

ESPAÑAS Y ARABES

SAN DIEGO CACTUS AND SUCCULENT SOCIETY

CACTUS -- STAFF OR DISTAFF ?

"Doc" Reuben V. Vaughan

THE CACTUS WAS to the Indians of the Americas what the bovine was to the Saxons and Celts. We all well know what the palm has done for the Polynesians and island dwellers of the Pacific, yet we do not fully realize that the CACTUS was to the Indians a staff of life. The tragedy is that we know so little of the medicin-

al values of the many plants, yet to the Indians these curative properties were well known.

We accepted tobacco and cacao erythoxylon for pain relieving and tonic properties, the calysia cinchone bark for its anti-malarial properties which we call quinine. We use vanilla, potatoes, tomatoes, belladonna, maize and cacutchouc (rubber). Can you visualize what our economy would be without these products? The many lost plants that man could have had the use of is a sad story. It is true that during the period since this New World discovery, we have travelled fast and far, but in the interim let time ravage much that we had of value.

In the 1700s the Germans began to evaluate the possibilities of Cactus being of value medicinally, and Dr. Rudini did much work on Cactus Grandiflorus (Night-blooming Cereus). This plant had a reputation of being of value in dropsical cases amongst the tribes. Dr. Rudini isolated an alkaloid called "Cactine" and it found much use amongst early cardiologists in caring for angina pectoris patients. It was also used for neurastenia, dyspepsia, tobacco poisoning, sexual exhaustion. It did not prolong diastole. Digitalis later displaced the use of Cactine as it was found to be more potent and reliable.

Pellotine is an alkaloid obtained from Anhalonium Williamsii. It is a powerful hypnotic and analgesic. It is not as powerful as morphine which displaced it.

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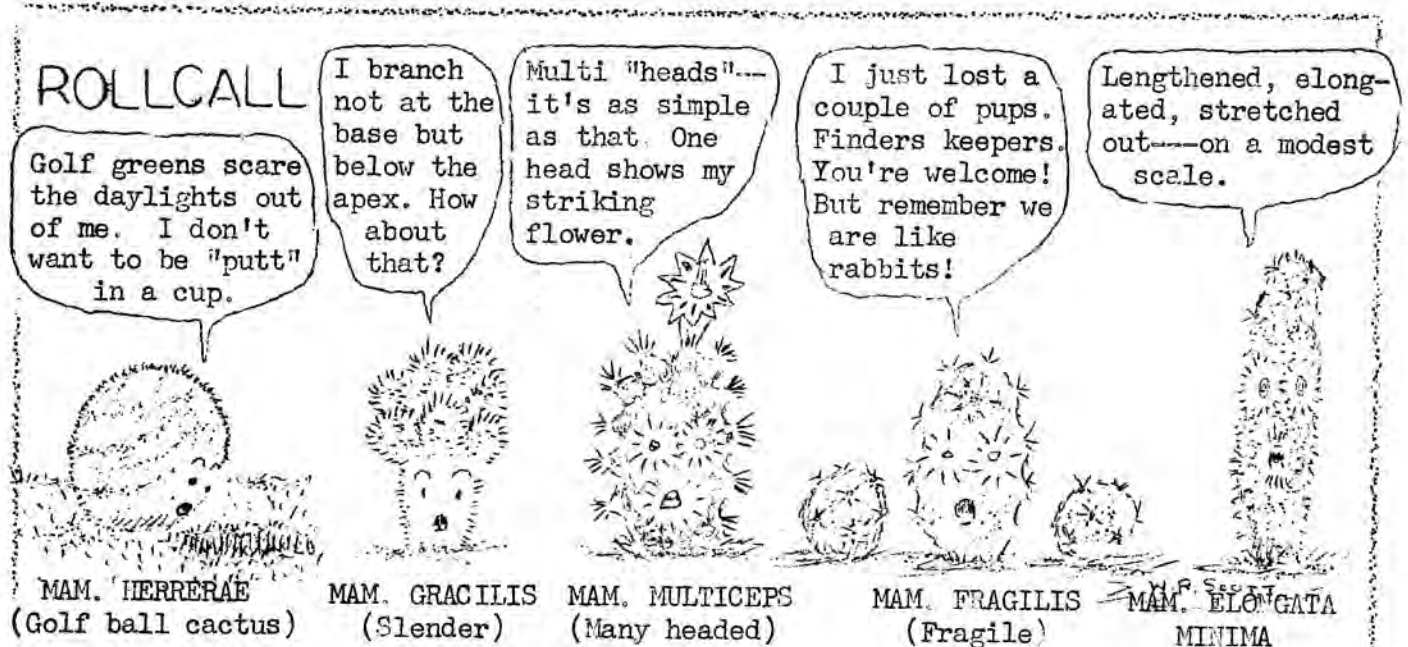
CACTUS AND SUCCULENT SOCIETY OF AMERICA
NEW BOARD MEMBER FROM SAN DIEGO SOCIETY

The San Diego Cactus and Succulent Society is now represented on the Board of Directors of the Cactus and Succulent Society of America. On April 11th at a Board meeting Walter R. Scott of San Diego was recommended and approved for appointment as one of twelve members. He will take the place of Edward S. Taylor of South Gate who is Affiliate Chairman. Mr. Taylor will continue as an appointive Board member. Others are:

- | | |
|-----------------------------------|---------------------------------|
| 1 Ted Hutchison of Riverside | 7 Harry Johnson of Long Beach |
| 2 Joyce Tate of Sunnymead | 8 Mary Bleck of Los Angeles |
| 3 Dr. H. C. Lawson of Los Angeles | 9 Dr. Lyman Benson of Claremont |
| 4 Walter Fader of Sierra Madre | 10 Robert Foster of Reseda |
| 5 John Bleck of Los Angeles | 11 Jay T. Lodson of Orinda |
| 6 Kathryn Sabo of Woodland Hills | |

"Scotty" as the new member is commonly known, serves the San Diego Society as Chairman of the Activities Committee in which capacity he has acquired the title "The Old Wagonmaster" and as such committeeman he is an appointive Board member. His cactus-related cartoons appear in the San Diego Society Bulletin "Espinaz y Flores" and starting in January 1970 they began appearing in the Cactus and Succulent Journal.

Term of office is three years, ending in Dec. 1971, which period will see early planning for the 1973 National Cactus and Succulent Society Biennial Convention which will be in El Paso in 1971. The 1973 Convention could very well be in Southern California once again--possibly San Diego. Your Editor asked The Old Wagonmaster what he thought about extra "cactivities". The answer was: "Let's get the wagon rolling- - - Giddap."



CACTUS OF THE MONTH

ONE OF THE most popular miniature cacti is *REBUTIA MINUSCULA* (re-boot-i-a mi-nus-ku-la) the "fire crown" cactus. This species was first

put in the genus *Echinopsis* by Weber, but was removed by Karl Schumann. The genus was named after Rebut, a cactus dealer, and the species name means small--not very distinctive since all *Rebutias* are small!! This is a South American genus, found primarily in the lower mountains of Northern Argentina and Bolivia.

REBUTIA
MINUSCULA



(FIRE CROWN)

The stem of the fire crown is a flattened globe, very prolific and fast growing. It will bloom from seed the third year on its own roots. The individual heads are rarely more than one and a half inches in diameter and one inch high, but it will form clusters over a foot in diameter in a few years. The tubercles are spirally arranged in about twenty rows and are tipped with many very small spines pointing outward. The flowers are bright red, nearly an inch in diameter and are borne around the base of the stem in spring and summer. The flowers usually close at night and reopen for several days. Seeds are frequently set, the pods ripen within a few days, and if the seedlings are not allowed to dry out or be in direct sunshine for several months, many new plants will be yours.

The fire crown, and other *Rebutias* also, prefer half-shade in our climate and will take much more moisture than the average cactus. They do very well confined to a small pot, and are usually undisturbed by repotting. They respond rapidly to fairly frequent (monthly) feedings.

Crested forms of the fire crown may be seen, and they apparently do as well on their own roots as grafted. These crests usually bloom as well as the normal plant.

-----L. H. Phelps

NEW IDEA FROM AN OLDTIMER (Courtesy: Glenn Heyer)

"That soil which is best for succulent cuttings is a light unmanured sandy soil which will neither bind nor retain moisture long. Others recommend a small quantity of broken garden pots--broken pretty small--to answer the same end--and of this number I reckon myself. I was first led to it by observing that all plants, and more especially succulent ones, not only rooted sooner when in contact with the side of their pot than when placed in its center, but ramified themselves along the side for some time, until they had acquired strength to extend their fibres into the little world of earth about them. Cuttings rooted in the center of the pot direct their fibres horizontally until they reach the sides, close along which their roots greedily extend, and desert the central mould, which is probably liable to greater extremes of wet and drought, than the favourite pieces and sides of pots, their radicles are so much enmeshed of.

"For when a pot of cuttings is in want of water, it is of course drier than it ought to be; and as soon as watered, it is also of course somewhat wetter than is absolutely necessary to the welfare of the cuttings, especially in the center.

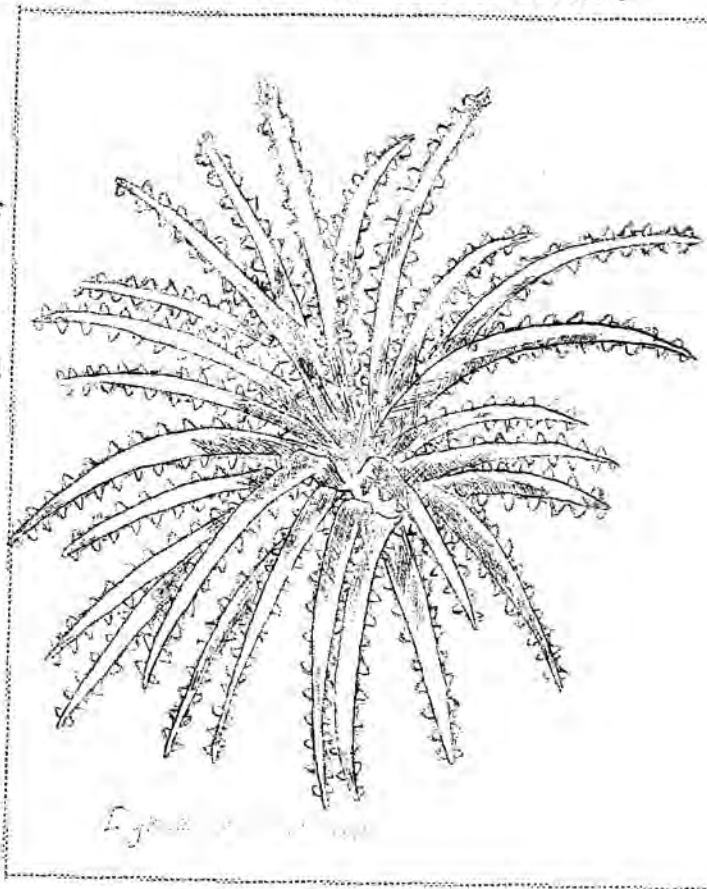
"Whereas the nature of the inner side or superficies of a garden-pot, filled with mould, and planted with cuttings, cautiously watered, has a very gradual tendency to absorb as much humidity as renders it cool and moist, but never wet, which is probably the reason why the radicles of plants prefer being in contact with it, to being in the center of the earth it is filled with, which as just noticed, is subject to greater extremes of moisture and drought, besides, any superfluous humidity loitering about the wounds of the cuttings themselves is much more easily dissipated or attracted by the absorbing nature of the pot..."-----Adrian Hardy Haworth, 1794

DYCKIA -- the Succulent-of-the-Month

The pineapple and the puya, the "living vase" and Spanish moss, as well as the Dyckia, are all Bromeliads and all are native to the Americas. This genus was named for Prince Joseph Salm-Reifferscheid-Dyck (1773-1861), author of outstanding books on succulents. Superficially, Dyckias resemble aloes or agaves with their toothed leaves and rosette form. They look even more like Hechtias, another Bromeliad, and are in fact, so closely related that it takes the flower to know which is which*.

"They seem to thrive under much neglect." Now there's a statement to gladden the heart of a busy gardener! They can take full sun and low temperatures--beware of freezing--following the general rule of the harder and stiffer the plant, the better adapted to fluctuation in temperature. Although quite drought resistant, they will take plenty of water if the drainage is good. Nor do they need an exotic soil mix--what is good enough for the majority of our other succulents is good enough for the Dyckias. However, lean well toward the acid side and steer clear of lime. It appears that one man's neglect may well be another man's care.

Mulford Foster collected Dyckias in Brazil, finding many of them growing in crevices in rocks. D. FOSTERIANA was named for him, and Lad Cutak claims it is the gem of the genus. "Its spiral whorl of grey leaves appear to be made of platinum and its brilliant flowers of gold." How does that grab you? It stimulated Foster to name one of the hybrids he developed "LAD CUTAK", which he says is the most vigorous grower and bloomer of any of the Dyckias. As you read this article, Foster is even yet hybridizing another winner.



Among Foster's introductions are: D. COCCINEA (from the Latin, referring to the color of the fruits) which he describes as quite a hardy plant growing in much more compact masses than many Dyckias with narrow, upright, olive-green leaves, its 18" spike of orange-red flowers blooming in early spring and summer.

D. MINARUM is a compact stiff-leaved little plant about 2-3" in diameter with orange-yellow flowers.

D. MICROCALYX is a medium-sized plant but Foster says it is certainly the most floriferous he has ever had. It produces from one to three tall branched flower stalks each year with hundreds of yellow flowers. Its mass of curved, narrow, heavily spined leaves is a real addition to the rock garden.

D. LEPTOSTACHYA (from the Greek, meaning slender spiked) grows in sun or shade, reproducing by underground stolons. Varying from maroon to green, the leaves are fewer in number than other species.

Special July Meeting
Pot Luck at the Taylor's - 1670 E. Main, El Cajon
Remember, it's a week later than usual - July 11th.

Does anyone have D. URSINA? (Pronounced er-SY-na, meaning "like a bear".) Foster writes that the flower spike and even the sepals are covered with 1/8-inch thick brown wool resembling a bear's fur! He found this one high in the Brazilian mountains on a cold raw windy morning--later the sun was so fierce he was convinced that the wool acted as a two-way insulation. D. ursina is a bit large for pot culture, but there is always room in the garden for lovely orange flowers set off with brown wool.

D. RARIFLORA has an interesting inflorescence and is rather well known. D. BREVI-FOLIA (also known as D. SULPHUREA) appears to be a handsome glossy compact plant as pictured in Exotica. With sulphur-yellow flowers, I presume.

The Braggin' Table is wide open for any species of this genus and for our mutual learning experience, we hope to see a goodly number represented.

*Lyman B. Smith distinguished between the two in the book BROMELIADS IN COLOR (Edited by Victoria Padilla, 1966, being a compilation from the bulletins of The Bromeliad Society.) DYCKIA: Petals joined centrally to a tube formed by the bases of the filaments, but their margins free, yellow or orange; seeds winged,

HECHTIA: Flowers functionally unisexual with one sex aborted, inconspicuous, never more than 15 mm long; ovary from wholly superior to slightly so.

I don't know what all that means, but I try to have something for everyone.

CACTUS-- STAFF OR DISTAFF ? (Cont'd.)

A sad mistake indeed, as the opium salts are habituating and destructive. Pellotine was successfully used in the treatment of locomotor ataxia.

Mescaline in another alkaloid which is well known. It causes exhalation, It is a fermented juice drink called "Mescl". Lophophora Williamsii is also known as Peyote buttons. Its habitat seems to be Zacatecas and Chihuahua on both sides of the river near Laredo. To the natives it is a "sacred mushroom" used in religious rites and is attributed with Divine properties. In 1845 Lemaire described this plant under the name Echinocactus Williamsii. Later it was transferred to the genus Anhalonium. The following alkaloids have been isolated from the "button": anhalamine, anhalonine, anhaloidine, lophophorine, and pellotine--all are closely related. Anahaline is identical with hordenine found in barley.

From time immemorial the Kiowa Indians of the Rio Grande Valley used this drug which produces a delirium similar to Cannabis Indica, but with the difference, mescaline, etc. give colored hallucinations, dilation of the pupil, muscular relaxation, loss of sense of time, circulatory depression and a body analgesia. Lophophorine injected in rabbits gave a reaction similar to strychnine tetanic convulsions. It was once thought to be useful in asthma and neuralgia. The Carnegie gigantea (Engel.) has the alkaloid Carnegine which is similar to the Anhalonium alkaloids, along with Pectenine. Of small value. Little research has been done on other cactus plants at this time. Sad is the fate of much of our natural history, bypassed in our anxious quest for new horizons.

Epiphyllum Society

Bill and Ruth Nelson are forming an Orchid Cactus Club in conjunction with the well-known San Diego hybridizer, Dr. J.W. Troxwell. There are already twelve members to the Society and membership is \$5.00, which includes your National Membership. For information please contact Mr. Bill Nelson - 5 - at 298-3349.

EACTUS



"What is so rare as a day
in June? Then if ever come
perfect days; Then heaven
tries Earth if it be in
tune, And over it softly
her warm ear lays; Whether
we look or whether we lis-
ten, We hear life murmur or
see it glisten". Remember
when SMOKE GETS IN YOUR
EYES was a song and not a
weather report?? "Every
clod feels a stir of might,
An instinct within it that

reaches and towers, And groping blindly above it for light, Climb to
a soul in grass and flowers". It's not only the sweet earth that's
filled with activity these days...the works of TONY D'ATTALIO will be
displayed at the Natural History Museum for the next two months. Nat-
ionally known for his scientific illustrations of microscopic sea and
wild animals--zebras, giraffes, camels, etc. TONY it isn't true that
EDITH BILLAYER said the picture in the Evening Tribune was a good like-
ness, we all know it was your "smiling camel".

"Now is the high tide of the year, And whatever of life hath
ebbed away, Comes flooding back with ripply cheer, Into every bare
inlet and creek and bay, Now the heart is so full that a drop over-
fills it, We are happy now because God wills it". The May program was
an outstanding affair..the planted rock display ogled and ogled the
delights of all who came. Using mostly "feather rock" little plants
nestled in valleys, on mountain sides and precarious precipices..
from the rocky shores of Maine to the sunswept beaches of Southern
California..from Zygodactylus festively festooned from a petrified
pinon to grand granite outcropping of "Jim Knows" One quickly runs
out of adjectives and searches in vain for proper superlatives to
convey, not only the prepossessing physical attractions but the in-
ward pleasure receives from the obvious delight participants express-
ed through their creations for this plutonic pageant. The most mag-
nificent magma was the prodigious pyramid of pyrocrystalline submit-
ted by RUTH RICHARDSON with plant-like waterfalls and a wide range of
Cacti and succulents depicting both flora and fauna. Running a close

CACTUS SQUEEZINS second was ELAINE NIEHAUS with a pretentious pinnacle emerging from a gentle crush of succulent foliage with calculated hues that crescendoed in a sea of pale pink bloom of *Oscularia deltoidea*. LEE PHELPS placed third with a "Cactus Cabob" of *Echinoceriads* and WALTER SCOTT received Honorable mention for a "Cactus Caboodle", both of which would be the asset of any garden--but it was truly the day of the "Succulent".

"We sit in the warm shade and feel right well, How the sap creeps up and the blossoms swell, We may shut our eyes, but cannot help knowing, That the skies are clear and grass is growing". Rhw hall was filled with other plants in preparation for the "Open House" that followed the next day. Tables were arranged giving due emphasis to the special feather rock cactivity, but in no way did it diminish the grandeur of the assorted spectacle of plants that had given the Bragging Table its most ostensive manifest we have seen in quite some time. Over 400 people breached the temptation of the Iris Show, Phillipine Folk dancing, an All Breed Dog Show, out doors Art part, a Modern Music Concert and a hippie wedding by the Bowling Green to have an almost gourmandizing look at the prides of our life. HAZEL SCOTT warmly greeted people at the door and set them in the mood for a courteous fleecing of their odd change by SOPHIE LOYLAND and NIBBY ALINE-FELTER for the benefit of Torrey pines. JACK RAMAY spent most of the day picking out spines from his hands for his own personal well-being, leftovers from a gargantuan plant moving task in setting up for the show and a generous amount of beginner's curiosity.

"No price is set on the lavish summer, June may be had by the poorest comer...it's fair time...June is the Queen of Months...the perfumes that are June's alone mingle and follow the winds through open windows...it's Fair Time...coming as fragrant messengers from our gardens' bounty...it's Fair Time...finish your transplanting and repotting; stake your trees; pinch off new growth...hurry...it's FAIR TIME..do your weeding, spray for insects present and future...hurry...fertilize all those plants...hurry...water, water everything, IT'S FAIR TIME...Nature is in full stride and she will not pause... yes indeed...IT'S FAIR TIME.

May's latter blossoms linger in our memories near to the choicest experiences of summer...not the least of which was our experience of the evening of May 21st when BRIAN LAMB came to town and projected

CACTUS SQUEEZING the finest slide review "Exotica" imaginable..the blossoms of the free flowering Rebutias and Lobivias seemingly jumped right off the screen to become boutonnières and nosegays..it was rare indeed to hear such a smooth unhurried delivery with each tongue twisting botanical name spoken as though they were laid out and cleanly dissected before your very eyes, as well as ears..pictures of a new genus whose galaxy of star-like flowers looked like wrought-iron fantasy that commands the entrance to Vacation Village's restaurant-cabaret complex..we shall call it Multiflorathickastema..only because

we can't read our own notes..gosh..the seventy odd (we use the term loosely) in attendance enjoyed the best Sir George could muster and prattled in casual splendor..our residente "El Vivo" was dressed as though he had just returned from pallbearing chores in the lathhouse.. with suit and tie, no less. DOC CORLISS spoke of BRIAN'S country home, garden, the "Exotic Collection" and proper English "tea"... BRIAN spoke of Cac"tea"..at any rate, whether it is Cac"tie" or "tea" or coffee or milk, it capped off one really outstanding month for the ol' Wagonmaster and his captivating cactivities.

And June is yet to come..we start off with the WORKSHOP. WO I, BOB TAYLOR will be there with grafting materials, and will give instructions on plant splicing this year..by that we mean it's not fair for him to do ALL THE WORK, besides you'll be missing that certain thrill that comes only by grabbing hold of the problem and doing it yourself.. get the spine?? At center ring left will be LEE WHELPS demonstrating how to classify Cactus through photography and extend the enjoyment of floral activities long after winter renders your garden to rest.. something like chewing Juicy Fruit after the coffee break..bring camera and all the gear. In center ring right OLIVER and SOPHIE LOYLAND will be showing various forms of vegetative propagation. BILL NELSON will

SHORT GARDEN STORY

Gopher burrows into Helen Witham's "Native Plants Garden".

Very hungry, chews off five-inch Agave flower stem.

Rodent with big tummyache.

Helen with headache of similar proportions.

QUESTIONS: Aspirin? Digel? Trap?

ANSWER: Trap.

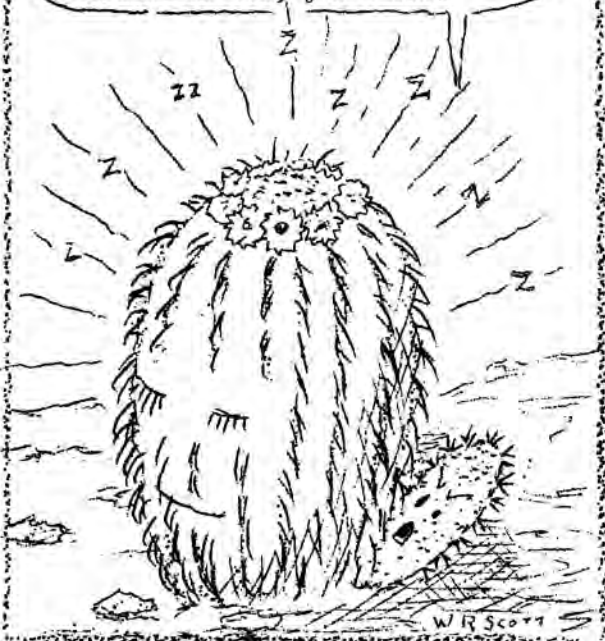
Agave, gopher, tummyache, headache, all gone. --end



CACTUS SQUEEZINS do features on Hanging Baskets. MINNIE ROGIL may be there to demonstrate the art of flower preservation. RUTH NELSON will do her bit on helpful hints on keeping plant records. Possibly JIM STALSONBURG will elucidate on the "YORGIN" method of seed propagation. A veritable three-ring circus. If there is anyone we have left out who wishes to participate, bring your goodies along and check in early with Program Chairman IONE HUBNER. What?? No flower arrangers?? By all means there will be a Braggin' Table competition!, also the ever present Exchange Table which incidentally brought forth many of the plants that were incorporated in the winning Feather Rock displays..

This is our last opportunity to pass on the fun schedules for the Fair Exhibit preparations..there will be Potluck Parties on June 13 and 14 also on June 20 and 21..check for time and things with WARREN BUCKNER, Fair Chairman at 469-1391..WALTER SCOTT, Graft Display Chairman at 296-6022..LEE PHELPS, Cactus Garden Chairman--582-8236 or NIBBY KLINEFELTER, Succulent Chorewoman at 276-6517. Where do we fit in..we are not sure from this vantage point, bit "in" is the key.. "in-volved"..the quotes to this point havd been from James Russel Lowell..not to be out-quoted, our Hon. Treasurer GLENN HEYER says in reference to award money earned for Fair Exhibits, quote: "we often forget what gives money its value..somebody exchanged work for it". However, it is less important to redistribute the wealth than it is to redistribute opportunity. (A. Rhidd)

HEY THERE, Borrego Barrel, ol' Boy, WAKE UP! You cast a dark shadow, and besides you're standing on me. ECHINOS like to absorb a little sunshine too, you know.



Help Wanted

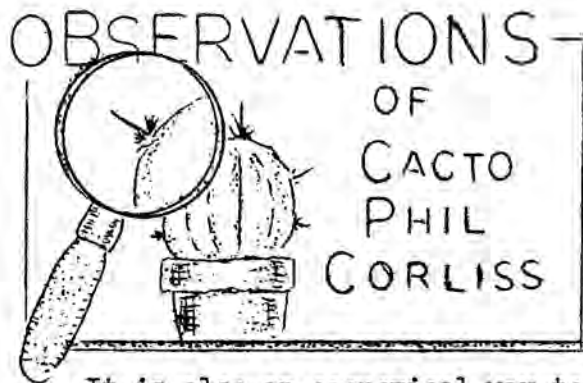
San Diego Cactus & Succulent members on June 13-14, June 20-21, July 6 at — Del Mar help collect, haul, label, index, tear-down, make coffee and sandwiches, sign up at the monthly meeting or call - 469-1391

LIBRARY OF THE SAN DIEGO CACTUS AND SUCCULENT SOCIETY (BOOKS)

- Agaves, the---August J. Breitung
Aloes of Tropical Africa and Madagascar---G. W. Reynolds
American Rock Gardens---Stephen F. Hamblen
Botany for Gardeners---Harold W. Rickett
Bromeliads---Mulford B. Foster
Bromeliads, the Colorful House Plant---Jack Kramer
Bromeliads in Cultivation---Robert and Catherine Wilson
Cactaceae (Two volumes)---N. L. Britton and J. N. Rose
Cactaceae---T. Taylor Marshall and Thor M. Bock
Cacti (Two copies)---John Borg
Cacti (Two copies)---Walter Kupper and Lia Roshardt
Cacti and Other Succulents, The Book of---Claude Chidamian
Cacti and Other Succulents (Four volumes)---Edgar and Brian Lamb
Cacti and Succulents (Two copies)---Walter Haage
Cacti and Succulents---A. J. Huxley
Cacti for Decoration---Vera Higgins
Cacti in Colour, Encyclopedia of---Edgar and Brian Lamb
Cacti in Southern Africa---Rolf Rawe
Cacti for the Amateur (Two copies)---Scott E. Haselton
Cacti of California---E. Yale Dawson
Cacti of the Southwest (Two copies)---W. Hubert Earle
Cactus and Other Succulent Plants---H. M. Roan
Cactus Growing for Beginners---Vera Higgins
Cactus Guide (Two copies)---Ladislaud Cutak
Color Compact (Text in Japanese)---E. Akayama
Crassulas in Cultivation---Vera Higgins
Cultivation of the Mesembryanthemaceae---G. Schwantes
Cultivation of Succulents, The---H. Jacobsen
Desert Notes (Two copies)---Mary Graham
Easy Gardening with Drought-resistant Plants---A. and I. Nehrling
Epiphyllum Handbook---Scott E. Haselton
Exotica III---A. C. Graf
Family Album---Charles Glass
Flower Arrangement---Marjorie Way
Flowers and Plants, Color Dictionary of---Roy Hay and Patrick Syngé
Flower Encyclopedia---Albert E. Wilkinson
Flower Family Album---Helen F. Fischer and Gretchen F. Harshberger
(page 1 of 2)

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- Flowering Cacti and Other Succulents---H. Rose
Flowering Cactus---Raymond Carlson
Flowering Succulents---Gordon Rowley
Gibbaeum Handbook---G. C. Nel
Glossary of Succulent Plant Terms---W. Taylor Marshall, R. S. Wood
Golly, What a Garden---Arthur F. Otis
Grasses, The---Alma Chestnut Moore
Growing Plants from Seed, Complete Book of---Elda Haring
Gymnocalyciums---R. Ginns
Handbook of Succulent Plants (Volumes 2 and 3)---H. Jacobsen
How to Know Cacti---E. Yale Dawson
Kaktusy (In Czechoslovakian)---F. Pazout, J. Valnicek, R. Subil
Mammillarias---C. Marsden
Morphology of Cacti---Dr. Franz Buxbaum
Native Cacti of California---Lyman Benson
Naturalist's Lexicon and Addenda---Robert S. Woods
Observer's Book of Cacti and Other Succulents (Two copies)---
S. H. Scott
Our Native Cacti---Ethel Bailey Higgins
Print of My Remembrance---Reuben V. Vaughan
Robert's Rules of Order---Henry M. Robert
Rock Plants---Arlette Davids
Stapelieae (Three volumes)---White and Sloane
Study of Cacti---Vera Higgins
Succulent Euphorbieae---White, Dyer and Sloane
Succulents and Cactus---Jack Kramer
Succulents---H. Jacobsen
Succulents for the Amateur---J. R. Brown
Succulents in Cultivation---Vera Higgins
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Vegetation and Flora of the Sonoran Desert (Two volumes)---
Forrest Shreve and Ira L. Wiggins
What Kinda Cactus Izzat?---
Reg Fanning
CACTUS AND SUCCULENT JOURNALS (Bound Copies)---1931, 1932, 1933,
1934, 1935, 1936, 1937, 1946, 1950, 1951, 1952, 1953, 1954, 1955,
1956, 1957, 1958, 1962, 1963, 1964, 1965, 1966, 1967, and 1968.
INDEX FOR CACTUS AND SUCCULENT JOURNALS THROUGH 1967 (Page 2 of 2)



GROWING CACTUS from seed can be most rewarding. There is great satisfaction in producing attractive flowering plants from seed. It is often the only way to add many wanted varieties to your collection because despite the availability of seed (often collected in habitat) to commercial growers, there is a dearth of available plants of many varieties since commercial growers tend to raise proven sales favorites.

It is also an economical way to add to your collection. Even if you can find a dealer who offers these scarce varieties you will certainly pay over one dollar for most propagated plants and up to ten dollars or more for collected plants, which may be difficult if not impossible to reestablish. Packets of 10 to 25 seeds will cost from 10 to 25 cents depending on source and quantity discount. From one packet of seeds you may raise from an half dozen to two dozen mature plants. The extras make nice gifts or you can swap or sell them to other collectors. With some species there is such variation in the seedlings that you may wish to keep several of the plants. For instance, I have seedling plants of several *mammillarias* that have wide variation in spine color--white, yellow, red, black, brown, etc. Others have variation in spine count--four spines to each tubercle on one plant and six to each tubercle on another.

Besides growing species from seed, there is adventure in raising your own hybrids. Some of the most desirable cactus plants in the trade today are the hybrids produced by Harry Johnson and Ed. Hummel. The possibilities pique the imagination.

I would suggest that before you spend money for seeds that you practice your growing technique with seeds produced on your own plants. I think it is safe to say that types that grow well for you as mature plants will be easiest to raise from seed. In my own case I find that *mammillarias* and the *neoporteria* group are easiest. Most general books on cactus have sections dealing with growing from seed and there are numerous small books and pamphlets (such as the one by the Lambs) written especially on the subject.

There are a few important differences between growing cactus seedlings and mature plants: 1) Rather high temperatures are important for germination and rapid growth, 2) seedlings should not dry out or their growth is checked, 3) Too much sunlight will retard growth and too little light will make tall weak plants. 4) "Damping off" and the inroads of the larvae of the scarid fly must be prevented.

COMMERCIAL SOURCES OF CACTUS SEED: Domestic: Many cactus dealers in the United States offer seeds but the variety from most is limited and often only in "mixed" packets. By far the best source is New Mexico Cactus Research, P.O. Box 787 Belen, New Mexico, 87002. 50¢ for catalog, free to regular customers, which lists over 2,000 varieties of cactus and over 500 other succulent seeds. Packets cost 25¢ with increasing discounts on amounts over \$5.00. I plant over 100 varieties from this source each year and find germination usually very good.

Overseas: Members of "The Exotic Collection" (see Journal) get free seeds and the opportunity to buy other packets each year. Germination is good and some choice varieties are offered.

Karlheinz Uhlig (7053 Rommelshausen, Kreis Waiblingen, Lilienstrasse 5, West Germany) offers plants and seeds. I have not ordered from them but their 1970 seed list (free) contains over 1,000 varieties of cactus seeds starting at 10¢ a packet.

H. E. BORN (D-5810 Witten, Postfach 1207, West Germany) also lists about 1,000 varieties of cactus and 500 other succulents in their free catalog. I have received fine plants from this firm but have not tried their seeds.

Other sources are often listed in the Journal and in the African Succulent Plant Society publication. After writing last month's column I received a large shipment of exciting plants from Su-Ka-Flor (Switzerland). (Next mo. plants, insects)