

Espinas y Flores

BULLETIN OF THE SAN DIEGO CACTUS AND SUCCULENT SOCIETY
Affiliate of the Cactus and Succulent Society of America, Inc.

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January 9, 1988

JANUARY MEETING
Saturday January 9, 1988

1:30 P.M.
Casa Del Prado, Room 101, Balboa Park

PROGRAM

CAUDICIFORMS--Plants with middle-age spread
by Joe Clements

Joe Clements is a respected authority on the growth and care of cacti and succulents. He is a member of our society and past member of our board of directors. He is on the board of CSSA. Currently he is Dessert Garden Curator at the Huntington Botanical Garden. This is sure to be an interesting and informative program.

Congratulations to our new Board of Directors - Shirley Berry, Cathy Frost, Dorothy Dunn, John Pasek, Chuck Adams and Rudy Lime.

I did not get a list of volunteers who will bring refreshments to the January meeting. We would appreciate contributions from anyone who cares to bring something. Thanks

*REMEMBER- If you have not paid your dues for the year '88, you will not get an Espinas y Flores next month.

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DEADLINE FOR THE FEBRUARY ISSUE -- January 29 -- Hope you all have a very happy and healthy New Year. Mary

SUCCULENTS-OF-THE-MONTH

Trichodiadema, Mestoklema, & Delosperma

by Rick Latimer

The "Iceplant" or "Fig Marigold" family (Mesembryanthemum) like the cactus family has plants that range from easy to grow to those that are nearly impossible. Species range from plants that consist of just two leaves and roots as in the case of a single headed Lithop (without a flower or seed or last year's leaves which are present certain times of the year) to a utilitarian Carpobrotus plant which we use in southern California for erosion control and may "grace" backyard or highway hillsides. We think of this family as plants that range from short and singular to short and spreading, but no tall plants as is the case in such succulent families as cactus or the euphorbias. The vast majority of the "mesembs" are leaf succulents, although a few are stem succulents. The flowers look superficially like daisy flowers, but where the daisy "flower" is actually a cluster of a few to many individual flowers into a 'composite' flower head, the mesemb flower really is a single flower with many petals. The chromosome number of this family is usually either 8 or 9.

The plant order Centrospermae contains several families that have succulent members: the Cactaceae, the Didiereaceae, the Chenopodiaceae, and the Mesembryanthemaceae. The red and yellow colors found in the flowers of this order are not due to the presence of the chemicals that we call the anthocyanins (which occur in most other flowering plants), but are due to a special class of them called betalains. The Mesemb family has been divided up into four sub-families: Mesembryanthemoideae, Hymenogynoideae, Caryotophoroideae, and Ruschioideae. The first three subfamilies are grouped together under the heading "Central placentation", while the last subfamily (which includes most of the family and most of the interesting species) is placed under the heading "Basal to Parietal Placentation". To put that another way (in general), the Ruschioideae subfamily is distinguished by one character of the fruit, that is, the seeds are attached to either the floor or walls as opposed to the central column of the fruit. The tribe Ruschioideae is further divided up into various tribes and subtribes. In the tribe Ruschiinae, subtribe Delospermatinae we find the genera Drosanthemum, Delosperma, Mestoklema, and Trichodiadema.

The Mesemb family is exclusively native to arid regions. 99% of all species are indigenous to the southern part of Africa. The exceptions are a few species that have somehow gotten to such places as California, Chile, Australia, the Arabian peninsula, the Mediterranean region, and a few Atlantic and Indian Ocean islands and elsewhere in Africa. Since,

mesembs are native to dry regions, they demonstrate some morphological adaptations to conserve water. A few are annuals, most are leaf succulent, and a few have tuberous roots such as some species found in the genera Aridaria, Delosperma, Ruschia, Mestoklema, Trichodiadema, and Aloinopsis. Some of these have perennial above ground stems, but others drop the above ground shoots during the dry season. Since fogs are extremely important sources of moisture in some of these habitats, there are visible adaptations to them as well. Delosperma echinatum's leaves are covered with "hairs" giving the succulent green leaves a "stickery" appearance. All Trichodiadema species have succulent leaves with a tuft of bristles on the top. If one observes the plants in their native habitat after a cool clear night, one may see how dew drops condense on the hairs and against the light of the rising sun see a diadem on each leaf that glistens if diamond studded. Marloth observed that when he put a drop of water on a withered leaf, it gradually became turgid again.

The name Trichodiadema derives from the Greek words 'trix' = hair and 'diadema' = crown. There are about 30 species. The roots are either woody or tuberous. The flowers white or light to dark violet red. Species are native to Southwest Africa/Namibia, Cape Province, Orange Free State, and one species comes from Ethiopia! European authors list the dormant period to be December and January, but Ed Storms recommended only moderate watering in our summer. Three well known species are T. bulbosum, T. densum, and T. stellatum. The leaf clusters remind one of an etiolated Mammillaria, but we know they are stem succulents while the "Trichos" are leaf succulents.

The name Mestoklema derives from the Greek words "mentos" = full and "klema" = a small branch. There are about 7 species. One species has a tree like trunk. Not all species have tuberous roots. The flower stalks that persist are almost thorny. The habitat is similar to the previous genus, except one species (M. macrorrhizum) is native to Reunion Island instead of Ethiopia. Plants were unheard of a few years back, but since this and the last genus are so popular at our shows there is a classification just for them.

The name Delosperma derives from the Greek words "delos" = visible and "sperma" = seed. There are about 140 species. Most species are not interesting, but at least two D. sutherlandii and D. hirtum have tuberous roots. The habitat of this genus is much more widespread. It goes from Southwest Africa/Namibia all the way through south Africa, up into Zimbabwe and eventually all the way into Saudi Arabia. The flowers are said to be all colors, but I am pretty sure there are no black or blue ones!

REFERENCES:

- Guenter Andersohn, Cacti and Succulents.
Walther Haage, Cacti and Succulents.
Hans Herre, The Genera of the Mesembryanthemaceae.
Hermann Jacobsen, A Handbook of Succulent Plants, V. III.
Werner Rauh, The Wonderful World of Succulents.
G. Schwantes, Flowering Stones and Mid-Day Flowers.
Ed Storms, The New Growing the Mesembs.

PLEASE NOTE: Everyone's dues are due by the end of the year. These are annual dues that come from January to January.

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MONOTYPIC GENERA: ODDBALLS OF THE CACTUS FAMILY

by Dorothy Dunn

A monotypic genus is one which is represented by only a single species. Through some usually minor difference - generally in the flower, fruit, or seed - some plants cannot be conveniently referred to any other existing genus, and a new and separate genus must be erected to contain them. This is true of quite a few interesting cacti. These plants present us with a very diversified spectrum, ranging in size and form from tiny, globular plants to clambering epiphytes to huge, many-branched, tree-like cacti. Many of them are quite rare, slow growing, and difficult in cultivation due to the extreme conditions of their natural habitats, and some of them are more familiar to us and of easier culture. They are native to varied and widespread geographical locations, from our own Southwest (Arizona, Texas, New Mexico), through most of Mexico, including Baja California, to South and Central America and the Galapagos Islands. Their habitats range from extremely hot, arid, rocky, almost soil-less conditions to humid, tropical rain-forests.

This article cannot adequately cover all of these genera, so will be limited to the more interesting - and available! - species likely to be found in cultivation. Also, there is still some controversy over whether some species are actually monotypic, and even to which genus they belong - a lot depends on which authority you consult, and which one is presenting the most convincing argument at the moment! I am including a few "questionable" or "borderline" cases because the plants are generally found in collections and because many amateur enthusiasts have a sentimental (and stubborn) attachment to the older names.

One of the most familiar of all the monotypic genera is Carnegiea gigantea, the Saguaro of southwestern Arizona. It also grows in north-west Mexico and the northernmost portion of Baja California, where it is found in stony deserts and on rocky mountain slopes up to about 3,500 feet. It is one of the largest of all cacti and also one of the slowest-growing, taking about ten years to produce a 6-inch "specimen" from seed (although under optimum conditions in cultivation they may grow somewhat faster). At about 10 feet (and 75 years) it starts to branch. A specimen about 50 tall and 7 feet across would probably be about 200 years old and weigh about 6 tons. It begins to bloom at about 40 years of age; the flowers are nocturnal, fragrant, and pollinated by bats. Despite the vast quantity of seed produced, few seedlings make it to maturity. Reasons for this range from theories that there is a disease being spread by moths among the populations, to unfavorable climatic conditions at crucial times, to over-grazing by cattle as well as the local rodent populations. Carnegiea gigantea sometimes crests in the wild, and the flower is the state flower of Arizona. The genus is named after the well-known American philanthropist Andrew Carnegie.

Another southwestern United States cactus is Homalocephala texensis, which is widespread over Texas, New Mexico, and Mexico, and is often known as the "Devil's Head" or "Horse Crippler". The plant body is solitary, eventually reaching a diameter of about one foot. It grows on open sandy hills exposed to a fiercely burning sun; often the top of the plant will be flush with the soil for some protection from the heat. The ribs are very prominent and armed with formidable spines. The plant is so tough that it can survive being trodden on by a horse, with scarcely a dent to show for it - in fact, the horse usually comes out of it the loser! The flowers are deep pink, fragrant, and last for several days. They occur on top of the plant and are followed by very attractive bright red seed pods the size of small walnuts. In some areas Homalocephala texensis has been completely eradicated in the interests of agriculture. Lyman Benson, in his new book The Cacti of the United States and Canada, has transferred this plant to the genus Echinocactus.

Bergerocactus emoryi is a monotypic genus from northwestern coastal Baja California, and also formerly from southwestern coastal California. According to Yale Dawson, it could still be found at Oceanside and San Clemente as late as 1930 and until at least 1975 there was still a population at La Jolla Farms within sight of the UCSD campus. The southern limit of this plant is about 25 miles south of El Rosario, Baja California, and it also occurs on Cedros Island. The type locality is at the Border Field State Park and is now protected by law. The plants have slender stems with golden-yellow spines and bright yellow flowers. They multiply by sending out branches below the surface of the ground, eventually forming large colonies. A strange feature of this plant is its method of seed dispersal. As the fruit ripens, the remains of the dead flower are forced to one side by the pressure within the seed pod. The red pulp, with the seeds embedded within it, is slowly squeezed out like toothpaste through the small pore at the top of the fruit. This is apparently the only member of the Cactaceae which disperses its seeds in this manner. Spontaneous hybrids of Bergerocactus emoryi with both Myrtillocactus (x Myrtgerocactus) and Pachycereus (x Pachgerocereus) have occurred in the wild. Benson has now transferred this plant, as well as the previously-mentioned Carnegiea gigantea, to the genus Cereus.

Leuchtenbergia principis, from central and northern Mexico, is sometimes called the "Agave Cactus". It has been known in cultivation for a long time, and was named in 1848 to honor Eugene de Beauharnais, Prince of Leuchtenberg and stepson of Napoleon Bonaparte, who was an ardent patron of horticulture. In habitat it grows at an elevation of 4,600 to 6,500 feet; it often branches dichotomously and old plants can form large groups. The lemon-colored flowers are about three inches long and very sweetly scented, and are borne at the center of the plant on the newest areoles. It is not a difficult plant to cultivate - it has a long, parsnip-like taproot, and for this reason should be given a deep pot. It also requires very porous soil, careful watering and plenty of sun and warmth during the growing season. It grows easily from seed, but another - and rather novel - manner of propagation is to plant the tubercles in a rooting medium with only the tip exposed; new plants will sprout from them. (This method of propagation also

works well with the long-tubercled Dolicothele-type Mammillarias, as well as Mammillaria plumosa and M. carmenae.

Obregonia denegrii grows in Mexico on hillsides in the shade of small bushes and boulders, and in cultivation seems to look better with some shade. It eventually reaches a diameter of about 5 inches, but will bloom when 2 or 3 inches across. It is shaped like a broad, flattened pine cone, and small plants grown from seed look almost like little Sempervivums! It also has a thick taproot and will occasionally form small clumps. According to Backeberg it cannot be grafted. (He obviously never visited C and J's Cactus Nursery!).

Aztekium ritteri was discovered in 1928 and was originally described as an Echinocactus. It is believed to be the slowest-growing of all cacti; seedlings 4 years old are often less than one-quarter inch across! In Mexico, it often grows on almost inaccessible cliffs, where it adheres like abalone shells. The majority also grow under overhanging cliffs where they receive their only moisture from dew and fog. Conspicuous characteristics are the subsidiary ribs and the densely-folded surface of the principal ribs, somewhat resembling the ornate carvings of the Aztecs. The flowers appear to grow on "stalks"; they are pale pink and last for several days.

Encephalocarpus strobiliformis is one of the easier Mexican "oddballs" to cultivate. It likes a porous soil and moderate to generous watering in the summer. It is very free-flowering; the flowers arise from the youngest tubercles in the crown of the plant, and are brilliant violet-red to purple.

Strombocactus disciformis comes from central Mexico where it occurs in large colonies on baking hot hillsides. There were originally additional species in this genus; these have since been removed to Toumeyia. This plant also has a stout taproot.

Neogomesia agavoides is now usually included in Ariocarpus, but Backeberg presents a persuasive argument in favor of keeping it as a separate genus. Its unique characteristic is the position of the large, very wooly areoles on the upper surface of the tubercles at some distance from the tip. The tubercles resemble the leaves of an Agave, hence the specific name. It is known only from a single locality in Mexico, where it grows on gravelly hills. It was discovered in 1941.

Escontria chiotilla is a large, much-branched tree-like cactus from Mexico with edible fruit having the aroma of gooseberries.

Stephanocereus leucostele is native to Brazil, where the plants occur only as scattered individuals. It is a spectacular single, unbranched, very slender columnar plant; relatively fast-growing, it may easily reach a height of 10 feet. Its unusual growth habit is similar to Arrojadoa in that it develops a tuft of bristles at the apex on reaching flowering age; new growth continues through this zone and then another similar apical tuft develops, and so forth. Its flowers are white and nocturnal, and the plant is still somewhat rare in cultivation. Werdermann at one time referred it to Pilosocereus on the basis of its fruit.

Stetsonia coryne are tree-like cacti from northwestern Argentina which eventually reach a height of 25 feet, and in habitat sometimes form very large colonies. The flowers are white and nocturnal. Seedling plants are very beautiful and make attractive pot plants (for awhile).

Vatricania guentheri from Bolivia was discovered in 1927, and Buxbaum first classified it as a Facheiroa (another monotypic genus from Brazil). It is a large, branching Cereus characterized by a very unique cephalium. The nocturnal flowers appear from the lower part of this cephalium and last for one night only.

Neocardenasia herzogiana, also from Bolivia, is usually considered a monotypic genus although attempts have been made to unite it with Neoraimondia. Both are genera of very large tree-like cacti, and both sometimes produce two flowers simultaneously from the same areole.

Brachocereus nesioticus from the Galapagos Islands is botanically an extremely isolated genus, perhaps related to Haageocereus (Barthlott) or Armatocereus (Backeberg). Although discovered in 1899 it has only recently been introduced to cultivation and is practically non-existent in collections. In habitat it grows on bare lava rock where it forms large colonies. It requires strong sunshine, little water, and winter warmth. The flowers are nocturnal. Brachocereus means "short cereus"; nesioticus, "island dweller."

Other monotypic genera include Ortegocactus macdougallii, a peculiar light silvery-green cactus from Mexico, Chamaecereus silvestrii (the familiar "Peanuts") from Argentina, now generally classified as a Lobivia, the Bolivian Hildewintera aureispina, now routinely referred to Borzicactus, Roseocereus tephraacanthus from eastern Bolivia, Rauhocereus riosaniensis from northern Peru, Backebergia militaris from western Mexico, with its spectacular "helmet-crest" cephalium, Morangaya pensilis from Baja California, now usually classified as an Echinocereus, and Rooksbya euphorbioides from Mexico, formerly known as a Cephalocereus or Neobuxbaumia.

Literature consulted:

Backeberg, Curt: Cactus Lexicon
Barthlott, Wilhelm: Cacti
Benson, Lyman: The Cacti of the United States and Canada
Borg, J. Cacti
Cactus and Succulent Journal of America, various issues
Martin, Chapman, Auger: Cacti and their Cultivation

Killing Cactus and Other Succulents

Bayer, Scott, and Filbeam on Haworthias

Since 1976 four books on the genus *Haworthia* have appeared, providing a comprehensive look at this group -- what it comprises, how the species and varieties therein may be related, and, in a modest way, how they may be identified. M. B. Bayer, formerly of the Karoo Botanic Garden in South Africa, is the author of two of the books, Haworthia Handbook (1970) and The New Haworthia Handbook (1982). His books are complementary, and to get the most out of them, they should be read together. Col. Charles Scott, a retired South African police officer and a student of haworthias, has authored the third, The Genus Haworthia (1985). The fourth book, Haworthia and Astroloba (1983), is by the English plant collector and student, John Filbeam.

The Bayer and Scott books present far-reaching taxonomic revisions of the genus, usually agreeing on the simple identifications but often in disagreement on the complex or difficult ones. Their work represents years of study, much of it previously published in various succulent journals. Bayer in particular has built upon the work of previous collectors and taxonomists, acknowledging that work as appropriate. Filbeam's book is not intended to break new ground but is a self-described "collector's guide" and follows closely, although not entirely, Bayer's taxonomy.

Twenty-five years ago, the taxonomy of haworthias was not just in disarray; it was chaotic. Much of the problem arose out of a combination of careless collectors in South Africa and taxonomists in Europe who described the plants sent them, with little or no knowledge of the plants in habitat or indeed of the habitat. At one time or another, over 400 names have been used with haworthias. Bayer reduced that number to sixty-eight species and forty-seven subspecies, varieties, and forms. Scott decided upon eighty-eight species and seventeen varieties.

At the risk of oversimplification, Bayer and Scott faced three major problem areas: (1) The need to exclude names and plants not properly part of the genus; (2) the uncertainty of the validity of many names; and (3) the over-splitting of many species by earlier taxonomists. This article will summarize the problems and Bayer's and Scott's answers. Future articles will examine their solutions to individual species and species complexes.

1. In the last two hundred years, a large number of garden hybrids had been introduced and accepted as "good" species. In addition, botanists from time to time attempted to include other genera (*astroloba*, *poellnitzia*, and *chortolirion*).

In his first book, Bayer identified the garden hybrids and

dismissed them from further consideration. Scott, with one or two exceptions, reached the same conclusions. Both men rejected the other genera listed above, for reasons of floral and/or vegetative differences.

2. Many old descriptions were lacking in one or more important ways: incompleteness, vagueness, absence of herbarium or reliable photographic records, no locality, or ascription to a patently incorrect locality. This had at least two unwanted consequences. In many cases, two or more descriptions and thus two or more names were applicable to the same plant, while at other times descriptions could not with any certainty be matched against existing plants.

Both Bayer and Scott waded through the mass of material and plants and explored field populations. Each ultimately arrived at one description and one plant, in the process discarding many names. Unfortunately they did not always arrive at the same conclusion. It is clear where they differ, however, and confusion in referring to these plants may be avoided by specifying whether an identification is Bayer's or Scott's. Reasons for these differences are at least several. A reading of Bayer's and Scott's writings suggest that Bayer is the more demanding of the two in requiring strong evidence of linkage between old names and existing populations. (But Bayer is flexible; in two cases he accepted Scott's determinations after he had published his own.) Scott, at the same time, seems to have been more inclined to pursue the possibly risky course of seeking out field populations which he would then trace back to descriptions lacking in completeness, including the absence of locality data. On probably more than one occasion, both men studied the same material and reached different answers.

3. Many descriptions were of single plants within a population, made without regard to natural variability and based on insignificant vegetative differences. In other cases, descriptions were of different population groups but failed to take into account geographic continuity, similar floral characteristics, or the considerable similarities which, for identification purposes, were more important than the differences.

Here again there is considerable agreement in the conclusions reached by Bayer and Scott, but there is also significant disagreement. Bayer appears to place far more emphasis in his species concept on geographic relationships and continuity than does Scott. Scott shows an inclination to place an importance on relatively small vegetative differences that Bayer would set aside in making a final identification. At the same time, Scott clearly dislikes to use subspecies, variety, and form designations, a tool Bayer found useful. Additionally, an important finding by Bayer, that there are consistent physical differences between *H. reinwardtii* and *H. coarctata*, which led to some realignment of the two species, was ignored by Scott. (Scott also rejected another

uncontestable finding by Bayer that the genus may be divided physically into three subgenera, based on consistent floral differences and similarities.)

The differences in technique of the two men in this third problem area led to some basic differences in how they resolved the identities of the important haworthia complexes - *retusa*, *magnifica*, and *mirabilis*, as examples. Simultaneously, both studies also eliminated from formal standing many desirable forms which are still found in the field. Bayer has recognized this consequence but states in effect that there are so many potential forms that the taxonomist has to stop somewhere. Pilbeam, in one of his rare divergences from Bayer, maintains as an aid to the collector a number of varieties and forms not formally recognized by Bayer or Scott.

None of these books offers final answers. Bayer in particular has stressed the tentativeness of much of his work, and if he should return to his haworthia studies would undoubtedly offer new insights as well as changes in the taxonomy of the genus. Meanwhile, Bayer and Scott are the only game in town. They remedy many if not all of the errors of the past, and they offer a common language for us to use in pursuing our own study and enjoyment of haworthias.

-Bob Kent (12/87)



PROGRAM OF EVENTS FOR 1988

All meeting times are 1:30 PM the second Saturday of each month in Casa Del Prado, room 101 Balboa Park unless otherwise noted.

NOTE; 7 May first Saturday.

NOTE; June annual show; Set up times Friday 3 June 10:00 AM to 8:00 PM and Saturday 4 June 7:30 AM to 9:30 AM. Judging Saturday 4 June 9:30 AM to 12:00 PM. Open to public 12:00 PM to 5:00 PM 4 June, and 10:00 AM to 5:00PM 5 June. Take out time Sunday 5 June after 5:00 PM. Plant sales 10:00 AM to 5:00 PM Saturday and Sunday 4 and 5 June.

NOTE; 11 June picnic Felicita County Park area #4 11:00 AM to 4:00PM.

Martin J. Meyer

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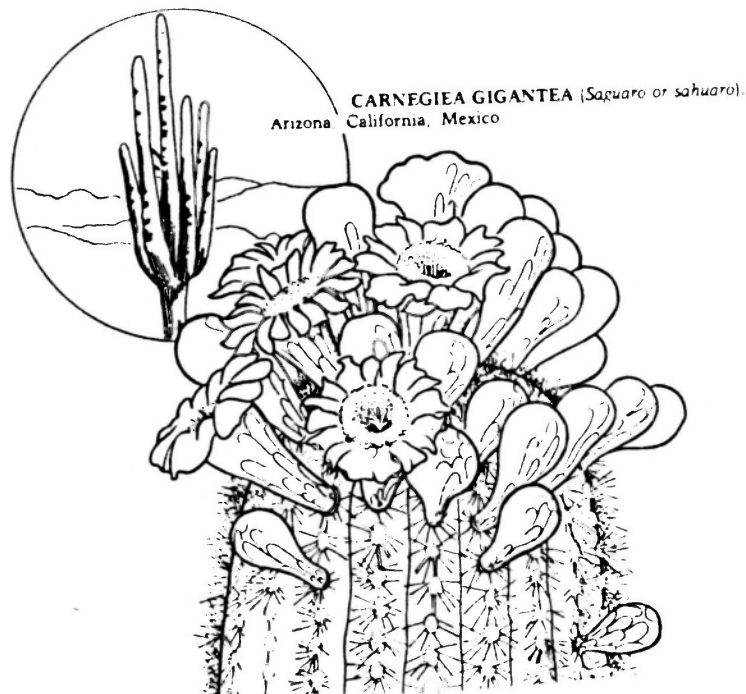
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The San Diego Cactus & Succulent Society is open to all persons interested in growing cacti, other succulents and exotic plants. Meetings are held the second Saturday of each month at 1:30 p.m. in Room 101, Casa del Prado, Balboa Park. Board of Directors meetings are held after the general meetings. Annual dues are \$8.00 per single member per year, \$2.00 for each additional member of a household within a family. Single copies of Espinas y Flores are 60¢.

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