

# ESPINAS Y FLORES



## PROGRAM

**Burl Mostul of Rare Plant Research**

## SUCCULENT OF THE MONTH

**Pachyform Mesembs  
By Phil Bunch**

**The Newsletter of the San Diego Cactus & Succulent Society Inc.  
Affiliated with the Cactus & Succulent Society of America**

**Volume 39 Number 10  
Saturday October 9th  
1:00 PM Room 101 Casa Del Prado  
Balboa Park, San Diego CA**

# Presidents Message

September 19, 2004

**A** week has passed since our return from LOTUSLAND and I am still basking in the beauty and wonder in my thoughts and dreams. It is such a special garden - Madam Walska certainly took the idea of massive planting of single species, and theme planting to great heights. Though this was my third visit, I still found wonder in the many unique touches and delighted in several new features. Around the house there were new mosaics created by tiles which had only recently been discovered in the basement. The topiary garden has been redone and some wonderful, whimsical new animals are growing. And, of course, there is the new cactus installation. The Dunlap Cereus collection is now in place and looking great! It is laid out geographically and there is an overlook so you can get the "big picture," as well as wander amongst this fantastic collection of columnar cactus. This has got to be the most complete collection of it's kind anywhere. It is artistically mulched in black slate and accented with many big, angular, basalt rock columns (think Devils Post Pile,) for that unique LOTUSLAND touch. The trip came off with only a couple of hitches (25 minute stop at the check point for a safety check - as our driver said: we had to stop - they had guns.) Many thanks to Lee Badger who made all the arrangements. Thanks to all of you who came along for your patience and for helping set a land

speed record for a picnic at the beach!

**REPORT FROM THE BOARD:** A couple of exciting new developments - We are contracting to get a new cart for our library! The old one has been problematic for some time, and this new one will have all the functional benefits of the old one - yet be stronger and easier to handle. During the switch over we will complete a data base of all books to have available for members, and glean out some duplicates to put on the benefit drawing table. We are looking for a couple of volunteers to assist in this project - so if you love books this is a great opportunity to become better acquainted with our library and perform an important duty in the process. Contact Jeff Harris or Chris Miller if you are interested in helping out..... We have also completed research, and will soon be purchasing additional shade cloth to use in the patio for the June sale. This is very important to assure that our sales area meets the needs of our vendors, volunteers, and the public. Thanks to Jeff and Lee for all their work on these projects. Our next Board meeting will be on October 14th, 6:00 PM at Tom and Laura DeMerritt's, all interested members are welcome. As we go into the Fall, I wish you all happy equinox, enjoy life as it comes, see you on October 9th.

Cover: Chris Miller in the New Cactus Garden at Lotusland

Pam Badger  
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# Pachyform Mesembs

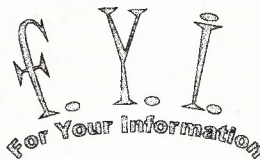
by Phil Bunch

**P**achyform mesembs are members of the Iceplant Family that have enlarged roots or stems. These distinctive features are the means by which they store water and to some extent nutrients. They are generally from areas where drought occurs during at least part of the year.

Mesembs have evolved a broad range of strategies to survive in habitats where water from the soil is hard come by. They include some of the most developed and most familiar leaf succulents such as Pleiospilos and Lithops. Less well known are the mesembs that have transformed their roots and stems into storage organs. They share this strategy with plants like Adenium, Pachypodium and the other better known "fat plants."

Pachyform plants are grown for several reasons. Their main at-

Continued page 9



Your Editor received a communication from a Gentleman who owns property in Alpine. If the following is of interest to you, let me know and I will put you in contact..... *Paul*

"I own a ranch in Alpine which used to be a chicken ranch. Unfortunately, it closed down. Each building is 30 feet wide by 425 feet long which is a steel structure with a dirt floor. The weather in Alpine is hot and dry and somebody informed me that this weather is excellent for growing cactus. So if you do know if anybody is interested in this situation, I'll be extremely grateful if you refer him to me. Lastly, I will make him a deal that he can't refuse"

# ALOOIDEAE - ASPHODELACEAE AND THE GENERA THEREOF

by M.B. Bayer

Alsterworthia International Special Issue No 4

**M**y fascination with *Haworthia* has presented me with many problems in the way the genera in the Alooideae have been discussed, appraised and modified in and subsequent to G.D. Rowley's analysis (1967). Parr (1971) coalesced *Astroloba*, *Haworthia* and *Poellnitzia* and I refuted this in 1972 when I also wrote a rebuttal of Rowley's paper. My remarks did not deter Mrs Obermeyer-Mauve (1973) following and accepting Parr, nor in adding *Chortolirion* to *Haworthia*. Rowley (1976) quite pragmatically discussed the Aloid genera, but in 1980 suggested the incorporation of *Poellnitzia* in *Aloe*. He implemented this proposal in 1981 and promoted it again in 1985. Smith and van Wyk (1991) published a cladistic analysis of the Alooideae which I felt was unacceptable because of the fallacious character states and sets that were used there. Despite that paper and at least four others (Smith 1991, 1994, 1995; Smith & van Wyk 1992) generally supporting the unispecific status of *Poellnitzia*, Manning and Smith (2000) incorporated the genus in *Astroloba*.

My objection to this manipulation of the genera is that the supporting arguments have been incorrect and that it essentially has not addressed or considered what I perceived to be the

stumbling block to arriving at a better delimitation of the genera in the sub-family. This is the relationship within the genus *Haworthia* where it is quite evident to me that it comprises three distinct sets of species (the subgenera of Bayer ex Uitewaal). The floral and morphological differences for those three sets are absolute, and I am sure will need to be seen so in any way in which *Aloe* is configured. This is because the floral similarities within those subgenera are so minimal. I consider these floral differences to be as dramatic for genus delimitation as any of the character states covered in Rowley's (1967) analysis. It would alarm me if the result of a DNA study produced any other result. The sets also appear to me to be "behaviourally" different and with this consideration the genera (even if unispecific) *Poellnitzia*, *Chortolirion*, *Astroloba* are of similar status. This is not to imply that I do not recognise the problems with many other oddities in the Alooideae which require re-evaluation of the generic arrangement.

Adam Harrower of NBI asked me to identify an *Haworthia* he had collected near the Potberg (cf. *H. heidelbergensis*). In view of his interest I asked him to look out for *H. limifolia* on a trip he was to undertake to the eastern Transvaal. On his return he pre-

sented to me a plant he took to be that species. It was in fact *Chortolirion angolense*. However, he produced photographs of another species at which I exclaimed "This is a new genus". Here I recognise the irony of this reaction when the generic arrangement in *Aloe* is so questionable.

The plant that Harrower collected has thin, slender, spineless, hyacinthoid leaves (figs.1-2) with very pronounced bulbous bases. There seem to be few accumulated dry bulb scales as in *Chortolirion* and the plants have not displayed deciduousness as does that species. The blades of the older leaves dehisce leaving fleshy bulbous bases and these are spirally arranged in the lowest order of the Fibonacci series viz. 2, 3 or 5 (fig.2). The roots seem rather sparse and are the yellowish colour of *Aloe*. The flower intrigues me more (figs 3 & 4). The free terminal portions of the flower are not channelled but are flared in the style of the sub-genus *Haworthia*. The midribs of the inner petals remain exposed and the margins of the outer petals adhere close to the mid-rib of the inner. This is the case in the subgenus *Hexangulares* and *Chortolirion*, as well as in this "new genus". The lower petals are more undershot than is the case in either the *Hexangulares* or subgenus *Haworthia*.

The geographical location is the high-lying escarpment between the ranges of the species *H. koelmaniorum* and *H. limifolia* of the *Haworthia* sub-genus *Hexangulares*.

Why I have stated so categorically that this is a "new genus" is largely because of the historical (mal)treatment of the genera of

*Aloioideae* and the failure of students and commentators of *Haworthia* to exhibit any rational species concept. Such a concept appears to be missing for the genera as well. These shortcomings, coupled with the name changes which would ensue, have discouraged me from ever trying to formalise three distinct genera for *Haworthia*. What has troubled me in recent times is the emerging belief that molecular study will provide the basis for a real and irrefutable phylogenetic classification. We have now a paper published in *Taxon* 52:193 (2003) (see reprint pages 6-21) by Treutlein et al which will enable one to see to what extent these expectations are being met.

What strikes me immediately about the paper is firstly a statement in the abstract, and secondly the unfortunate selection of study material. The abstract summarises the results of the work done and this is: "The current taxonomic system does not reflect the phylogenetic affinities and relationships among the succulent genera *Aloe*, *Chortolirion*, *Gasteria*, *Haworthia* and *Poellnitzia*." I find this extraordinary as it has never occurred to me that it did, and I would have expected this sentence to be worded in such a way as to form a key question to be answered by the study rather than as a conclusion. Similarly Treutlein's closing paragraphs of his discussion should have been used as key questions to be answered by the study and not have been derived from it. One sentence reads "complete sampling..needed".

The selection of material I take to be somewhat irresponsible given the past history of classification of the group and the literature. I would have

expected some kind of predictive approach to the selection of material. The inclusion of unknown hybrids such as *H. ryderiana*, *H. kewensis*, and *H. icosiphylla* can tell us nothing. Ignorance of the actual taxonomic position of *H. geraldii* is similarly curious. The material is virtually entirely ex hortus and given my experience with identification, even voucher specimens are hardly likely give such material much credibility. I do think more thought and consideration should have been given to the species used in relation to the problems they present to their classification.

Putting these considerations aside, I would comment as follows on the results as presented primarily in Treutlein et al's fig 4. It does tell me what I had supposed i.e. subgenus *Haworthia* is very different from the other two subgenera of *Haworthia*. BUT *H. geraldii* (i.e. *retusa*) is grouped with *H. attenuata* and *H. glauca* and close to *Gasteria*! It is a result which does not make sense. The true *H. geraldii* is *H. retusa* and that is arguably an ecotype of *H. turgida* as much as it is a discrete species. We could indeed just be seeing - in Treutlein's own words - a "gene tree". Of course genes that can be sampled in the different types of DNA analysis are only another data set, and are not necessarily responsible for the morphology that we can see. Nevertheless it is equally true that, say, observed floral morphology may be the product of interplay of far more genetic material than those analyses entertain.

The inclusion of the unknown hybrids just introduces unnecessary tension or clutter or inaccuracies into

the cladograms. *H. kewensis* may have female parentage as *H. subgenus Hexangulares*, and *H. ryderiana* similarly subgenus *Haworthia*, to explain their position in the cladogram. *Astroworthia bicarinata/skinneri* is the hybrid *H. pumila* x *A. corrugata(muricata!)* so it is not surprising that it comes out with that species.

What is significant is that *Chortolirion* comes out with the grass aloes, thus showing that the *Hexangulares* flower may be *homoplasious* (i.e., having evolved more than once). It would surprise me for a structure as complex as the flower to be so. Please note that Treutlein is wrong in saying Uitewaal divided *Haworthia* into two groups and that the "former including the *subg. Haworthia* and *subgenus Robustipedunculares*". Uitewaal divided the group *Hexangulares* into *Gracilipedunculatae* and *Robustipedunculatae*. The way this is has been repeated in the closing paragraph of Uitewaal's paper has confounded Treutlein, who goes on to say "This division is strongly supported by...". This is not true. He has no *Robustipedunculares* in his analysis apart from the DNA (cytoplasmic) in the hybrid *Astroworthia*. It is thus not surprising that it comes out in the "heterogenous group" that includes *Aloe aristata*, *Gasteria*, *Poellnitzia*, *Astroloba* and *H. retusa* ("geraldii") and its position here is very dubious.

Dr. Manning (personal communication) feels that the results vindicate the treatment he and Smith gave *Poellnitzia*. I must state that he is quite correct on the point of bird pollination and it has been shown that sunbirds do pollinate *Microloma*. But I cannot agree

that *Poellnitzia* is unequivocally *Astroloba*. In Treutlein's fig.3, *Poellnitzia* could be with either *Gasteria* or *Astroloba*, with *Aloe aristata* as a wild card nearer to *Astroloba* than is *Poellnitzia* (one needs to look at distribution and variability of *Aloe aristata* to know that something is not kosher here). In fig.4 *Poellnitzia* collapses below *Astroloba* as does *Aloe aristata* and the cladogram shows no "bootstrap values" to substantiate an opinion. Would one argue that *Aloe aristata* then also belongs in *Astroloba*?

As there is no member of the *Robustipedunculares* in the analysis and one can only wonder what a better species representation would have done to the cladogram. It is important that *Chortolirion* is seen to group with the "grass" aloes. The flower is definitely *Hexangulareoid* whereas the bulbous structure is replicated in *Aloe buetneri* as well as in a few of the "grass" aloes. My opinion regarding the Harrower "new genus" is that it is in fact discrete and introduces an entirely new dimension to the discussion. Something should also be said about cladograms. The binomial system is essentially built on the concept of dichotomous branching. The fact of the matter is that in any two-dimensional cladogram which is used to depict relationships, the one axis will represent time and the other two-dimensional space if one considers that species, like any other phenomenon in creation, are spread in space (they change with time). Therefore a two-dimensional diagram is very restricting and leads, for example, to statements such as "*Poellnitzia* is nested in *Astroloba*". To think that a statistical bootstrap value will give a true measure of that dis-

tance in a two-dimensional array may be wishful thinking.

After seeing this Treutlein paper I am happier with the way in which the existing classification meets my needs for identification and communication and I do not think the word "merely" used by Treutlein in this connection is appropriate. Whatever high-grounded attitudes now seem to prevail that DNA studies give a new and correct dimension to phylogeny as the intent of classification, my contention is that this has always been the aim even in the most simplistic morphological studies. Classification is a prime function in zoology as well and there has never been any doubt that phylogeny was the prime aim of the classification. The only reason it seems to be obscure in botany is the absence of good archaeological or fossil evidence and the problem of determining homologies in a muscle and nerve free organelle. Dr Manning kindly made this comment among others which I may not be doing justice to:- "Clearly there are just two alternatives IF one wants to define genera in phylogenetic terms: lump everything into *Aloe* or split *Aloe* up into several other genera, each corresponding to one of the monophyletic branches that are revealed by the analysis. The latter treatment is confounded by a) incomplete sampling within *Aloe* and b) probable lack of good characters by which these segregate genera could be recognised". I would have omitted "within *Aloe*". Treutlein et al make another statement... "The further the status quo departs from reality, the more difficult it will be to integrate practice and theory". This seems to be a twist of words. I think it should read "The further the-

ory departs from practise the more difficult it will be to integrate the status quo with reality"? Again that is the problem that should have been addressed in the preliminary approach to the study. The status quo by definition cannot depart from anything.

To close, I need to say something about definitions. I have already made several statements about the absence of definition at species level where I still find resistance among students of *Haworthia* (if not wider). It is simply a fact that classification is a process of specifying so that one can generalise about a set of some kind. In dealing with *Haworthia*, I experience the group as three sets, and as stated above, these sets relate to the present classification as I have already described. The current generic classification expresses the experience of collective experience of all previous writers and researchers in the field. It has an historic value and an embedded "truth" of some kind; or, if the classification process has credibility, it should have and it should be respected accordingly. The definition of genus quite obviously has to be linked to that of species - systems of species which can be shown to be related sets in respect of morphology (physiology), genetics and geographical considerations. I contend that this has always been an unspoken aim and intent of classification and it is wrong to suggest now that it is absent from existing classifications. In my experience it is/was always seen to be the ideal that classification should reflect phylogeny. In doing so it would also reflect morphological/physiological, genetic and

behavioural characters that lead to understanding. This is what I wrote in *Asklepios* 77:6 (1999) "... understanding of what it really means to be human". If we are pursuing knowledge for any other purpose it may be that we are on an ego-trip. To maintain that floral structure is very limiting in the way it has largely driven classification is correct to a degree. I think it is wrong to make the implication that floral structure is driven by less characters than, say, those nucleotide sequences of the Treutlein analysis.

Touching on the "behaviour" aspect - I think *Poellnitzia* is unique. The *Robustipedunculares* and *As-troloba* possibly could not maintain their integrity in each others' company viz. hybridisation between members where they co-occur. They complement each other geographically. *Hexangulares* maintains integrity wherever and with whatever it grows except with its own members. *Subgenus Haworthia* similarly always maintains integrity except with own members and presents a degree of plasticity far greater than any complementary set. *Poellnitzia* maintains its own integrity and is extraordinarily invariable in the close company of *Gasteria*, *Robustipedunculares*, and *subg. Haworthia*. *Hexangulares* and *Robustipedunculares* occupy quite different territories and virtually do not meet at all.

Acknowledgement:-

Dr J.C. Manning, Compton Herbarium, Kirstenbosch responded in very kind manner to my criticisms in Bayer 2003, and was most helpful in obtaining hard-copy of the Treutlein



publication, as well as in interpreting the DNA methodology for me for the purposes of this paper. In having written this, I do not dispute his need for a pure phylogenetic model. I am simply trying to put a case based on my practical experience and knowledge of the plants concerned, hoping that the two poles will eventually meet in a functional way. Paul Forster of the Queensland Herbarium and Steve Hammer of California were kind enough to comment on, and edit, drafts of this article.

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From (not by): Harry Mays  
Editor, *Alsterworthia International*.  
EU agent for the ISI.  
World agent for *Haworthia* Study,  
Japanese journal



traction is probably the sculptural forms taken by their enlarged stems and roots. These are often attractive and can be used to simulate bonsai. A few people grow them as part of a collection demonstrating the range which this diverse family of plants has taken. Some are grown for their exceptional flowers.

I started growing pachyform mesembs seven or eight years ago with the intent of finding plants that could be used as small, quick bonsai substitutes. The results have been mixed. Some lived up to my expectations while others have fallen short. Plants that do not grow perennial leaves from the bare stem or raised root are generally best for bonsai-like treatment. Examples are *Phyllobolus resurgens*, *Phyllobolus tenuiflorus*,

*Phyllobolus prasinus*, *Mestoklema tuberosa*, *Trichodiadema bulbosum* and *Delosperma napiforme*. The first two *Phyllobolus* have an almost stumpy, woody caudex with annual stems. *P. prasinus* is a very nice pachycaul (fat stem). *Mestoklema* has elongated, malleable roots that form a bronzy-colored bark after they are exposed to the light. *Delosperma napiforme* and the closely related *Delosperma bossermanum* are tiny plants with elongated tubers.

Plants with nice rootstocks include many *Aloinopsis*, *Nananthus*, *Rabiea*, and *Bergeranthus*. These look best for the first year or two after they are raised above soil level. They tend to form new rosettes of leaves over the surface of the rootstock eventually hiding it from sight. As I mentioned I have only been growing them for a few years and it may be that with time the rosettes thin out exposing the raised

root again but for me this remains to be seen.



*Drosanthemum crassum*

There are a few plants such as *Drosanthemum crassum* aff. (Mesa Garden 1488.85 SB995 Strandfontein) which have relatively thick stems which are more woody than succulent. This species can be trained into a very tree-like form.

Most of these plants stay relatively small and can be grown in shallow containers that show off their unusual shapes very nicely. All prefer a well drained mix. I have been successful watering them year around but cool season growers like *Phyllobolus* need only an occasional watering during the warm season. All do well with light, frequent feeds. Strong light is important but plants grown under shade cloth often do well and the leaves may be more attractive.

# Upcoming Events

## 2004

**August 14-15** Houston C&SS Annual Show and Sale. Free Admission to (judged) show of cacti and succulents. Rare and unusual plants for sale. Children's drawing contest (prizes!). Houston Arboretum and Nature Center, 4501 Woodway Dr, Houston, Texas. Hours 10am-5pm each day. Contact Hank Andresen for more details. Tel: 713-436-1734 or e-mail him at hand1609@hotmail.com

**August 20 - 22** 14th Eastern C&S Conference at the DoubleTree Guest Suites in Plymouth Meeting PA. Hosted by the Philadelphia C&SS. While you're there, enjoy Longwood Gardens and Morris Arboretum, world-class museums and a brand new baseball stadium. For more info contact Co-chairpersons, Rita Hojnowski 856-227-0599 ritabhøj@comcast.net or Elayne Toizer e-mail: atoizer@aol.com or tel: 215-233-2965 Succulent Lovers, Unite!!!

**August 21** : British C&SS National Show, Spalding Exhibition Centre, Springfield, Spalding, Lincs, England.

**September 4** : 21st Huntington Symposium at Huntington Botanical Gardens.

**September 5** : CSSA Board Meeting, Huntington Botanical Gardens. (Ahmanson Classroom).

**Mid-October** : CSSA Tour to Chile, home to Copiapoa, Eriosyce, Eulychnia and others. See itinerary in last issue of To The Point.

## 2005

**January 15** : CSSA Board Meeting at Huntington Botanical Gardens

**April 16** : CSSA Board Meeting at Huntington Botanical Gardens

**July 1 - 3** : CSSA Annual Show and Sale at Huntington Botanical Gardens

**August 5 - 11** : CSSA 31st Biennial Convention, Scottsdale Plaza Resort, Phoenix, Arizona Host Club: The Central Arizona Cactus & Succulent Society Special Rate for Rooms \$89 per night (Normally \$300)

Convention Chairman, Duke Benadom Program Chairman, Leo Martin e-mail: leo1010@attglobal.net Confirmed speakers already include Sheila Collenette, Chuck Hanson, John Lavranos, Mark Muradian, Gard Roper, Guy Wrinkle.

## 2006

**January 14** CSSA Board Meeting, Ahmanson Class Room, HBG

**April 15** CSSA Board Meeting, Ahmanson Class Room, HBG

**June 30 - July 2** CSSA Show and Sale, HBG

**August 17 - 20** British C&SS International Convention at Loughborough University in England. Speakers from Argentina, Australia, South Africa and the USA already confirmed. For further details contact David Kirkbright, 71 Lakes Lane, Newport Pagnell, MK16 8HT, England, or e-mail at: Kirkbright@bcandss.fsnet.co.uk

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