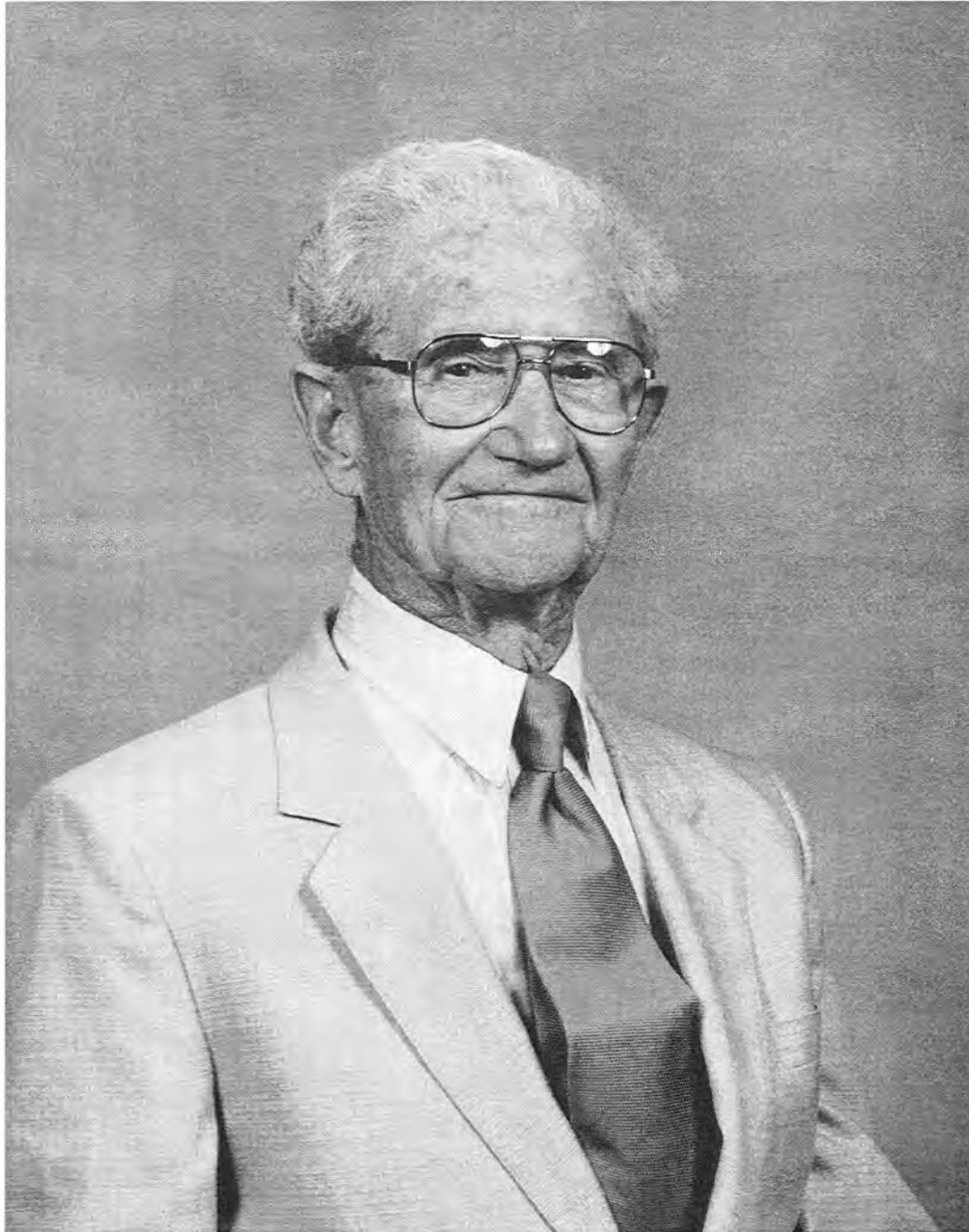


Espinas y Flores

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

VOLUME XXIX NUMBER SEVEN, SATURDAY, JULY 9, 1994 @ 1:00PM



Happy 90th Birthday
Bob Taylor

San Diego Cactus & Succulent Society

MADAGASCAR, A NATURAL HISTORY

JULY PROGRAM: THE SAN DIEGO CACTUS & SUCCULENT SOCIETY IS PROUD TO HOST MYRON KIMNACH, CURATOR EMERITUS OF THE HUNTINGTON BOTANICAL GARDEN, WORLD CLASS BOTANIST AND EXPLORER, AND THE EDITOR OF THE CACTUS & SUCCULENT JOURNAL OF AMERICA. MYRON WILL PRESENT MADAGASCAR, A NATURAL HISTORY WITH FOCUS ON THE SUCCULENTS AND RARE PACHYCAULESCENT PLANTS. THIS WILL BE A TERRIFIC PROGRAM. PLEASE JOIN US AND BRING A FRIEND! - AND REFRESHMENTS - WHY NOT?

CACTUS & SUCCULENT OF THE MONTH: SAN DIEGO COUNTY NATIVE CACTI AND SUCCULENTS - PLEASE REFER TO DYLAN HANNON'S EXCELLENT ARTICLE AND BRING IN ANY SAN DIEGO COUNTY SUCCULENTS YOU MAY HAVE IN YOUR COLLECTION

DEL MAR COUNTY FAIR

Special Thanks to Altman's Plants (Deena, Ken & Bob), C & J Cactus (Carl Volkers, Jim Kampwirth, & Dylan Hannon), Rancho Soledad Nursery (Jerry Hunter, Jessy Villalvaro & Reiner Radermacher), KCR Rock (Jeff & crew), Joe Wood - Wood's Shop Construction & B&B Masonry (Bruno Buechler), Michael Buckner (landscape design) and all the hard working SDC&SS members: Rick Plant, Tom & Laura DeMerritt, Susan Hopkins, Derith Hughes, John Williams, Alan Abbott, Ed Nolan, George Plaisted, Ed & Debe DeLollis, Rudy Lime, Stan Yalof, Alex Cardenas-Murphy, Warren Buckner, Rick Latimer, Michael Cullen, Dylan Hannon, Joe Wood, Joey Betzler, and Michael & Joyce Buckner.

And a special thanks to Karen Wilson, garden editor for the Union-Tribune - we really appreciated all the nice things you had to say about our display!!!

"The Exhibitors' Choice Award, which goes to the landscape voted best by the show's exhibitors, went - as it did last year - to the excellent display by the San Diego Cactus and Succulent Society, which also won the award for Outstanding Educational Display. It's one of the best displays in the show, including several unusual and rare specimens, and not to be missed."

FROM SUNDAY, JUNE 26, 1994 ISSUE OF THE SAN DIEGO UNION-TRIBUNE

This is an abridged newsletter, obviously, and you will receive a normal issue of *Espinas y Flores* in August. The editors this month invested much time and direction to the CSSA Show & Sale at the Huntington Botanical Gardens, the San Diego Show & Sale, the Del Mar Fair Exhibit, the fantastic trip to Lotus-Land, and personal family weddings and funerals, (Welcome!!! to the family Amy Buckner!!!). Please forgive us for this short late issue.

SOUTHLAND NEWSLETTERS!

As part of the exchange program with many cactus & society newsletters your LBCC editors have seen some wonderful editions. More and more are being produced on computers which makes everything look spiffy, but what we most enjoy are those things which make each newsletter different. A lot of time is spent on the production of newsletters, large or small, and editors are best "paid" by being allowed to "do their own thing." For even a short newsletter the hours are long and lonely. Editors need to enjoy what they're doing if the creative juices are to flow. As long as basic society news and information is covered a newsletter is complete. But to create an outstanding newsletter, the editor or editors should remain relatively unfettered, within the general budget of the society.

One of the best examples is *Espinas y Flores* from San Diego. It's always been excellent, especially for its Plants of the Month articles by fine growers, and the occasional cartoon by local talent. (In fact San Diego abounds in talent willing to actually contribute to its newsletter). But we've especially enjoyed watching the Newsletter under Michael and Joyce Buckner, two very creative people willing to put in hours of work. And hours it is -- we'd guess maybe 40 VOLUNTEER hours a month jointly, minimum. There is a bold, philosophical style with articles of all kinds from involved plantspeople in this large (for a local monthly newsletter) publication. My only criticism used to be that the edging and print was sometimes too dark, but the look of the newsletter has lightened considerably. If you go to the San Diego Show, be sure to check out this newsletter. They always have display copies.

Open Gates, now edited by Joe Casey and with many contributions by the Pickoffs, is an especially friendly newsletter to read, as is the delightful *Gems of the Desert* by the Wendlands. Then the San Gabriel *Communique* under Virginia Shambeau (with Fred Hutflesz) and then Dave Tufenkian and now Leslie Harris always combined local news with much plant information. Another "must read" is *Sunset's Slightly Skinny Sheet* now not so skinny under the editorship of Suzanne Richards, who is! There's lots of area info and people news. (It's always had purple paper, but why?!!) Walt Wegner has put in hours of work over the years on the *LACSS Bulletin*, and has included much valuable info I've never seen anywhere else -- for example the state of Baja roads for those of us keen on roadrunning that way. Now this newsletter has added plant info sheets, and is one of the larger local publications. Soon Sandy Chase will take over editorship and will no doubt enjoy doing it "her way". The South Coast *Newsletter* was under the editorship of a number of people over the years including us, and then the Causey's who kept it short, fun, & people-oriented. It's now looking for an editor although their Prez has done a great job. We've never exchanged with Palomar so are not very familiar with that newsletter, but it's good and has much talent. There have been several Santa Barbara editors -- all good.

As for *The Roadrunner News* from Long Beach, we've tried to keep it fun, with a little different "look" from the others, an emphasis on people and promotion of our activities. We've always kept size to one 1st class stamp, so have been limited in scope, but the editors have had fun writing about our local deserts, local issues, local culture, local events etc. Long articles on genera we've left to other societies and the many excellent books available both from Rainbow Gardens and our own club libraries. We've also tried to make the newsletter visually appealing. We've done it "our way," and it's been fun.

GENERAL RULES FOR HEALTHY HAPPY CACTI & SUCCULENTS

- ① The primary key to successful cultivation of succulent plants consists of watering at correct intervals and/or during proper seasons. When watering, plants should be drenched thoroughly. At every third or fourth watering accumulated salts should be leached out by watering several times in one session. Allow the top inch of soil in the pot to dry out between watering when plants are in their growing season. Keep plants much drier when they are dormant and during cold weather.
- ② Plants in containers should be moderately potbound. Roots typically seek heat and aeration as well as moisture. The potbound condition is preferable, because with an over-potted (*pot too large for plant*) plant the soil can remain cold and wet for extended periods.
- ③ Soil mixes, which rarely contain actual soil from the garden, vary tremendously in composition and proportion of ingredients. The most important qualities that any soil mix for container plants should have are the ability to: drain quickly, retain moisture, and act to hold the plant securely in place.
- ④ Fertilizing container plants is best done minimally. Add a weak solution of plant food at every other watering. Succulents approaching and during their dormant period should not be fertilized. Different fertilizer's ratios may be used to promote either foliage or flower production.
- ⑤ As with other plants, cacti and succulents are prone to occasional attacks by various harmful insects and diseases. Prevention is always the best cure. Preventative measures include keeping plants in top health, growing them outdoors where/when possible, and growing plants "hard", that is, with a conservative watering and fertilizing regime and strong light.
- ⑥ Many cacti and succulents enjoy the protection of an overhead shrub or tree in their natural habitat. Some species may be grown in full sun. Most others look their finest with at least light shading. Morning sun is best; most cacti require at least four hours of strong light daily. Many leafy succulents thrive with fewer hours of bright light. Dormant plants should be kept somewhat shaded, allowing them to be kept dry.
- ⑦ Propagation of succulent plants is a rewarding outgrowth for many cactus & succulent enthusiasts who have grown their plants lovingly and caringly for a number of years. Growing from seed is most rewarding, and numerous succulents can be reproduced from stem or leaf cuttings, grafting and division. To learn more about these techniques - turn this sheet over and join our society. We have a seed and plant exchange table at every meeting, as well as an extensive library and plant supply table with all the latest!

San Diego Cactus and Succulent Society Show Participants for 1994 were:

L. Badger, M. & J. Buckner, P. Behold, M. Bahr, L. Burley, J. Betzler, W. & V. Buckner, M. Cullen, N. Delgado, A. Cornett, D. & E. DeLollis, T. DeMerritt, C. Dykema, P. Flechsig, S. Frost, G. Graham, K. Graham, L. Grammer, K. Griffin, S. Griffin, M. Heckathorn, M. Henderson, D. Hannon, M. E. Holman, B. Kirkegaard, T. Knapik, R. Latimer, R. Lime, E. Marshall, A. Murphy, G. McNaughton, M. & R. Newcomer, E. & K. Nolan, D. Patterson, D. Peterson, M. Pierce, R. Plant, J. & K. Quijada, R. Richardson, S. Schell, H. Stern, B. Taylor, F. Thrombley, John Williams, Jerry Williams, M. Woodworth and J. Wood.

The Trophy and Plaque winners were:

Beverly Kirkegaard for Best Cactus, Best Mammillaria - Ric & Marylyn Newcomer, Best Opuntieae - Diana Peterson.

Best Succulent was won by Larry Grammer, Best Agave went to Bob Taylor, Best Aloe - Phylis Flechsig, Best Echeveria - Joe & Kay Quijada, Best Euphorbia - Larry Grammer, Best Mesembryanthemum was earned by Rudy Lime, Best Pelargonium or Sarcocaulon went to Mitch Bahr, Best Sansevieria - Joe & Kay Quijada.

Best Graft went to Beverly Kirkegaard, Best Mexican Plant in Show was won by Beverly Kirkegaard, Best Plant From Seed Grown by the Exhibitor - Beverly Kirkegaard, Best San Diego County Succulent went to Joe & Kay Quijada, Best Epiphytic Cactus was won by Phylis Flechsig, Best Pachycaul - Larry Grammer, Best Succulent Bonsai - Rudy Lime.

Best Educational Display went to Frank Thrombley, Best Exhibit and Most Artistic Display were both won by Rudy Lime, High Points 50 or fewer entries and Sweepstakes Trophy both went to Beverly Kirkegaard.

Some Show basics: We had a bit more than 25% entries this year, over last year (1993 had 500 entries, this year about 650). We used a different color for our tablecloths (the consensus was positive). The judges did a great job in staying on schedule, despite the additional entries. Coordination with Balboa Park and Casa del Prado Staff worked out much better this year - special thanks to Arlene, Roger and Judy! Tom Knapik assisted me this year in setting up the plant categories. His assistance was valuable, especially with the additional plants and classes this year - thanks Tom!

Special thanks are also due to the following members for assistance with the show and sale (no particular order): Tom Knapik, Frank Thrombley, Tom Parks, Allen Abbott, Sara Schell, Rick Latimer, Michael Cullen, Ed and Debe DeLollis, Tom and Laura DeMerritt, Philip Favell, Phylis Flechsig, Carol Jean Wolcott, Lee and Pam Badger, Carl Dykema, Kay and Joe Quijada, John Williams, Rick Plant, Steven Southwell, Perlso Lewis, Ed and Karla Nolan, Woody Minnich, Ethel Standish, Michael & Joyce Buckner, Tom & Laura DeMerritt, Ed & Karla Nolan, Larry Grammer, Michelle Heckathorn, Ruth Richardson, Nancy Elder, Beverly Kirkegaard, Rebecca and John Rodolff, Anita DiPietro, Joe Wujcik, Elizabeth Glover and her brother Wilbur Glover, Greg McNaughton, Don Paterson, Elibet Marshall, Tom Birt, Mary Ellen Holman, Carol Jean Wolcott, Sandy Frost . . . I hope I remembered everyone but for those I missed, thanks very much.

I was very pleased with the compliments in the form of notes and kind words, we all did good. The Phoenix Cactus and Succulent society showed up on Sunday about two hours before closing and were a very enthusiast bunch with lots of nice things to say. They were on a whirlwind tour of southern California and seemed to revitalize when they hit our show and sale.

Please let me know if I forgot to include you in our list of helpers. Also, please let me know of any suggestions for improving the show and sale in 1995.

Thanks for the help and support,

Sincerely,

- PAGE 5 -

Joey Betzler

Succulents of San Diego County

by Dylan P. Hannon

- PAGE 6 -

With both the richest flora and most southerly location of any county in California, it is perhaps not surprising that San Diego County should also contain a higher number of native succulent plants than any other area of similar size within the state. A majority of these by far are represented by the cacti. Other species belong to the Nightshade, Sunflower, Spurge, Agave, Milkweed, Ice-plant, Bursera, Stonecrop, Ocotillo and Purslane families. Only native, indigenous species are considered in this paper.

Besides these main families, which each have one or a handful of succulent species growing in San Diego County, there are three other groups which deserve mention for their notable succulence as a strategy in dealing with harsh local environments, even though they are not likely to be found in cultivation.

The first are the cucurbits, or members of the Cucumber Family. Species growing in our area include the "Wild Cucumber", *Marah macrocarpus*, and several gourd species: *Cucurbita digitata*, *Cucurbita foetidissima* and *Cucurbita palmata*. All of these plants possess a greatly enlarged main root below ground, which might be labeled a "caudex", except that no one has apparently been successful in raising one of these roots in a container situation beyond first or second season after transplantation. They are not difficult to grow from seed, although they may still resent even gradual exposure of the main root.

The second group is of small parasitic plants in the families Lennoaceae, Orobanchaceae, and Ericaceae. They lack chlorophyll and occur in sand dunes, chaparral, sage scrub, and coniferous forest habitats, where they are infrequently to very rarely observed by humans. Essentially succulent in all their parts, from roots to flowers, our native parasitic plants in some cases apparently belong to a complex relationship involving a 'host', such as a pine tree, and a primary 'parasite', such as a fungus, and these herbaceous flowering plants we call parasites may be only opportunists taking advantage of a much older symbiotic association between the fungi and conifers.

The third group of succulents outside the 'mainstream' is comprised of some of the major components of our coastal saltmarshes, such as Pickleweed or Glasswort, (*Salicornia* spp.), Saltwort (*Batis maritima*), Salty Susan (*Jaumea*

carnosa), and Sea-Blite (*Suaeda esteroa* and *Suaeda taxifolia*). While these highly succulent plants are not impossible to cultivate in pots (even pots without drainage holes, which are perhaps more appropriate), due to their being of annual habit, lax, untidy growth form or overall size, they are best left along our coast in their own specialized habitat. It has been estimated, using vintage photographs, that over 90% of original coastal salt marsh has been decimated, mainly by "filling-in", to accommodate industry and pleasure (marinas, etc.) in Southern California.

The remaining succulents are discussed below under "Leaf Succulents" and "Stem Succulents". There are a few which actually fit both categories, viz., Sea-Dahlia (*Coreopsis maritima*) and Sea Kisses (*Calandrinia maritima*). The latter is a rare, dwarf shrubby plant in the Purslane Family (Portulacaceae) which may be easily overlooked during its dormant season in June through November, when a majority of the plants discussed below are more or less dormant as well. Sea-kisses occurs only where maritime influence is prevalent, such as on coastal bluffs, and on various soils types, usually within coastal sage scrub habitat. As a consequence, an originally uncommon plant has become quite scarce due to coastal development. To come across one of its typically very small populations in spring can be just cause for a neighborhood block party! The foliage is glaucous, with leaves about 3-4 cm long, and the satiny, magenta colored flowers are borne on stalks up to 15cm tall.

Sea-dahlia is a member of the Sunflower Family (Asteraceae) and has succulent yet finely divided leaves and brittle, semi-succulent stems. This plant grows in an even more restricted area of our coastal zone than Sea-kisses, where it enjoys the constant cooling of oceanic influence. It is more frequently observed by nature seekers, due in part to its being generally more common and to its large, bright yellow daisy-like flowers borne on long, ascending stalks. The seedling quickly develops a conspicuous taproot, often with the uppermost part just exposed, and could probably be trained as a caudiciform specimen over time. Sea-Dahlia generally favors north-facing slopes in the wild, and makes an excellent addition as an accent plant in xeric gardens in coastal areas with a mild Mediterranean climate.

LEAF SUCCULENTS: Crassulaceae, Portulacaceae, Solanaceae, Agavaceae, Aizoaceae.

The Stonecrop Family (Crassulaceae) is arguably the most conspicuous family of San Diego's leafy succulent flora, with three genera represented: *Crassula*, *Dudleya*, and *Sedum*. Of these, *Dudleya* is by far the most diverse and interesting. In coastal areas, *Dudleya lanceolata*, *Dudleya pulverulenta* (Chalk Lettuce), and *Dudleya edulis* (Lady's Fingers) are frequently encountered in both chaparral and sage scrub habitats. Less commonly found are four members of the subgenus *Hasseanthus*: *Dudleya blochmanae*, *Dudleya blochmanae* ssp. *brevifolia*, *Dudleya multicaulis* and *Dudleya variegata*. These diminutive geophytes die back to small tuberous root(s) in the summer. *Dudleya viscida*, resembling *Dudleya edulis* but with brighter green, sticky leaves and pink flowers, resides primarily around Oceanside and on Camp Pendleton. Also found on the coast, but only in the Tijuana Hills along the border, *Dudleya attenuata* ssp. *orcuttii* is a dwarf plant with terete, glaucous leaves; it is common further south in Baja California. In the desert, *Dudleya arizonica* and *Dudleya saxosa* are infrequently observed. Finally, *Dudleya alainae*, the most recently described San Diego *Dudleya*, is restricted to the transmontane zone near Banner.

For those used to thinking of *Crassula* in its fantastically diverse South African sense, it may be somewhat of a disappointment to behold any of the several native San Diego county species. All are tiny annual plants which grow in seasonally moist areas (*Crassula aquatica*) or are more widespread in areas of coastal sage scrub and chaparral (*Crassula connata*, with three varieties, *Crassula saginoides* and *Crassula solieri*). Though they dry up in the summer, they can make interesting seasonal companion plants for other containerized native succulents in much the same way that mosses are utilized in bonsai. Finally, the large and widespread genus *Sedum* is reported for San Diego by one collection made in the Aqua Tibia Wilderness area of *Sedum spathulifolium* ssp. *yosemitense*.

In the same family as *Calandrinia*, two species of *Lewisia* occur in our mountains, *Lewisia brachycalyx* and *Lewisia nevadensis*. The genus takes its name from Meriwether Lewis of the Lewis & Clark expedition to find the so-called Northwest Passage in 1804-1805. All the species are leafy rosette plants of varying degrees of succulence, sometimes with only a few leaves, and bear

frequently showy displays of chicory-like flowers in pastel shades of white, pink, orange and red. Those occurring in the San Diego area, being rare in the first place and growing at high elevations in seasonally wet areas, unfortunately cannot be expected to succeed in cultivation for most hobbyists in Southern California. However, several of the more northerly species, which grow at lower elevations and under less specialized conditions, can be managed in pots with a shady, dry summer rest.

The Solanaceae, or Nightshade Family, does not generally boast many succulent representatives, but at least *Lycium* (the Box-thorns) contains a number of shrubs which have highly succulent leaves. In San Diego county there are seven native species of *Lycium*: four on the desert (*L. cooperi*, *L. fremontii*, *L. parishii*, and *L. torreyi*), one on the coast (*L. californicum*), and two which occur curiously in both areas (*L. andersonii* and *L. brevipes*). Most promising for the horticulturist is probably *Lycium californicum*, which is relatively compact and spreading in habit and is possibly trainable as a bonsai specimen. The small flowers are lilac-colored, followed by small red-orange berries.

In the Agave family (Agavaceae), *Agave* and *Yucca* each have two native species in San Diego County, although by a very long stretch *Nolina* is sometimes also included here. Species of *Nolina* typically possess a large, mostly underground caudex, a sort of "woody" plate-like structure which sports tufts of saw-tooth edged, fibrous leaves; it is probably also something of a stretch to give *Nolina* any status as a true succulent. Many of the yuccas are no less succulent than any given *Agave*, and the two species in our area, *Yucca whipplei* ssp. *whipplei* and *Yucca schidgera*, both coastal denizens, are no exception. The first of these is also known as Our Lord's Candle and forms attractive bristly rosettes of many narrow, bluish grey-green leaves and terminates a life of perhaps one to two decades by sending up a towering mast of very showy, creamy white flowers. *Yucca schidgera* (Mohave Yucca) also occurs on the coast as well as on the western edge of the desert region in San Diego county. The leaves of this yucca are dull green and may be slightly fibrous-edged, and the plant usually branches from the base. It also produces a large inflorescence, with whitish flowers strongly suffused with brown, but flowering does not end the life of the plant.

Our *Agave* species, *Agave deserti* in desert areas and *Agave shawii* on the coast, both make fine subjects for the collector of succulent plants or for the gardening enthusiast with a xeric bent. *Agave deserti* is on the small size for an *Agave*, with rosettes of whitish blue-grey leaves up to about 0.5m across. While *Agave deserti* is common in rocky and sandy areas of the desert, *Agave shawii* is very localized within the county. It is known definitely in San Diego only from Point Loma, where it still resides at Cabrillo National Monument, but may well have been growing naturally at a few other sites which have long since been urbanized. *Agave shawii* can be seen growing in abundance on lava flows on the coast south of Rosarito in Baja California.

Popularly know as "mesembs", members of the Aizoaceae (formerly Mesembryanthemaceae) or Iceplant Family are well represented in the San Diego area, although only two are believed to be indigenous. These are the Sea-Fig (*Carpobrotus aequilaterus*) and Western Sea-Purslane (*Sesuvium verrucosum*). The first is found on sandy beaches and immediately adjacent areas and is (or was) often planted for coastal erosion control. *Sesuvium* occurs in alkaline areas near the coast, more often in association with freshwater bodies. There is still some debate whether these two species, and hence the family as a whole, are native to the California Floristic Province, or whether they will be eventually added to the ranks of other, more frequently encountered non-native mesembs in our area, such as the annual ice plants (*Mesembryanthemum crystallinum* and *Mesembryanthemum nodiflorum*) and others.

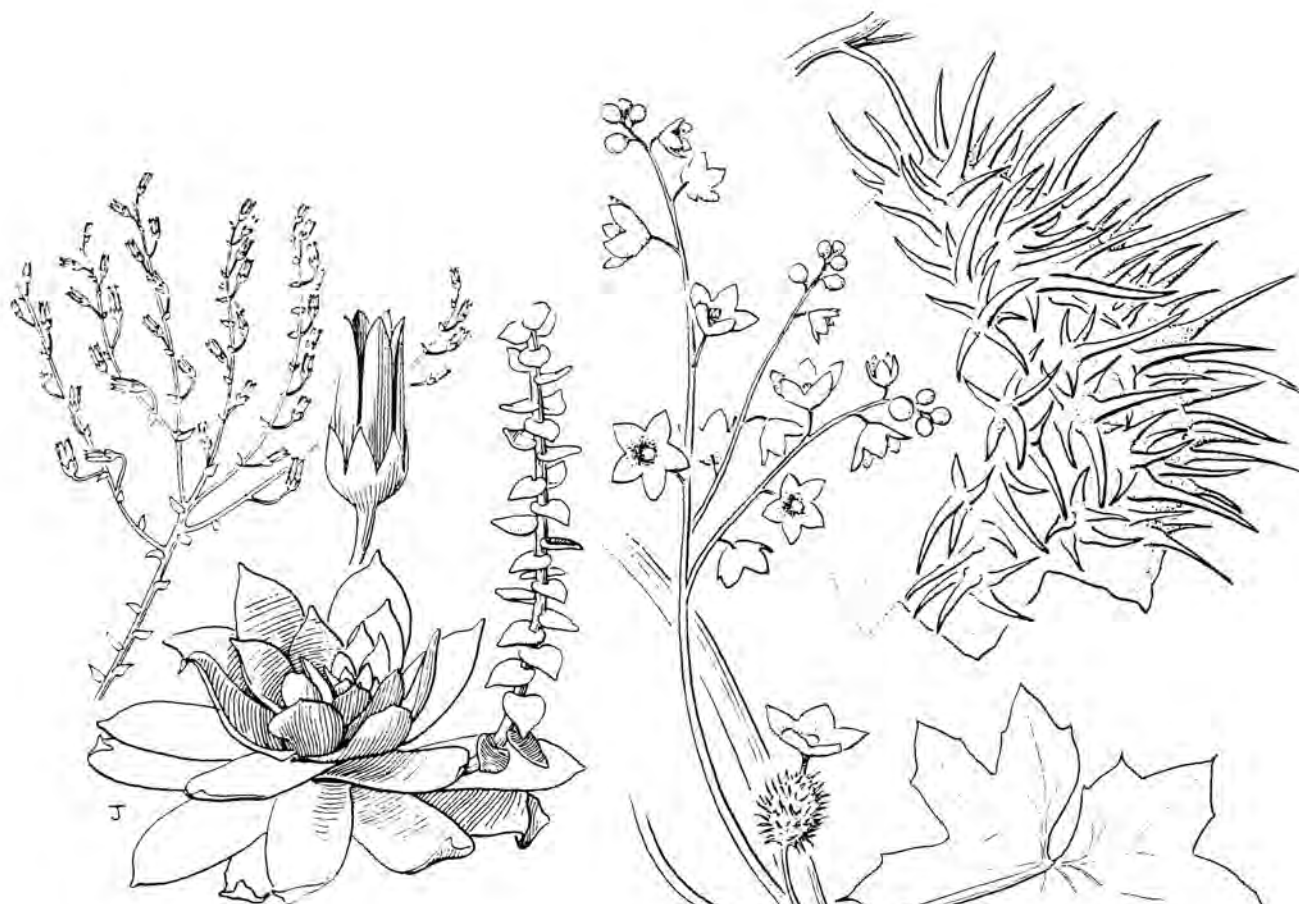


Fig. 609. *Dudleya pulverulenta* subsp. *pulverulenta* (A)

Fig. 356. *Marah macrocarpus* (A)

STEM SUCCULENTS: Euphorbiaceae, Asclepiadaceae, Burseraceae, Fouquieriaceae, Cactaceae.

Nearly as familiar as the cacti nowadays, the genus *Euphorbia* is a large one whose distribution covers many of the more arid regions of the globe. However, the "succulent phenomenon" has struck almost exclusively in southern and East Africa, and New World succulent Euphorbias remain few. One of these is *Euphorbia misera*, a shrubby plant which grows as a component of a special type of coastal sage scrub found primarily in the extreme southwest of our county, on hills in the South Bay area and the Tiajuana Hills, as well as a few stations to the north. Easily overlooked at a casual glance, up-close the plant reveals its silvery, knobby stems, succulent at least enough to draw it into the catch-all "succulent bonsai" category. The leaves, which are shed during the hottest months, are an attractive pale dull green and rounded in outline, while the cyathia (a compact, specialized flower head which resembles a flower) are maroon and green and striking up close.

Somewhat in parallel to the previous family, the Asclepiadaceae, or Milkweed Family, contains a rich assortment of succulent species in the southern and eastern portions of Africa, while the New World, still rich in species overall, is conspicuously wanting in succulent representatives. In the San Diego area, *Asclepias albicans* (Wax Milkweed) and *Asclepias subulata* (Rush Milkweed) are desert species, though the later is infrequently found near the coast, as at Dehesa, etc. *Asclepias albicans* has more or less terete greyish or whitish stems growing erect and tall and in *Asclepias subulata* the stems are shorter and more compact.

While succulent traits are not in any event usually associated with *Asclepias*, they certainly are with *Sarcostemma*, with several African species found occasionally, if not forlornly, in collections of succulent plants. Of the two species occurring naturally in San Diego county, *Sarcostemma cynanchoides* ssp. *hartwegii* may be loosely called succulent. It is found sporadically in both desert and coastal areas, where its abundant spaghetti-like grey-green stems scramble through low shrubs. The clustered flowers are pinkish and only marginally showy.

Well known to many readers, the Elephant Tree (*Bursera microphylla*) is an often fantastically configured large shrub or small tree whose occurrence in the United States is quite limited. Besides a few stations in southwestern Arizona and a few more at low elevations on rocky slopes in our desert to the east, it is primarily found to the south

in Baja California and just into Sonora across the Sea of Cortez. As with other members of the genus *Bursera*, whose members are increasingly in demand to meet the current succulent bonsai craze, *Bursera microphylla* is perhaps best regarded as a soft-wooded shrub. Its leaves are scarcely succulent, and if compared to the likewise soft-wooded Peruvian Pepper (*Schinus molle*), there is little difference in the consistency of the various parts of either plant, except that the trunk(s) of the Elephant Tree are proportionately more swollen, or pachycaul. Happily, this trait holds true for seed-grown plants, which can become attractive specimens within a few years of germination when grown "hard". Beyond this species, there is a tantalizing, semi-confirmed report of *Bursera hindsiana* from the eastern flank of Rabbit Peak in the Santa Rosa Mountains, just over the San Diego county line in Riverside county. It is only "semi- confirmed" because the report stems from a gift to Rancho Santa Ana Botanic Garden in Pomona, California, of fruits collected by a prospector who encountered a small group of shrubs he recognized as something unusual. When grown up at Rancho Santa Ana, senior staff botanist Dr. Robert Thorne quickly recognized it to be *Bursera hindsiana*, which otherwise is known from much further south in Baja California. This population awaits the intrepid explorer and lover of soft-wooded succulent plants, especially if he/she carries along a plant press!

More generally known to desert visitors is Ocotillo (*Fouquieria splendens*), which like the burseras is perhaps called succulent more often because it is amendable to cultivation with cacti and the like rather than having any true succulence. A physical description scarcely needs recounting here, while attention can be called briefly to the other members of the genus, the only one in the botanically odd and isolated Fouquieriaceae. Found only in Mexico, these other species make excellent candidates for container culture, with their sometimes swollen main stem(s) (especially *Fouquieria columnaris*, the Boojum Tree, *Fouquieria purpusii* and *Fouquieria fasciculata*) and distinct spination, which is derived from the petioles (leaf stalks) of leaves produced on new shoots. Leaves may also be produced from short axillary shoots borne along the main stem between the spines (the stem axis scarcely being evident) as when the Ocotillo first leafs out in spring. A few species are spineless and closely resemble members of *Bursera*.

STEM SUCCULENTS: Euphorbiaceae, Asclepiadaceae, Burseraceae, Fouquieriaceae, Cactaceae.

Finally, we are left with the cacti, made "last" in keeping with the author's false reputation as a noted anti-cactologist and advocate of generally less spinose fare*. The following genera are represented in San Diego county: *Opuntia*, *Bergerocactus*, *Echinocereus*, *Mammillaria*, *Ferocactus*, and *Echinocactus*.

The opuntias are well represented by both pad species (subgenus *Platyopuntia*, the prickly pears) and those with terete or cylindrical stems (subgenus *Cylindropuntia*, the chollas). The taxonomy of this genus, especially the chollas, is complex and seemingly ever-changing, even within the California flora. This is due in part to populations which may intergrade and/or hybridize with others, and to morphological characteristics which can be highly plastic both among and between populations. Twenty taxa are recognized as occurring in San Diego county (Beauchamp, 1986). The most common species on the coast are *Opuntia littoralis*, a low, spreading pad species with pale green stems, and *Opuntia prolifera*, a viciously-armed cholla with greyish green stems which may grow to some 2 meters in height, usually in small to large colonies. Just how many individuals comprise such colonies is an interesting question, since the plant is apparently much more inclined or able to produce joint propagules rather than seed-bearing fruits. In the desert, the Opuntias are much more prevalent, with large cholla species often comprising the most conspicuous element of the large shrub landscape. Chief among these are *Opuntia bigelovii* and *Opuntia echinocarpa*, with gold to straw colored spines. While such spination is highly attractive, these Opuntias, like other temperate desert plants, often resent residency on the coast and either will grow miserably or lose most of their color and luster - whether grown from joints or as seedlings. Air quality is one of the suspected reasons for this.

Bergerocactus and *Echinocactus* each have only one species in San Diego county, the former being entirely monotypic and otherwise found in northern coastal Baja California, where it is quite common. In San Diego only a few small stands are known, most notably on Point Loma, where it can be seen within Cabrillo National Monument, and in the Tiajuana Hills on the U.S. - Mexico border. The erect stems, which branch and sprawl at the base to form dense patches, are densely clothed in golden spines, giving an overall appearance similar to that of some of the *Haageocereus* of coastal South America (Peru and Chile). Miraculously, this plant has escaped the net of rabid genus lumpers of late, possessing as it does a combination of characters which make for ready and defiant independence.

In contrast *Echinocactus* was once a repository for just about everything but *Bergerocactus*, though it now is usually held to comprise about a dozen species centered in northern Mexico. It is rare in San Diego county, represented by a local occurrence of *Echinocactus polycephalus* var. *polycephalus* near Palo Verde Canyon in the desert.

Echinocereus engelmannii is the sole species of the Hedgehog Cactus genus to be found in San Diego county, not counting a citation of *Echinocereus triglochidiatus* var. *mojavensis* by Benson, which may actually be from a locality in Imperial County (Beauchamp, 1986). *Echinocereus engelmannii* is commonly found as var. *engelmannii* on rocky slopes and alluvial fans and washes in the desert, and var. *munzii* has been found above 1200 meters east of Cuyamaca Lakes and at Chariot Canyon.

Omnipresent in succulent collections and on the average window sill alike, *Mammillaria* (Fishhook Cactus) is represented in San Diego county by only two species, *Mammillaria dioica* and *Mammillaria tetrancistra*. The former is among a handful of plants, including Jojoba (*Simmondsia chinensis*), Box-Thorn (*Lycium andersonii*, *Lycium brevipes*) and others which occur in our desert as well as on the immediate coast. In some cases these bi-modal distributions meet up much further to the south in Baja California, where conspicuous mountainous features taper off. *Mammillaria dioica* is a small, usually clustering plant which is well-armed with hooked spines, though the spines do not hide the dull green tubercles or the pale yellow flowers produced in February - May. There appears to be an association, perhaps only coincidental, between this cactus and *Euphorbia misera*, as they are commonly found growing together but rarely one without the other. The second species, *Mammillaria tetrancistra*, is infrequently met with on desert slopes below 1200m elevation. Unlike *Mammillaria dioica*, it does not seem at all amendable to cultivation unless grafted, a procedure made worthwhile by virtue of the large pink flowers produced in spring.

Addenda to Dylan Hannon's article on San Diego Native Cacti & Succulents Please insert after page nine.

*The author is currently undergoing radical career therapy to correct this condition.

Ferocactus (Barrel Cactus) is well-known to many nature enthusiasts, with *Ferocactus viridescens* on the coast and *Ferocactus acanthodes* in the desert. While both species were once common, *Ferocactus viridescens* has been greatly reduced in numbers by urban sprawl, though it is not difficult to encounter colonies on south-facing slopes in coastal sage scrub habitat with a little searching. Uncommonly met with in collections, *Ferocactus viridescens* is an attractive species of small size, up to about 25cm diameter and usually not much taller; it commonly flowers at much smaller dimensions. The body is bright green and bears short, stiff, straw-colored to markedly reddish spines, in the manner of other *Ferocacti*. Unfortunately, this barrel cactus is the subject of the local cactus candy industry in Tijuana, and such impacts to Mexican populations may be as great as urban development has been to the U.S. compliment of the species. It is not known, however, if the whole plant is taken, roots and all, or whether only the "head" is cut off-- as is done in peyote harvesting-- which allows the plant to regenerate itself later. *Ferocactus acanthodes* attains considerably greater dimensions, even to overhead heights and diameters which defy human encompass. The spination is often conspicuously orange-red, and in both species flowers are yellowish or greenish.

Although the ideal season for viewing these non-traditional wildflowers is essentially finished, San Diego area cacti can be observed at any time of year. The more diminutive species of succulents are worth seeking out after good rains, and some of these will no doubt present a challenge for readers who are botanically inclined, *Dudleya*, *Lycium* and *Crassula* in particular. Happy hunting!!

References:

- Beauchamp, R. M. 1986. A Flora of San Diego County, California, Sweetwater Press, National City, CA.
 Except for the new Jepson flora, all essential further references dealing with the area's flora may be found in this book.

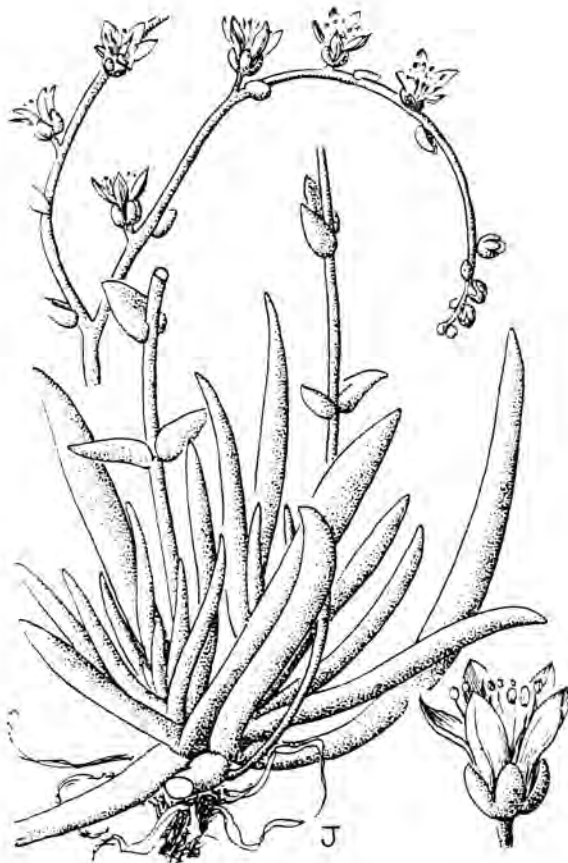


Fig. 607. *Dudleya attenuata* subsp. *orcuttii* (A)

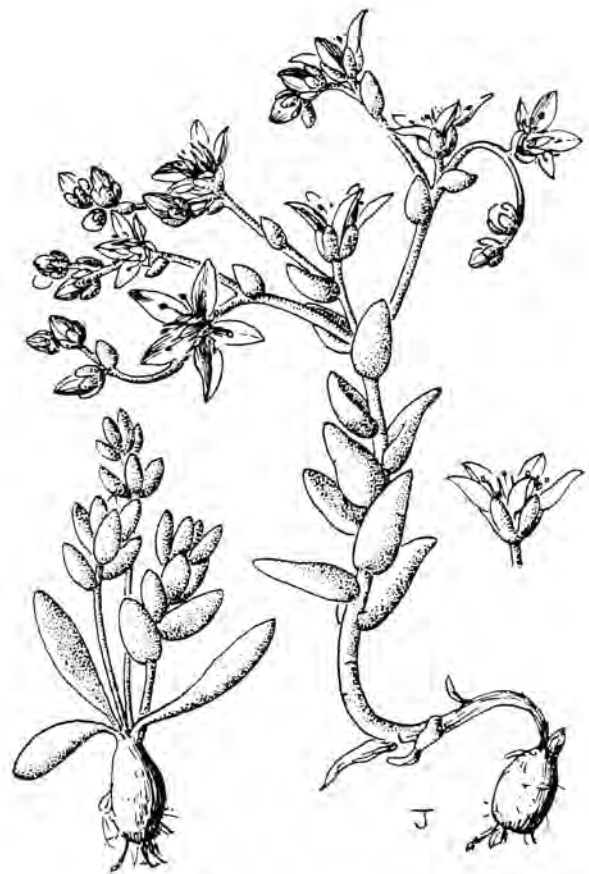


Fig. 608. *Dudleya blochmanae* subsp. *blochmanae* (A)

San Diego Cactus & Succulent Society Membership

The San Diego Cactus & Succulent Society is a non-profit, hobby organization created to stimulate interest in succulent plants. This society brings together people (and plants) with a common interest for the purpose of educating the public about the beauty and uniqueness of these remarkable plants, encouraging proper collecting and maintenance of the plants through preservation of native habitats and horticultural propagation, and to foster good fellowship. You are invited to join our society, whether you are an expert, amateur, or beginner, who loves unusual plants and flowers. VISITORS ARE ALWAYS WELCOME. BRING AN INTERESTED FRIEND.

Regular meetings are held on the second Saturday of each month in Room 101, Casa del Prado, Balboa Park at 1:00 p.m. (One may come as early as noon just to socialize or obtain a parking space easily.) Annual dues are \$10.00 for a single membership with an additional \$5.00 for each additional member at the same mailing address. The dues are payable at time of joining, and January of each succeeding year. Members receive our monthly publication Espinas y Flores, are entitled to library check-out privileges, and may partake in our many field trips and other activities. We offer knowledgeable speakers at our programs; many are world renowned scholars, botanists, explorers and authorities. We have a number of shows each year, especially our Annual Show and Plant Sale in June. We have a wide range of plants and supplies for purchase at favorable costs at most meetings. We also have a plant exchange table and monthly door prizes. All members will be consistently encouraged to contribute and participate in our many functions. Please join us and help us grow.

For more information, call Laura De Merritt, Treasurer @ 270-5544 or Joyce Buckner @ 222-3216.

Yes, I (we) wish to become 1994 member(s) of the San Diego Cactus & Succulent Society.

Please note: New members joining mid-year will receive 12 issues of Espinas y Flores. Prorated memberships will be offered in November /December for any new members joining during the middle of the year and wishing to continue their membership through 1995.

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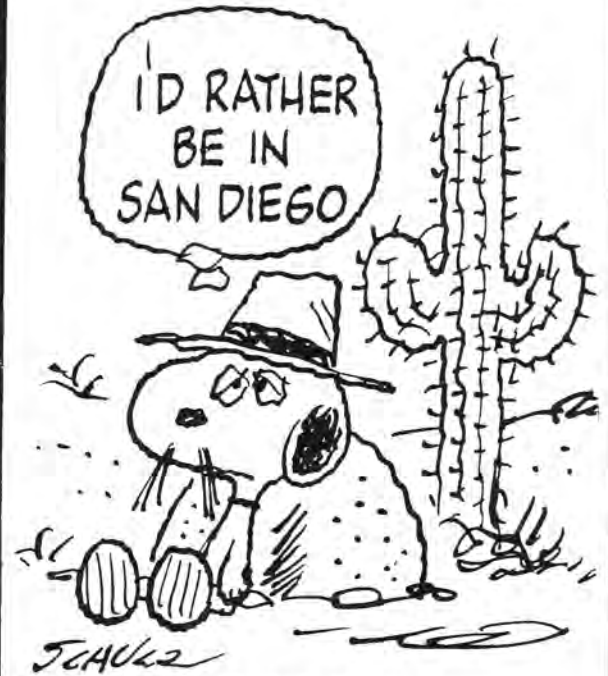
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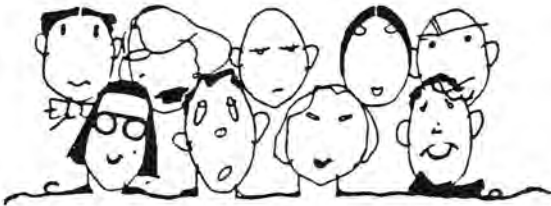


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The San Diego Cactus and Succulent Society, Incorporated is open to all persons interested in growing cacti or other succulent & exotic plants. Meetings are held the second Saturday of each month at 1:00 PM in room 101, Casa del Prado, Balboa Park. Board of Directors meetings are held at 11:30 AM prior to general meetings. Annual dues are \$10.00 per single member per year, \$5.00 for each additional member within the same household. Single copies of Espinas y Flores are \$1.00 per copy sent within the U.S.A.; foreign subscriptions are \$20.00 - 3 mailings per year. Affiliated with the Cactus and Succulent Society of America, Inc. Fax available - please call editor @ (619) 222-3216

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