitable and we were invited to stay overnight. And, as far as I remember, the discussion about plants got much longer than originally intended.

Next day (20th May 2006) in the morning we continued our discussion in Jürgen's garden and his greenhouse (Figures 4–10). It was really impressive to see various species of cacti and succulents grown directly in the ground, without any cover. And all the plants seemed to be in excellent conditions. Very nice collection. (Sadly, Jürgen passed away in January 2018. It is a big loss for the cactus world and I am sure he will be missed among those who knew him.)

Jürgen Menzel was well-known for his ability to obtain and quickly propagate (thanks to his skills as well as to favourable growing conditions in southern California) numerous rare, newly described, and other usually



Figure 9. An overall view of Jürgen's cactus collection grown in a plastic greenhouse in El Cajon, California (May 2006).

unavailable cacti. One typical example is *Digitostigma caput-medusae* Velazco & Nevárez (Figure 10). This quite atypically looking cactus was discovered only recently (in August 2001), described by Mexican botanists in 2002, and transferred by David Hunt into the genus *Astrophytum* in 2003. Thanks to Jürgen, the first seeds became available in Europe a couple of years later, the species got quickly propagated and soon got widespread among growers and enthusiasts. The collecting pressure on the population in its habitat dropped almost immediately. This is a perfect example of how the protection of rare and endangered species in their natural habitat should work. It is so simple: make it available among collectors. The more difficult part is to protect its natural habitat.

So this is the end of my travels with the cactus expert Josef Busek throughout the Southwest of the USA. I hope readers have enjoyed reading it as much as I enjoyed travelling

Zlatko Janeba, desert-flora@seznam.cz



Figure 10. Fruiting specimens of *Astrophytum* (*Digitostigma*) *caput-medusae* in Jürgen's collection in El Cajon, California. This very unusual and popular cactus was described relatively recently (in 2002) and at the time of our visit in El Cajon (May 2006) it was still quite rare in collections and the demand as well as the price of seeds were quite high.

IMPRESSIONS OF PERU: CUSCO TO AREQUIPA AND BACK

Clara Tan gives us a vivid account of her first trip to Peru, not on an organised tour but travelling independently. If you want to see the real country then this is the way to do it. It is a wonderful country with lovely people and it left a lasting impression on Clara.

Prologue

I decided to write a little travelogue about my trip to Peru as it was my first time in South America and the place is so different from anywhere else I've been in the world. Special thanks must go to Martin Lowry, my husband and travel companion, without whose linguistic ability and South American expertise I wouldn't have been able to travel around Peru in the way that I did. Thanks too to Nigel Taylor for his helpful suggestions for improving the original draft of this article. I hope you'll enjoy reading this shabby attempt at capturing my experiences.

The Itinerary

We were in Peru from 19 October to 1 November 2017, as follows:

- Day 1 Arrive in Cusco. Explore Cusco historical centre
- Day 2 Day trip to Machu Picchu
- Day 3 Cusco to Chalhuanca
- Day 4 Chalhuanca to Nazca
- Day 5 Nazca Lines flight, Chauchilla cemetery. Nazca to Atico
- Day 6 Atico to Arequipa
- Day 7 White water rafting on the Rio Chili. Explore Arequipa historical centre
- Day 8 Arequipa to Colca Canyon. Hot springs at Colca Lodge
- Day 9 Explore Colca Canyon
- Day 10 Colca Canyon to Espinar
- Day 11 Espinar to Cusco
- Day 12 Day trip to Pisac, Ollantaytambo, Salineras de Maras
- Day 13 Sacsayhuaman, Choco Museo Cusco
- Day 14 Rest and relaxation. Depart Cusco

The Mountains

The first thing I noticed about Peru was the mountains. They are everywhere you look.

Even in the cities, you can see them hovering in the background, as if they were an ever-present talisman guarding against some impending but indistinct threat. These are, of course, the mighty Andes mountain range, which runs almost the entire length of South America. Rather than any individual standout peaks, what appears before you is an endless array of peak overlapping with peak, which a giant might describe as rolling hills, except that they rise majestically to well over 5000 metres and more in height. The vastness of the landscape soon dawns on you too, you could be travelling for half an hour in the highland plains without the mountains ahead shifting in perspective in any way.

Apart from the Sacred Valley, with its lush forests, much of the mountains on the western slopes receive little rainfall and, consequently, have little vegetation. Generally what grows are low-lying scrubby bushes that make the mountains appear to be draped with a blanket of threadbare, pale green velvet. Put it another way, you could say the mountains are a huge creation of chocolate dusted with green tea



Figure 1. A volcano looming over a courtyard in Arequipa.



Figure 2. The wild west Andes.

powder... mmm... delicious... Sometimes all you get are bare slopes with polka dots of dark green, or just plain rock, albeit layered at different angles with various shades of reds, oranges, browns and greys.

Where plants do grow, they are often one or several of many species of cacti: long and slender limbed, short with angry, menacing spines, or large spongy clumps hugging the ground. Where it's too dry even for cacti, we find patches of nodules barely millimetres from the ground, looking like green slime from afar but actually quite hard and springy to the touch. On the other hand, rather ubiquitous are the greenish-brown grasses, tufts of them waving in the brisk Andean wind for miles around. They look soft as paintbrushes, but get too close and any bare flesh will be pricked by multitudes of their spikey, blade-like leaves, some even leaving festering bits behind. Cacti aren't the only impalers about... Perhaps a harsh climate breeds hostile life...

Dry though the mountains are, rivers do flow, sometimes a mere trickle, at other times gushing over the rocks with rapids and waterfalls, so cold the water will chill you to the bone without a protective wetsuit. Occasionally there are calmer waters in the form of lakes high in the mountain plains, where flamingos gather, and sometimes heat from the centre of the earth makes it close to the surface, producing geysers and hot springs. Certainly, enough water seeps into the ground for grass to grow and feed the herds of llamas, alpacas and even vicuñas you can often see roaming around. Just a note of explanation



Figure 3. Suri alpacas, revered by the Incas.

here if you're as confused as I was about four of the Andes' most famous mammals: vicuñas and guanacos are the wild cousins of alpacas and llamas, respectively. Llamas are beasts of burden (although you can only load 45 kilograms onto them before their backs break), and alpacas are reared for their wool. Alpacas, with their more rounded facial features, are definitely cuter than llamas, especially when they have tags on their ears like fancy earrings. Llamas tend to carry a look of disdain about them. Vicuñas are the most elegant and graceful of the three, with a slender head, body and limbs, looking more like deer than like long-necked sheep, as the other two do. I didn't see a guanaco so can't comment on its appearance.

Okay, back to the mountains. These come in many forms too. There are those with ridges reaching like the arms of a giant octopus into the valleys, or deep gorges over which condors soar, or towering sheer vertical faces like block after block of high-rise apartments, or even cliffs powdery white like flour. Some are jagged snow-capped peaks, and others have slopes so heavily terraced over the centuries it's as if the mountains have been painstakingly assembled from row upon row of thin stone bricks. In places you may encounter strange lines of conical formations jutting out of the rock face like a not-so-angular Toblerone bar, occasionally a big blackish-red amorphous lump of rock suddenly appears on the ground before you like an enormous blood clot, and there's even a river of pure white rock flowing down a valley, complete with ghostly white



Figure 4. The beauty spot that's Colca Canyon.



Figure 5. Sun, sand and sea!

mineral-encrusted algae dripping over the edges.

The mountains even extend all the way to the sea. There along the coast, they morph into something else: sand...

The Sand

I've never seen so much sand in my life. Between the rocky mountains and the coast is a wide band of sand mountains and dunes made up of fine sand of a creamy colour, not at all gritty unless you get it in your shoes, and stretching as far as the eye can see. Driving from Nazca to the coast, with sand ebbing away behind but yet more piling up in front, you start to think that the ocean is but a legend dreamt up by travellers past, as unreachable as El Dorado. This is the northern part of the Atacama Desert, the driest in the world, which is rather ironic given that it lies right next to



Figure 6. Sand flowing onto everything in its path.

the Pacific Ocean, the abundant waters of which cover half the Earth's surface. The sand is apparently a result of erosion of the Andes, all that rock ground up by wind and water... it's quite hard to believe that so much sand can be produced by such a slow process as the chiselling of rock, grain by grain.

The sand seems to flow from the mountains straight into the sea. There are a few gentle beaches where you can ease yourself into the water, but mostly it's a perilous leap from a cliff overflowing with sand. The incredible, or perhaps foolhardy, thing is that the Peruvians have built the main coastal Pan-American Highway right on these sandy cliffs. It's a feat of engineering as well as maintenance – strong coastal breezes swirl the sand over the road, depositing it in humps here and there, while the dunes close in over road signs and buildings, threatening to smother them as if healing themselves of the gash gouged into their side. We passed through a settlement which appeared to be accommodation for the road maintenance crew – it's hardly surprising that a sand digger station is needed here, just as a lifeboat station would be along a busy but treacherous stretch of rocky coast.

Speaking of the highway...

The Roads

Driving in Peru is not for the fainthearted. Traffic in the cities, as in many across the world, can only be described as chaotic. You have to be a pretty aggressive driver to cope with other motorists weaving in and out of traffic, long lines of cars with no break for you



Figure 7. The common tuk tuk... or converted motorbike.

to join or cut across them, taxis and even buses suddenly stopping right in front of you without warning to pick up or drop off passengers... the list goes on. The roads in the historical centres were built 200 years ago, when the only vehicles were horse-drawn carts and the population was much smaller; as you can imagine, the large number of cars on these narrow roads now result in gridlock, especially during peak periods. In fact, the police have to come out at particularly bad junctions to direct traffic, their incessant shrill whistles piercing through the din of innumerable internal combustion engines.

Beyond the cities comes a different set of challenges. The major highways linking towns and cities may be laid with asphalt, but they are all single-lane roads. The mountainous terrain they traverse means that everything is transported by road, which can often be very winding and rather steep. Therefore, it's not long before you find yourself stuck behind a lorry or two... or eight... Under such circumstances, overtaking becomes a fine art to be mastered out of necessity – if you stick to the usual rules of the road, it will take an age to get where you want to go. Before you protest too much, note that even the police overtake on a double yellow line around blind corners!

Overtaking by faith isn't the only challenge on the highways. The idea of highways being conduits for speedy travel between important population centres doesn't seem to have taken off in Peru. Instead of circumventing towns and villages, with access to them via smaller



Figure 8. Workmen clearing the road for us to pass.

roads branching off, the highways go right through them. To slow the traffic in these areas, speed bumps are used. There are signs warning of the speed bumps, but that is often not the case, and sometimes the bumps are hard to distinguish from the rest of the road surface. Even a handful of houses clustered by the road is enough to warrant a speed bump or two. Given that these are very high bumps that you have to slow to a crawl to get over without risking damage to the vehicle, you really have to keep your eyes open for them as it is definitely a very bad idea to hit them at normal highway speeds.

Another problem with the highways is the common occurrence of potholes, especially along the coast. Some stretches have so many that it is impossible to avoid them at all, another example of having to keep a lookout for dangers and being prepared to slow down at very short notice. Even entering a town doesn't bring reprieve... in fact, the roads can be even worse. In the rather bleak town of Espinar, there were two gigantic 'potholes' right in the main road, so big they spanned the entire width of the road. These were essentially roadworks: the first was just about passable by taking the car slowly in and out of it, but the second was so deep you can forget about continuing down the road... time to find an alternative route in completely unfamiliar territory...

Off the beaten track, as they say, the roads vary somewhat in condition. Top of the range is, for instance, the road to Pinchollo geyser, which comprises good hardcore with little



Figure 9. A typical gravel road in the mountains.

loose material on top, making for a relatively smooth and easy ride. Even then, you might suddenly encounter a stream flowing right across the road, creating muddy holes in it. An extreme example of this can be found on the main road to Espinar. The road itself is covered with gravel and so very bumpy to travel on, and at a couple of places near a mine, it is crossed by a sizeable river that, although shallow, has carved out great pools in the shingle bedrock (I was later informed that this is the Rio Apurimac). It's hard to tell how deep the pools are; luckily, a lorry drove past us while we were contemplating our next move, so we could observe how the locals do it and assess whether the road was indeed passable. In this case, to get across, you had to position one side of the car to go on the ridge of shingle around the pool you need to cross and just keep your foot on the accelerator – best left to someone with more experience than I have at these things.

Other types of road include the one to Chauchilla cemetery, which has parallel ridges going across it. Driving on this is bone shattering, like going over a 5-mile-long cattle grid. One would normally try to reduce the shaking by driving more quickly, but there is a thin layer of fine sand covering the surface, which acts as a lubricant and makes the car slide sideways, so you have to choose whether you're more comfortable shaking or sliding.

I've already mentioned the gravel roads, but how about that on a steep slope with hairpin bends and no safety barrier to stop you from plunging tens of metres down the valley if you



Figure 10. Smell the guinea pig roasting.

fail to brake properly because the tyres are rolling about on the gravel? That's what the road out of Sibayo up and over the Andes is like. For extra thrills, try doing it downhill with the road only wide enough for one car in most places, like the road leading to the luxury hotel Colca Lodge in Colca Canyon... One wonders if they've deliberately left the road in such shape so that when you eventually arrive at the hotel, you're so terrified and thankful to have made it in one piece that you're not about to go anywhere else in a hurry, staying instead to 'enjoy' the hospitality on offer. Amazingly, roads like these are no hindrance to the locals, even big tour coaches negotiate them without a second thought.

Obviously, speed limits are somewhat irrelevant on Peruvian roads, you just go as fast as the conditions allow. In fact, the speed limits imposed where signs are present are usually so low that nobody gives a toss about them. So just relax, take it all in your stride, and breathe in the sweet Andean air...

The Air(waves)

The air isn't so sweet in places. Of course, if you're stuck in traffic or behind a line of lorries, you'd be choking on petrol and diesel



Figure 11. Luckily this photo doesn't come with sound...

fumes if you had the car window down. The cities smell much like many cities in the developing world, a mixture of air pollution, rotting garbage, perhaps the odd whiff of sewers, and occasionally a delicious waft of potatoes, rice or meat floating around a street corner. Out in the rural areas, you often notice a rather pleasant but incongruous smell...

eucalyptus! What is this very Australian tree doing in the Andes? As I understand it, what happened was that centuries of Spanish occupation had stripped the landscape of its native trees – it's not just the local people that the Conquistadors were nasty to – and local knowledge of forest management was lost, leaving much of the mountainsides bare. Eucalyptus was then introduced in stages to address problems of erosion and timber supply, with a major push by the Peruvian government in the last 50 years as part of its land reforms for farmers. Of course the rights and wrongs of such an approach abound, and I shall leave any discussion of the issues to persons more qualified.

What sounds accompany the smells of Peru? A quick flick through the radio channels revealed that salsa music is a favourite, at least half the channels were playing it. My feet were soon tapping and my body swaying to the irresistible Latin beat... oh, if only there was someone to dance with!

There's something else that can be heard frequently: pan pipes. Many restaurants and shops seem to think that tourists want to hear nothing but the 'sound of the Andes'... well, not this tourist! To me, pan pipe music is so



Figure 12. Why, oh why build so high?

monotonous and repetitive, there isn't much variation in melody, tempo or mood even between different pieces, I'm bored of it within 2 minutes... Imagine having to put up with it for the entire 3 hours on the Expedition train to Machu Picchu!

There's another sound that may be familiar but is heard in a totally different context in Peru: those jingles blaring from street to street aren't a signal that the ice cream van is here, it's actually the refuse truck! People then bring out their rubbish and fling it into the truck themselves. I don't know how often rubbish is collected in Peru, but it does look like if you're not in when the refuse truck goes past, your rubbish stays at home.

One final thing on the air, as many people have asked me about it on my return. Yes, the air is thin, and you don't have to go to the extent of getting altitude sickness to appreciate what a lack of oxygen does to your body. Nothing feels untoward if you're not exerting yourself, but every step upwards lifting your own body weight against gravity leaves you a breathless, panting wreck... For us sea-level creatures, clambering over Inca ruins at 3500m with the sun blazing down relentlessly is really not much fun at all.



Figure 13. Deep-fried trout and a bowl of corn.

Altitude seems to have another bodily effect: it messes with your appetite! I might be absolutely famished, but the moment food passed my lips I would feel so full I couldn't eat anymore, no matter how delicious it was. I felt so bad leaving so much food behind... The curious thing is that this effect only kicked in a few days into the trip, as if it's some sort of delayed response by the digestive system.

While we're on the subject of eating...

The Food

In recent years, Peru has gained a reputation for being a destination for foodies, but that on its own ignores the reality of the vastly varying quality of food found across the country, especially in rural areas. We undoubtedly had some sumptuous, superbly delightful meals, but there were also those that were bordering on the inedible, and this is from somebody who grew up in Singapore and eats just about anything. The worst I had were cereal bars with the texture and taste of shredded cardboard, chicken fried till the juices have completely vapourised, and gristly beef that hadn't been cooked long enough, it was so tough there was no hope of ever chewing the meat apart. Having said that, any meat was always nicely seasoned, and soups were always full of flavour. By the way, in case you were wondering, alpaca meat, being very lean, is a bit dry and bland compared with other red meat I've had... I'd rather have a juicy piece of beef or lamb any day.

Peruvians don't seem to eat much vegetables – what accompanies the meat is



Figure 14. Lomo saltado and a seafood hotplate.

usually a mountain of raw onions. Next to that is generally a second, even bigger mountain of rice, and sometimes you'll also find some boiled local potatoes. Much has been made of the sheer variety of potatoes grown in the Andes – potatoes, after all, came from South America – but it's a real pity that they are often undercooked and too hard. Time to invest in a pressure cooker...

The Peruvians do make up for the lack of vegetables by eating a lot of fruit. You can find many familiar tropical fruits here: mangoes, papayas, watermelons, honeydews, pineapples, bananas, even cactus fruit. They also juice almost every fruit you can think of, and some cafes even serve fruit juice mixed with milk. I had a little jug of 'jugo de papaya con leche' on my last morning in Cusco, which was so reminiscent of the papaya milkshakes my mum used to make when we were kids.

What, then, is Peruvian cuisine like? One would expect it to be fusion in nature, given how long the Spanish occupied the region, but there is also a major influence from a somewhat unexpected part of the world – China! As an example, the popular dish 'lomo saltado' is essentially beef steak cooked in soya sauce, usually garnished with coriander and served with potatoes or rice. This influence is a result of the many Chinese immigrants who arrived in the 19th century to make up the shortfall in labour after slavery was abolished, bringing with them their flavours and tastes. You can also find many Chinese restaurants, called 'chifas', in the cities. We went to a lovely one in Cusco called Kion (Ginger), and it was

interesting trying to decipher the Cantonese menu spelt the Spanish way.

After this whirlwind tour of Peru, there is just one more thing to mention...

The People

My first impression of the indigenous Quechua people was that they are very short. I'm 1.65 metres tall, a pretty decent height I think, but certainly no towering willowy figure the likes of Uma Thurman or Naomi Campbell, yet I seem to be taller than most of the Quechuas, even the men. Perhaps being vertically challenged is an adaptation to the relative lack of oxygen at altitude?

Tall or not, the locals are really friendly. Whenever we stopped along the highway for a photo or to explore the surroundings on foot, many of the lorries, pick-ups and motorbikes going past would honk and wave... I don't think I've ever waved so much before, I felt like I was practising to be the next Queen of England!

People aren't just friendly, they're very helpful too. One morning in the little coastal town of Atico, our hire car wouldn't start. The woman who ran the hotel we stayed at not only hailed a tuk tuk for us and explained to the driver what we needed, after we'd engaged a mechanic and were waiting at the hotel for him, she called him several times to make sure that he hadn't forgotten about us. The tuk tuk driver, for his part, didn't just take us to one mechanic, when that first try wasn't successful, he kept going until we found one who could come without too long a wait as we had a lot of distance to cover that day. The mechanic, who actually worked mainly as an electrician, diagnosed a dead battery (it wouldn't charge), and he ferried us around in his tuk tuk looking for a replacement. We couldn't find a shop that sold the right type of car battery, with the terminals the right way round for the housing in the car, so he improvised with some extra wires to connect the new battery to the car's electrics. Within 2½ hours of first discovering a fault with the car, we were on our way, and the new battery worked like a dream for the rest of the trip.

Some days later, we had another problem with the car. I was driving on that very rough, gravelly road to Espinar when one of the tyres



Figure 15. Two little girls in a remote mountain village.



Figure 16. A bustling street in the middle of nowhere

accidentally hit a rather large stone and dislodged the windscreen in the top-right corner. When we got to Espinar towards the end of the day, we asked around for a mechanic and eventually found someone who said they could fix the windscreen... no, you don't need a mechanic for that. A team of two men and one woman immediately set to work in their yard, which was full of rusty old vehicles in various stages of disrepair. While they were working, the wind was picking up and lifting the corrugated tin roof on one side of the yard, flapping it about... it looked in danger of blowing off completely. Meanwhile, daylight was fading fast and it was almost pitch dark before they turned on the one very dim, swaying light hanging under that flapping roof. They stripped much of the rubber surround from the windscreen – we thought they would put a new one on, but



Figure 17. Inhabited buildings still waiting for another storey.

perhaps they didn't have one, instead they glued it and the windscreen back onto the car, holding everything in place with Scotch tape. More improvisation... but it worked, the windscreen didn't budge an inch after that!

We were told to leave the Scotch tape in place for a day before taking it off. When we did, it left sticky glue marks behind on the windscreen and surrounding metalwork, so we took the car to a car wash to remove the evidence before returning it in Cusco. Contrary to expectation, petrol stations don't come with car wash booths, you have to go to a 'lavado' for the job, just as you would drop by a hairdresser's for a haircut or a florist's for flowers. I spotted one not far from our hotel, and as with the other tradespeople we encountered, the couple who owned the car wash were most obliging and worked on our car straightaway. It was already well past 6 pm and dark by then, and every time they turned on their jet wash the lights dimmed. They were such an endearing couple, all smiles and humming along while they worked... and they took such pride in their job! The glue marks were particularly stubborn, but they weren't giving up, they threw everything they had at them, using all sorts of detergents and scrubbing hard until every last bit was gone... When we left, the car was absolutely sparkling! Somehow I just can't imagine getting this level of service in any of the countries where I've lived.

Okay, I know these people were paid for their trouble, but it was their attitude and approach that struck me. Perhaps they had to



Figure 18. The urban sprawl of Cusco.

go for all the business they could get, or they understood what it's like to be in need of help, probably because they've needed it themselves. It's clear that many people in Peru have few creature comforts – they seem to live and work in houses that look half-built or half-demolished. It's not at all uncommon to see row upon row of houses with bare brick for walls and no attempt at concealing the grey concrete pillars and beams criss-crossing the bricks. These houses are usually two or three stories high, and where you'd expect the roof to be, you find instead concrete columns protruding skywards, with the embedded steel rods sticking out beyond their ends. It's as if the inhabitants have left the option open of building another storey at some point in the future, when they need the space or have the funds to do so.

Houses like these are particularly prevalent in the suburbs and rural areas. There is quite a lot of urban sprawl, with building after building springing up in an unruly manner along the main roads out of town. It's the same old story, people migrating in droves from the countryside to the cities in search of a better life and building a roof over their heads on any patch of land they can get their hands on, with the authorities seemingly unable or unwilling to impose any regulation. Who knows what these people do for basic services such as electricity, clean water and sanitation... The mountainsides around Cusco are covered in these shanty towns, which some might regard as an eyesore, but when the sun goes down, they light up like a Christmas tree and actually

look very pretty! The irony of it...

Here's another taste of what living conditions can be like. On the first day of our road trip, we stopped at a small restaurant in the town of Abancay for lunch. I asked to use the toilet and was shown round the back into the yard to what looked like the family bathroom. I say that because there was a shower area next to the toilet, but forget any notions of relaxing baths or mood lighting. The door had to be held shut with the bin (where you throw used toilet paper), and once shut it took a while for my eyes to adjust to the darkness – there didn't appear to be any form of artificial lighting around. The water in the toilet bowl was a slimy green, the floor was wet through with goodness knows what kind of filthy water, and what little toilet paper around was lying on its side on that wet floor. Needless to say, the flush didn't work, and neither did the tap in the sink. All this toilet needed to make it even more grim were flies buzzing around... thankfully that wasn't the case. Luckily there was a bucket of clean water in the shower area, but while I was ladling water into the toilet, a woman called to me outside... turns out she wanted to flush the toilet with water that she'd just washed some clothes in. Looking back at this, I now realise that I was probably wasting the family's precious clean water by putting it down the toilet... I still feel quite bad about it.

These and many other encounters gave me a new-found respect for people who, despite not having much to boast about, somehow make a decent life for themselves. Life may be hard – just think how difficult it must be to keep warm in sub-zero temperatures in a flimsy mud-brick house with no insulation – but the universal qualities of love and comradeship are manifest everywhere, from the mechanic showering his little daughter with hugs and kisses, to neighbours watching a Jackie Chan movie (dubbed into Spanish) together in the

local restaurant, to hotel staff having their own little Halloween party in the hotel courtyard, complete with costumes and scary make-up. Peru has made such a deep impression on me, I must admit that I shed a few tears at the thought of having to leave this beautiful country, not knowing if I will ever return.

Epilogue

I've decided I'm not going to buy a Nissan X-Trail, ever, for the following reasons:

1. The air vents are far too small. My forehead might be freezing with the aircon blowing at it, but my chin would still be hot and sweaty
2. Probably related to the above, the car interior doesn't cool down enough despite the aircon having been at full blast for hours
3. The reverse camera is extremely misleading. It looks as though there's still tons of room when you're actually about to crash into whatever it is.



Clara Tan

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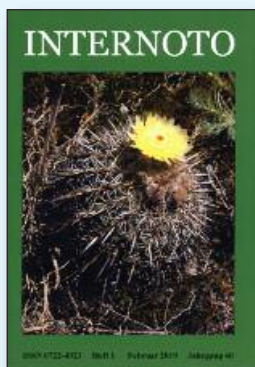
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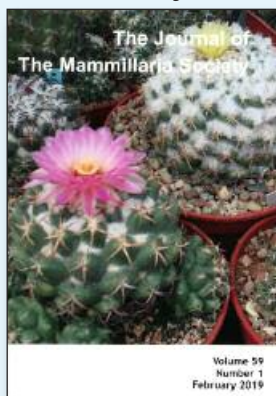
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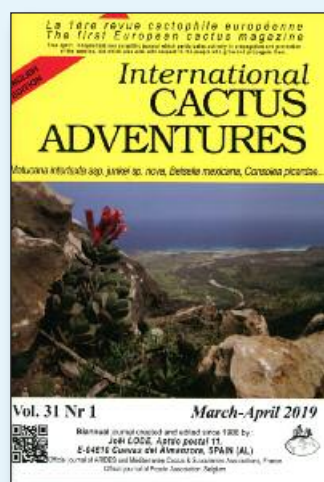
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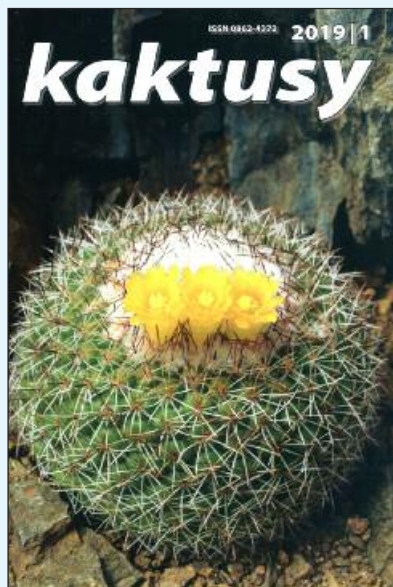
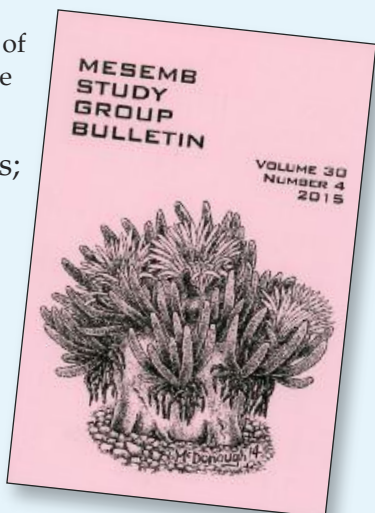
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For more information visit the [MSG website](#)



Kaktusy is an international (Czecho-Slovak) journal about cacti and succulents with a lot of interesting articles (travelling, descriptions, growing, exhibitions, books, taxonomy) published since 1965. It is in the Czech language with summaries in English and German.

Price: 180 CZK + postage (about EUR 8 + postage or about USD 11 + postage). 35€ for 2018.

Details from vladsedivy@centrum.cz

<http://www.cs-kaktusy.cz/>

INTERNATIONAL ASCLEPIAD SOCIETY

The INTERNATIONAL ASCLEPIAD SOCIETY is for all those interested in the Asclepiads and all members of the Apocynaceae family, particularly the succulent species. Asklepios journal 3 times a year, seed lists, meetings, CDs
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Or visit our web site: www.asclepiad-international.org for on-line subscription or details of local representatives.



A.I.A.S.

Pianta Grasse is the journal of the Italian Succulent Society (A.I.A.S.), founded in 1979.

It is published in Italian 4 times a year, with articles about New and Old World species, botanical gardens, journeys, succulent propagation, care and health.

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<https://www.sclerocactus-aventures.com>

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large succulent show. Also plant sales, new and second-hand books, lectures and more.

There is a photograph competition to celebrate 100 years of existence.

<https://succulenta.nl>

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A new online version of the Russian journal *Kaktus Klub* is now available as a free download.



This is a very well produced journal with excellent pictures. The text is mainly in Russian but there are summaries in English

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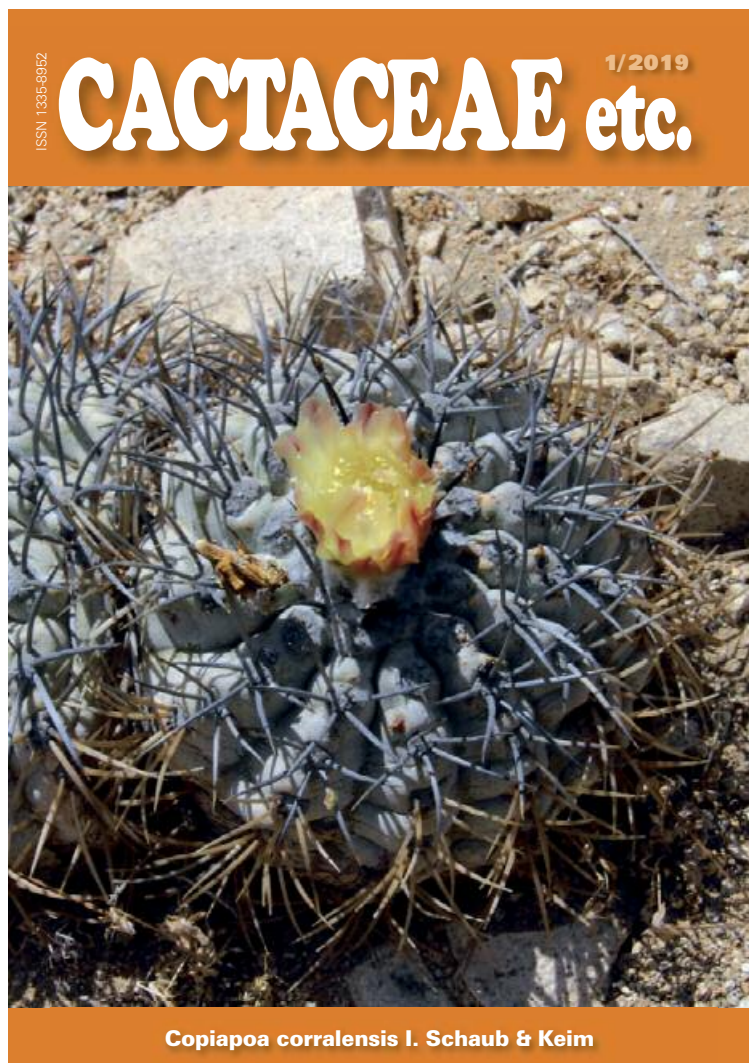
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For more information:
igor.drab@gmail.com



Copiapoa corralensis I. Schaub & Keim

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For more information please contact sulcohilli@gmx.ch

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<http://www.cactus-hobby.eu>

An extensive seed list from Prochazka, strong on Mexican cacti:

<http://www.kaktusy.com>

The new offer of the seeds (mostly with locality data) is available from Jan Jecminek on his website:

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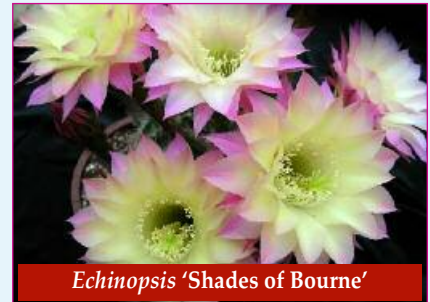
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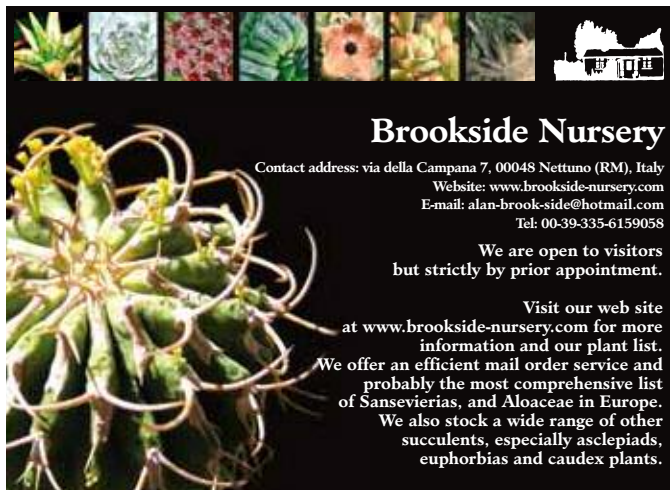
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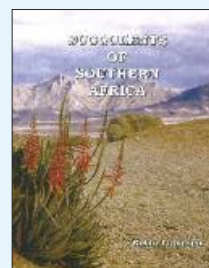
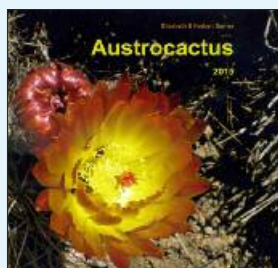
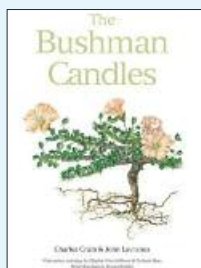
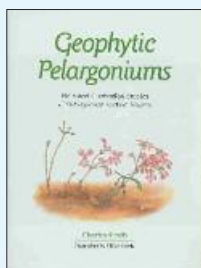
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