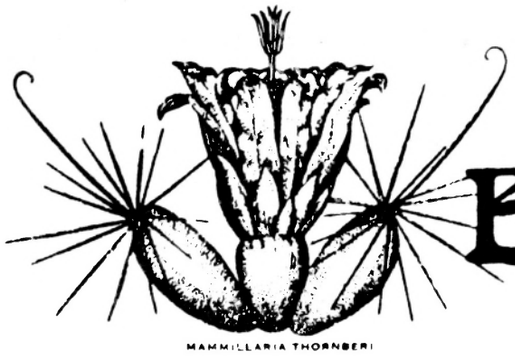

Espinas y Flores

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

XVII, Number 12 December 11,1982

Holiday Cheer

DECEMBER MEETING

Saturday December 11, 1982

1:30 P.M.

Casa Del Prado, Room 101, Balboa Park

Program

Election of Officers

Special Plant Exchange

Gala repast ala buffet

A free gift plant for those who attend

Please registered members only - No guests -

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IN THIS ISSUE

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Deadline for January Issue December 27? Really early, but so is meeting
Will get out somehow- Happy Holidays to you all -- Mary

****

ELECTION OF OFFICERS FOR 1982

The following people have been recommended by the nominating committee to be placed on the ballot for the 1982 SDCSS election of officers:

President - Frank Thrombley
First Vice President - Leroy Phelps
Second Vice President - John Pasek
Recording Secretary - Susan Clements
Corresponding Secretary - Robert Kent
Treasurer - Warren Buckner

All have agreed to serve in the position for which they are being nominated.

PLEASE DO NOT VOTE UNTIL THERE HAVE BEEN NOMINATIONS FROM THE FLOOR.

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NEWS NEWS NEWS

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The library will NOT be open at the December meeting.....

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Thanks to Carl McCloud for donating plants to the sale table...

****

Pots will be available for sale at the December meeting. .....

****

We would like to know how many would be interested in a tour of the Living Desert at Palm Desert, California.

****

Volunteers are needed to be librarian at the Botanical Memorial Library in Room 104, Casa Del Prado one Saturday or Sunday per month from noon until 4 p.m. If interested, please call Leila Calamari- Phone 232-8232 - Your service will be deeply appreciated.

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The San Diego Zoo's popular Botany for Breakfast series continues this winter with three new lectures. Each lecture focuses on plant species in current cultivation at the Zoo which are adaptable to domestic landscapes, and emphasizes growth characteristics, landscape uses and cultivation requirements. Speakers are available to answer individual questions following each presentation. Acutal specimens may be reviewed by following a self-guided tour map, which also includes an appendix providing further information and suggestions on how and where to obtain propagation material.

Lectures begin at 8 a.m. and 10 a.m. in the Zoo's Rondavel room. $6.00 fee includes continental breakfast. Non-Zoo members must also pay Zoo admission. Advance reservations are required. Call 231-1515, ext. 412.

December 18

"Conifers of the San Diego Zoo", presented by Hatch, assistant horticulturist, San Diego Wild Animal Park.

January 22

"Bamboos of the San Diego Zoo", presented by Richard Haubrich, President, American Bamboo Society.

February 26

"Aloes of the San Diego Zoo", presented by Bill Knerr, plant propagator, San Diego Zoo.

CALENDER FOR 1983

MEETING DATE	SUCCULENT OF THE MONTH	CACTUS OF THE MONTH
January 8	Canary Is. Succulents Dorothy Dunn	Lobivia
February 12	Large Aloes Rick Latimer	Epinhytic Cactus Rick Latimer
March 12	Dudleya Dorothy Dunn	Echino Fossulocactus
April 9	Bursera, Pachycormus, & Fouquieria	Coryphantha
May 14		
June 4 & 5	ANNUAL SHOW & SALE	
June 11	Cissus & Cyphostemma	Espostoa Frank Thrombley
July 9	PICNIC	
August 13	Sempervivium & Jovibarba	Ferocactus Dorothy Dunn Frank Thromblev
September 10	Stapeliad (Pick a Genus)	Thelocactus
October 8	Mesembryanthemum (Pick a Genus)	Neochilenia
November 12	Succulent Bromeliads	Monotypic Genera Dorothy Dunn
December 10	CHRISTMAS PARTY	

NATURE'S FREAKS

CRISTATION, MONSTROSITY, AND VARIEGATION IN SUCCULENT PLANTS

Of all the bizarre manifestations exhibited by an already somewhat outlandish group of plants, cristate and monstrose growth and variegated pigmentation in cacti and succulents are without a doubt the most outrageous and provocative. Although all collectors of these plants are fascinated by them, reactions to them are varied, ranging from the incredulous to enthralled to shocked revulsion. There are those who think they are among Nature's most beautiful and intriguing creations, and those who think they are ugly, grotesque, repulsive malformations. It's almost impossible to be indifferent to them.

To add to the mystery and controversy surrounding them, although scientists, botanists and collectors have been studying the phenomena of cristate and monstrose growth in plants for many decades no one has yet come up with any conclusive answers to: WHAT CAUSES THESE PLANTS TO DO THIS? Everything from lightning to hailstorms to woodpeckers to radioactive sources in the ground has been suggested. But the incontrovertible fact remains that, to this day, no one has ever been able to deliberately force a plant to crest or produce monstrose growth, despite extensive experimentation in the past. "Unspeakable atrocities" were committed in the name of science; plants were attacked with everything from knives to X-rays to acids in futile efforts to force plants to produce crested or monstrose growth.

Succulent plants may develop several kinds of abnormal growth, including: (a) fasciation or cristation, (b) monstrose growth, (c) proliferation, (d) carunculation, (e) variegation or chimera, and (f) loss of normal pubescence (hair).

Crests can be found in almost all plant families, and are quite common in cacti and other succulents. The terms cristation and fasciation frequently are used somewhat interchangeably in the literature. One authority says that any malformation on top of a plant is a fasciation, and if it follows a symmetrical pattern it is crested. Although cristation may appear in different forms, it always consists of multiple buds instead of a single bud. Almost any part of a plant may be affected - stem, flower, fruit, or leaf, and sometimes even aerial roots. George Lindsay explains it as follows: "The growing apex of a plant is composed of a group of dividing cells called the meristem. The meristematic cells divide and supply the new cells which differentiate into the specialized tissue systems of the stem. In normal plants the apical meristem is a growing point, and the new tissues are built up around and under it in a symmetrical manner. In a crested plant the apical meristem is a "line" rather than a "point", and new tissues are not produced evenly on all sides, resulting in fan-shaped stems."

Much confusion exists as to the actual differences between crested and monstrose growth. According to Claude Chidamian: "The cristate plant differs from the normal because its growing tip, in-

stead of continuing its usual symmetrical form, develops laterally, producing a flattened growth like a cockscomb which may in time become twisted and convoluted. A monstrose plant, on the other hand, develops multiple centers at its growing tip, from which irregular growth springs." Monstrose growth is usually somewhat dwarfed, with both leaves and stems being foreshortened and possibly gnarled and twisted. A.D. Houghton presented this concise definition: "A normal plant has two axes of symmetry; a cristate has one plane of symmetry; a monstrose plant has no planes of symmetry."

Proliferation occurs when a plant continues to split up and form offsets in an abnormal way. This is due to multiple bud formation, but not in a fasciated form. In exteme cases the plant may never flower.

Carunculation is associated mainly with Echeverias, and appears as raised "warty" excrescences on the upper leaf surfaces. It occurs naturally in some forms of E. gibbiflora, and is deliberately exaggerated and emphasized in such man-made hybrids as E. 'Paul Bunyan', E. 'Cameo', and E. 'Edna Spencer'. H.M. Butterfield, who, along with his protegé Dick Wright, did extensive work along this line, had this to say: "Such caruncles may appear on the upper leaf surface near the base during summer growth of several kinds of Echeverias but rarely persist long. Theories have been advanced to explain why such caruncles appear during the active growth of the leaves and may partially or entirely disappear from leaves formed during the winter months. One theory is that the upper epidermal layer of cells is thin, and with the pressure of rapid growth the cells are forced upward in the carunculate area much like popcorn pops. As the inner pressure is lessened when growth declines, the caruncles may not grow much or may not form at all."

Variegation is the bicolor (or sometimes tricolor) effect resulting from a localized failure of pigment to develop. This is often a temporary condition caused by nutritional deficiencies, and many variegated plants must be grown from cuttings rather than leaves if the variegation is to be retained. There are several kinds of chimeras (plants composed of a mixture of two or more genetically different tissues), and in some kinds the abnormal appearance is limited to the surface cells and buds. If an adventitious bud is formed from the inner cambium layer of cells which are not changed, then the new growth reverts to the normal form or to the normal green where color is involved. Some variegated plants contain so little chlorophyll that they cannot survive on their own roots and can only exist on a graft.

Although many experts have theorized as to the possible causes of these abnormal types of growth, heredity is the causative factor most favored by writers and investigators. Several authorities are of the opinion that many cacti have an inherent tendency to crest and that various external stimuli can trigger this tendency into expression. Some succulents with crested growth produce a good percentage of crested seedlings. Others believe that environment is a major factor. Houghton thought that external conditions such as soil type and temperature have a profound influence on the growth of cristates, and that under poor conditions they show a tendency to revert to the normal type of growth. Butterfield, on the other hand, said that reversion occurs when growing conditions are optimum. Others believe that diseases and viruses play some part in

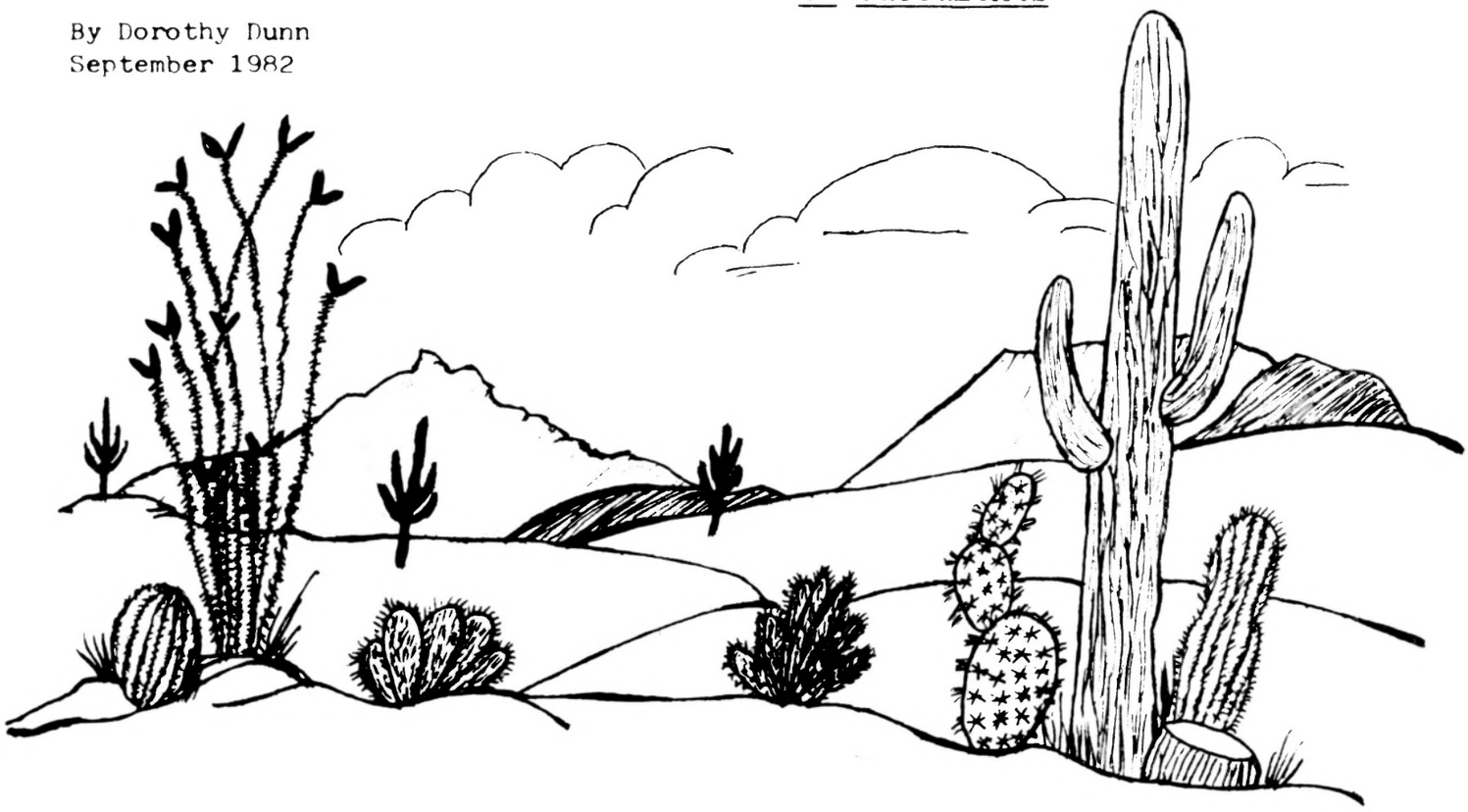
the occurrence of abnormal growth, and E.C. Hummel believed that the larvae of certain insects might excrete chemicals inside the plant, causing it to crest.

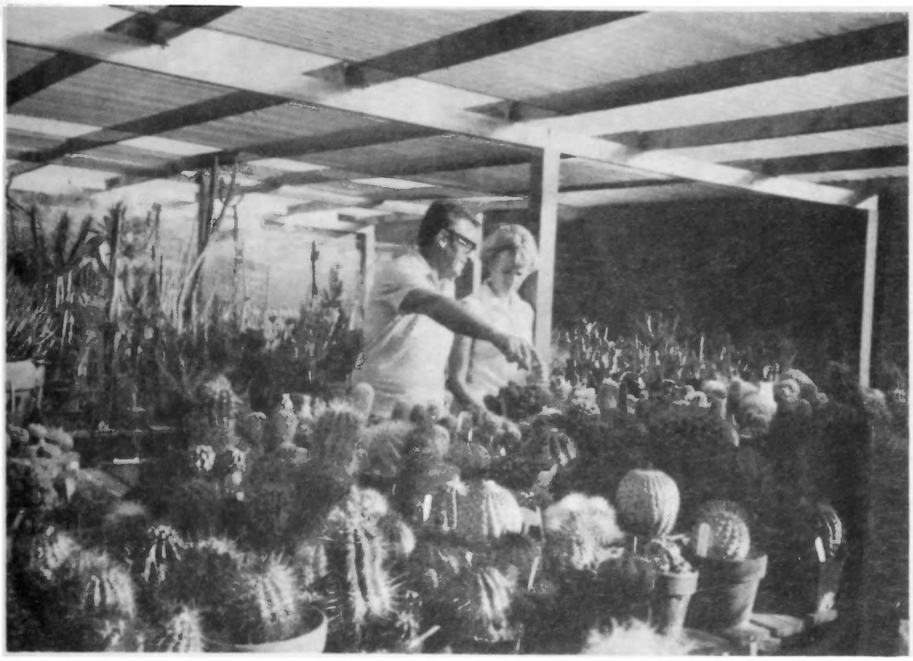
Those who speculated that injury or damage to a plant might be an important factor in cristate or monstrose growth subjected plants to some unbelievably cruel and inhumane treatment in their efforts to prove their point. Wolthuy, in 1938, subjected young plants of the genus Echinopsis to the following "stimuli" in an attempt to induce cresting: Cutting across the center of the growing tip; cutting away the top; sticking rusty nails into the plant; stabbing the plant all over with a knife; striking heavy blows with a steel brush; inflicting similar blows on decapitated plants; pouring salt, soda, and other irritating materials into wounds; injecting lactic acid, oxalic acid, formic acid, various other chemicals and pure water into the plant; and planting in various types of soils with different degrees of moisture. Houghton tried: cutting through the growing center; crushing the plant; slow crushing by increasing the weight; needling; puncture by electro-cautery; injury by electric sparks and chemicals. Others have experimented with drugs and the application of X-rays. All kinds of peculiarly malformed plants resulted, but not a single crest.

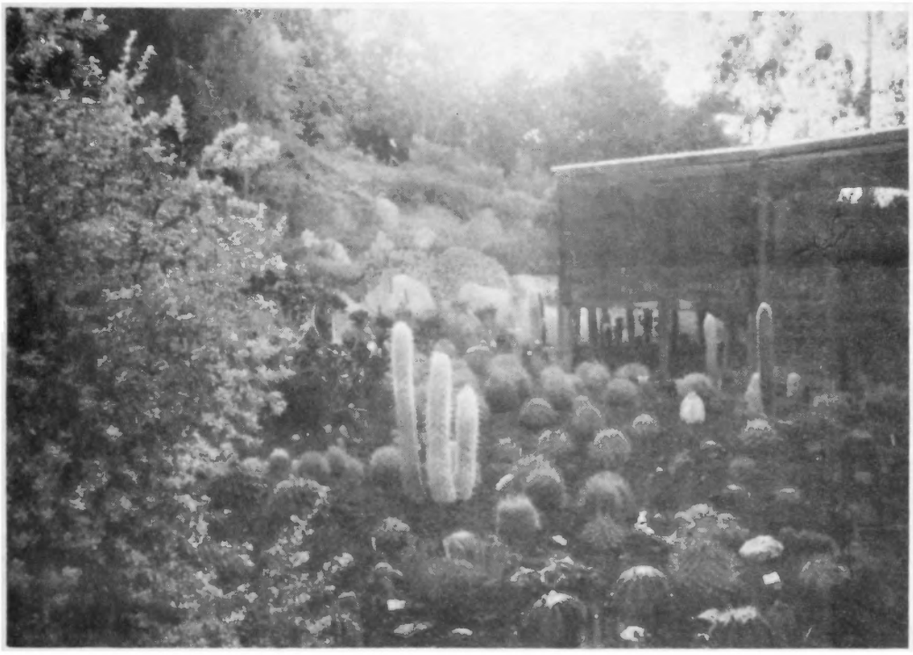
It would appear that so far the plants have triumphed over man and his science, and through all the theorizing, experimentation, and torture have refused to divulge their secret. No one knows why plants crest, and no one has ever been able, through any artificial means, to make a plant crest. Their fortitude and resistance deserve our respect.

References cited: Cactus and Succulent Journal of America, various issues
Rowley, Gordon: The Illustrated Encyclopedia of Succulents

By Dorothy Dunn
September 1982







MEET BEVERLY AND BOB KENT

After serving in the Foreign Service for 28 years, Beverly and Bob Kent have settled in San Diego County. Bob and Beverly entered their first Cactus and Succulent Show last summer and came away with "Best in Show".

They have been collecting for about 15 years, seriously the last 6 years Their last 4 years in the service was in Baja, California. While there they had a permit to collect plants and when they moved to the United States they brought their collection with them. They said their garden "just grew," but the landscaping shows a definite eye for design. Neither one could name a favorite. Because space is a problem a plant has to be very special to be taken in now. Bob and Beverly both spend 3 - 4 hours a day maintaining the garden.

In their spare time Bob has gone back to school and Beverly like to weave. Both are native Californians.

New members are: Donna J. Barker, San Diego
JoAnn Berquist, San Diego
Capt. John Duncan, USN
Les and Jerre Ellsworth
Janet and Robert Hancock
Eduardo and Julie Marty
Mr. and Mrs. C. O. Saucedo

Bragging Plant Winners for November were:

1st - Martin Mooney for his Crassula deceptrix
2nd - Carl McLeod for his Pachypodium lealii ssp. saundersii
Tied for 3rd - Rick Latimer for his Ceropegia dichotoma
Dorothy Dunn for her Crassula "Buddhas Temple"

SAN DIEGO CACTUS & SUCCULENT SOCIETY

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The San Diego Cactus & Succulent Society is open to all persons interested in growing cacti, other succulents and exotic plants. Meeting are held the second Saturday of each month at 1:30 pm in Room 101, Casa del Prado, Balboa Park. Board of Directors meetings are held after the general meetings. Annual dues are $7.00 per family. Single copies of Espinas y Flores are 60 Cents.

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