

Espinas y Flores

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

.....
TOMO OCHO. NUMERO DIEZ
.....

.....
DICIEMBRE 1973
.....

P O I N S E T T I A

'Christmas Flower'



Euphorbia pulcherrima, Willd

The 'Poinsettia' is a native of Southern Mexico. In habitat it is a branching shrub up to 10' high with a woody trunk and milky juice.

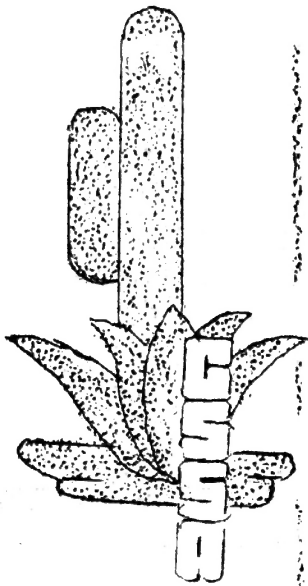
Leaves are obovate and deciduous. The terminal leaves form dark red velvet bracts which surround the tiny yellowish flowers which appear during the short-day Christmas season.

Poinsettias do well in the out-of-doors in our climate. They may do better in a warm southern exposure, preferably against a wall which is sheltered.

Poinsettias are one of the first plants to show the effects of frost. One can usually tell about how cold it was during the cold nights by watching the poinsettias. If the temperature drops below freezing and the plants have no protection, the effects show very quickly, the leaves wilt and drop.

If one has a parent plant, he may take stem cuttings, each with four or five eyes, and start new plants.

Poinsettia culture has become a sizeable industry in our county. A variety of colors have been produced in the showy bracts. The plants are grown in pots and 'timed' to produce long lasting flowers at the appropriate season. The original one-color plants are unobtrusively disappearing from the scene and being replaced by the more colorful, longer lasting varieties.



CSSA CONVENTION --- 1975

- - Board Meeting - -

CSSA CONVENTION Coorganizers Ed and Betty Gay came to San Diego on Friday, November 16th to meet with the local Coordinators (Dr. Philip G. Corliss and Ye Ed) and the Officers and Directors of our society. Full time was devoted to Convention matters. Solid progress was made.

Convention headquarters will be the BAHIA HOTEL on Mission Bay. Dates are May 12 to 16, 1975.

A very interesting 5-day program of activities and speakers is taking form. Several speakers are already committed, including local talent. Field trips were discussed at length. It appears conventioners will have the opportunity to visit the greatest concentration of cactus-growing nurseries to be found anywhere--north San Diego County.

The very important or should we say 'most important' matter of selecting a Convention Registrar was settled. Pat Mooney of Chula Vista will lead a group of three or four to handle registration matters.

The very efficient Regalement team--Jean and Leta Hapeman--will assume responsibilities for refreshments--coffee, punch, lemonade and incidentals. The activity couldn't be in better hands.

Probably the most exciting and unusual, or one-of-a-kind evening event scheduled for the last day of the Convention (Friday evening) will be a boat trip on the Bahia Bell on Mission Bay, across to the Catamaran Hotel, for a 'LUAU' and a boat ride back on the same Bahia Bell.

A very unusual, also one-of-a-kind, publicity feature for the Convention will be a special issue of CALIFORNIA GARDEN, a local publication, the oldest continuously published journal in the English language--three score and X years.

A title for the convention was discussed. Since it will be in San Diego County which has more cactus growing nurseries than any other equivalent area, the title may reflect that thought.

A preview of Bahia's convention facilities was scheduled for Saturday morning at 10 o'clock. A group gathered and under the guidance of Jerry Kaschak it took a guided tour of the facilities for the purpose of finding the answers to all questions involving the convention. Many mental and pencilled notes were made.

A long time and much work lies ahead but very satisfactory progress is now being made. We are looking forward to seeing a record crowd in San Diego during the week of May 12-16th, 1975. Start making your plans NOW !!

DECEMBER MEETING -- December 15th, Room 104, Casa del Prado -- 'SPIRIT-OF-THE-SEASON' program. NO PLANT SALES, NO EXCHANGE PLANTS, NO PLANTS-OF-THE-MONTH, but do bring your membership card for a grand drawing of super plants, courtesy of the Taylors. And a Xmas 'regalement'. BE SEEING YOU ON SATURDAY the 15th.

MUCHAS GRACIAS for the November regalement to: Virginia BUCKNER, Gertrude CISEK, Rose D'ATTILIO, Perlso LEWIS, Jean and Leta HAPEMAN.

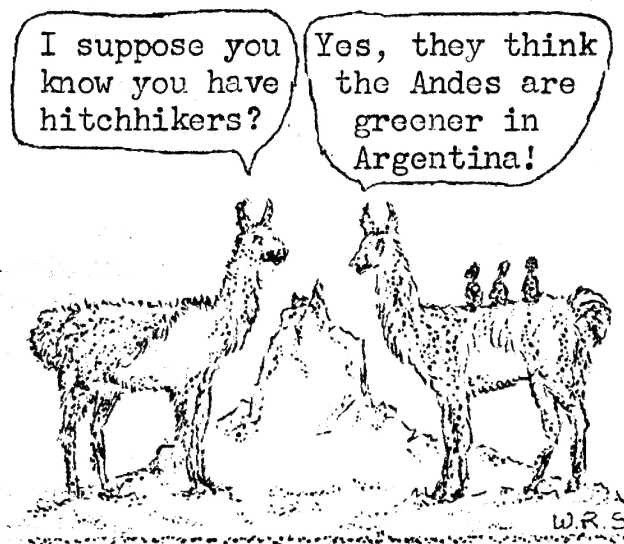
DUES ARE NOW PAYABLE -- \$5.00 to our new Treasurer: John A. KORVER
Rte. 2, Box 2001-C, Escondido, CA 92026, for the calendar year 1974

YOU GOTTA BELIEVE IT --- IF YOU SEE IT !
OR HEAR VICTOR TURECEK TELL IT!

While trudging slowly and painfully short of breath at a very high altitude in the Argentine Andes, all the while light headed, Victor Turecek was very much surprised to see Opuntia vestita. It wasn't supposed to be there. Its habitat is La Paz, Bolivia, on the Pacific side of the Andes and at an elevation of 12,000 feet. It doesn't appear to have 'evolved'. Then how was it 'transported'?

Opuntia vestita is a very interesting little cactus. It grows in clumps and it is very fragile. Its stems break apart easily. The fruit falls off and strikes roots and starts new clumps. The seed don't have what is ordinarily expected of seed. The areoles are filled with white wool and long hairs. The flowers are deep red. And there is a cristate form which is remarkably beautiful. A clump would bring to mind a curled-up sheep resting in the distance. But crossing the Andes. How about that?

Victor surmises that Señor O. vestita came across and over the Andes from Bolivia to Argentina on a llama as a beast of burden for the Indians of the Andes. Bolivia and Argentina are on opposite sides of the Andes and a little more than llama-spitting distance apart. Victor doesn't say the llamas crossed over to Argentina just to accommodate and deliver Señor O. vestita. The trip could have been incidental. Or Señor could have been llama food.



Distant Pastures are Greener

That brings us to Julianne Rice. This past summer she was displaying an Opuntia vestita in a small pot. It was in flower and its flowers were very red. She could hardly believe what she had. No one could vouch for it from experience.

Questions are like rabbits, they multiply. Did the flowering take place in Holtville. Do you have a picture of the Andes in your garden? And how do you keep Señor O. vestita from learning about a 12,000-foot plus loss in elevation and a corresponding increase in temperature and humidity? And will it flower next summer?

Our readers should be enlightened !!

. . . . Ye Ed

ESPINAS Y FLORES takes this opportunity and means of saying "Thank You" to the following individuals for permission to use a most comprehensive article on "The Saguaro and its Use" with an unusually comprehensive reference to:

Jan G. BRUHN, Faculty of Pharmacy, University of Uppsala, Sweden, who is studying Cactaceae alkaloids, and who is a member of Sociedad Mexicana de Cactologia, Nordish Kaktus Selskab and Cactus & Succulent Society of America for his report on "CARNEGIA GIGANTEA: The Saguaro and its Uses" (see pages 13 to 16, this issue) who writes:

"You have my permission to use this article in your bulletin", and to:

Joseph G. SUTTON, Manager of Publications, the New York Botanical Gardens for "Permission is herewith granted to the Editor of 'Espinass y Flores' to reprint the article concerning the economic aspects of the Saguaro cactus by Jan. G. Bruhn." And to:

R. Mitchel BEAUCHAMP, Dept. of Biological Sciences, Herbert H. Lehman College, Bronx, New York, who called the article to our attention and arranged the necessary details for its use in our bulletin "Espinass y Flores".

SUCCULENT-OF-THE-MONTH --- Red-flowering plant

Julianne Rice

All that mysterious time of Peace and Glory is at hand once again. Would that we pause now and again to reflect upon our great good fortune to be a part of such a homogenous group where sharing is a rather taken-for-granted way of life on a given Saturday in San Diego at Casa del Prado.

Perhaps those distant receivers of Espinas y Flores will be assured that those of us at December's Christmas Party shall be in perfect attunement and will be wishing them the heartiest of Holidays.

When one thinks about red-flowering plants the mind gleefully bounces along a most impressive array of genera. Of course we are fairly sure Lee had December blooming varieties in mind. Eh?

It would seem natural to visualize the poinsettia first. And rightly so! (Page one--what a coincidence?) However, since so very much excellent material has for years been devoted to that lovely plant I should like to call attention to an equally lovely one that, perhaps, fewer persons have associated with the Christmas holidays.

Have you grown, or owned, Kalanchoe blossfeldiana? If so, you can understand the enchantment of having a window filled with the inviting warmth of millions of exquisite red flowerlets, not for just a few days, or a month, but all winter long.

Around Thanksgiving of last year while browsing thru Mike Buckner's delightful place in Old Town, I became enamored with one such plant and naturally took it home. Later it helped to decorate Floral's Open House. Subsequently it travelled over the mountains and was placed in a window facing east where it literally bloomed itself into the hearts of all who saw it.

People actually stopped by to inquire if they might see it at closer range and to ask what it was and where it might be purchased. Sorry you were so far away, Mike!

Am I remembering correctly that you, Mike, said you thought it was a hybrid with Blossfeldiana parentage?

So many of the Kalanchoes come from Madagascar with others found in the Transval.

'Tis not the season for scientific reasoning, rather a time for loving our plants. And because those of us who have been around a few years know and love Mike and Edie, that plant of last Holiday season was loved and enjoyed to the very fullest.

Bless you all, and love us, one another !

CSSA SPECIAL ACTIVITY ----- DO NOT FORGET !!

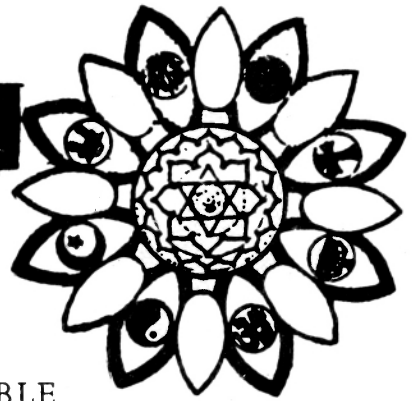
Our January meeting will be on Saturday the 12th in Room 101. It will be the occasion of the CSSA Special Quarterly Meeting. The program will be "PLANT-O-RAMA" given by a number of our club members, each with a plant of his choice or a special topic, and each with great liberty to be himself.

AND REMEMBER, EVERYONE is invited to take part. So "come for lunch" on that date. Take the opportunity to become acquainted with our out-of-town visitors. Lunch will start earlier than usual, during the noon hour, and last longer, long enough to permit everyone attending to pass the regalement table. And the regalement table will be well stocked! Full details next issue.

NIBBY'S

Note Book

december, 1973



NO SALES TABLE

NO BRAGGIN' TABLE

NO PLANT "EXCHANGE" TABLE

DECEMBER MEETING is the 15th.

We will meet in Room 104...101 has been rented (!)...we'll have to count our blessings we have a room to meet in at all, as we cosily crowd in Room 104 on December 15th.

We are repetitious purposely -- for apparently a change of date or time or place is hard to remember. Mr. Moon, custodian, said that people showed up with plants the first of December... and were most surprised...we expect more will show up the 8th unless they remember

DECEMBER 15th!

*Write it on your heart that every day
is the best day in the year.*

*He is rich who owns the day,
and no one owns the day
who allows it to be invaded
with fret and anxiety.*

*Finish every day and be done with it.
You have done what you could.
Some blunders and absurdities
no doubt crept in;
forget them as soon as you can.*

*Tomorrow is a new day;
begin it well and serenely
and with too high a spirit
to be cumbered with your old nonsense.*

*This new day is all that is good and fair.
It is too dear,
with its hopes and invitations,
to waste a moment on yesterdays.*

RALPH WALDO EMERSON

But bring canned goods or toys or good used clothing or blankets for the Taylor's Mexican missions...if you forget, add to the usual fund the Society donates with good old used MONEY! December 15th!

Augie Pfeiffer urges you to bring your MEMBERSHIP CARDS...he even) said - and he is Chairman of the Christmas party - no tickee, no) Dec 15th! plantee. Martin Mooney & John Korver, Treasurers, will be on hand)

To backtrack to November's program. What was Victor's accent? He was born of Czechoslovakian parents (Turecek) in Argentina and consequently learned to speak Czech before he learned to speak Spanish. Or English. Victor travelled over 2,000 miles in little over two weeks.* Great experiences were relived before our eyes with the excitement of sharing the hunt. There was something about the altitude and exertion that made a headsplitting, mindblowing CL-A-A-ANG of the rock-pick hitting rocky soil for specimens...which made a memorable impression on Victor, and consequently on us. * In Argentina.

He projected pictures of the tiniest cactus of all - Blossfeldiana lilliputana - a dime would cover one - clusters of them in crevices of rocks. Of a Pereskia with a trunk like an elephant tree. The one with long blonde curling spines was Parodia masaii - and Oreocereus celsianus, white and hairy, was 6 or 7' high and three feet in diameter. Thanks for an outstanding program, Victor.



Leo Pickoff, who accompanied the President of the LA C & S Society for the program, filled in for Lee Phelps, conducting Plant-of-the month session. Leo didn't fool around - WINNERS WERE: Loyal Joe Bibbey's "Santa Claus" cactus (Pilosocereus leucocephalis) and Emery Cotten's crested Stapeliad varigata. Ruth Richardson had to miss another meeting - I got the pictures, Ruth, for November - but WHO WILL TAKE PICTURES OF OUR DECEMBER MEETING? Ruth has to be out of town...again...and reminded us that her two years are up. Anyone with a hankering to be Club Historian and/or Club Photographer speak right up. To The Board.

There were two new plant vendors. Rose d'Attilio had "Lad Cutak" Dykias - much to Warren Buckner's delight. Elvira ("Wanna-Buy-a-Plant") Bibbey had "Black Knight" Echeverias. (Loyal Joe has a real dream trip coming up this month - he is being paid to collect seashells on the Mexican coast as part of his WORK - really!)



Also present at the November meeting - Huernia (pronounced wernia we're late in discovering) zebriana. The bloom of shiny chocolate life-savers surrounded by yellow-and-brown zebra-striped stars contrasted strongly with the gray-blue pillers of the plant bodies. Whose?

Betty Baker was unable to attend so Audrey Justice was going to be in charge of the Plant "Exchange" Table. But Audrey hurt her back over-tidying the garden so Margaret Lickert took a turn with the table. The heavy paper she brought made setting up and cleaning down a breeze ...fortunately, for she was on her own doing both...while Ilse Sommerfeld and I muddled around "helping". The BIGGEST PLANT ever was donated by Nellie Kennett - Pilocereus palmerii whose flowers are pink. During the time she owned it Nellie NEVER ONCE CARRIED IT. Why should she? Either her husband at home or Some Nice Man at the meeting lugged it about...Nellie came in the Naval Hospital on Friday for surgery and was home the following Wednesday - and is rapidly recovering.



Ruth Nelson is also improving and was able with Bill to attend FLORAL'S "OLDFASHIONED CHRISTMAS" 1-2nd of December, which was beautiful and full of ideas...The Nelson's were impressed (as were many others, including Helen Howe) by the delightful display by Thelma O'Reilly and Mary Burchill representing C&S. Their approach was whimsical and their creations amusing and much admired...The long-haired prickly pear made a perfect snowman among the snowballs of mammillarias... Another member entered an exhibit but for the B&B Garden Club of Coronado - Ann Boyd made a beautiful little Christmas tree of podocarpus trimmed with miniature cardinals and candles...next year, succulents? (Oh - and the TINIEST gingerbread men!)... We saw Joan Fleeer there, too, and are happy to report that she's moved back to San Diego: 1924 33rd Street, SD 92102... Also ran into Mabel Twining of LaJolla.

Suppose there will be less "fueling around" during the gasoline gap...Suddenly economy in energy is not only a smokescreen but a watchword...what a year it has been...the jade plant has been provoked into full bloom quite early...there was an "I AM" slug in the cookie jar... and we've a lot to look forward to - planning for the CSSA Convention in '75...Ed & Betty Gay were down to whet our appetites...in the meantime



**Merry Christmas
New Year's Olé!**

By this time it was very hot. No breeze stirred and there was but little shade with the July sun overhead. After eating, everyone took a long siesta. In the late afternoon, when the shadows were long, the pickers started out again, but Ted and I stayed in camp to learn how the jam was made.

The responsibility for this job was entirely up to the matriarch, who was all business as she readied another batch for cooking. She had no clock or thermometer and used a gourd ladle to measure out the starting mixture of three parts fruit to two parts water. Over a hot mesquite fire it soon came to a boil, and continued boiling for about twenty minutes while it was stirred briskly. When the mixture looked right she used a gourd to dip it out and put into a large loosely woven basket setting on top of another wide-mouthed olla, allowing only the juice to pass through it into the olla below.

The cooking olla was rinsed out with water to remove any sand or trash that had settled to the bottom, then the juice was put back for more cooking. Now, with the fire cut down, the juice simmered for about five hours, when it gradually thickened into a delicious syrup. The day's labor netted about one gallon of syrup. It was stored in the small ollas, then sealed with pieces of deer hide or cloth stretched over the mouth, tied down and sealed with a mud paste which dried hard and tight.

In between stirring the juice, Grandmother spread the pulp out on the canvas to dry for a whole day, after which it was worked by hand to remove the seeds. All the women take turns at this tedious job. Kneeling on the ground, with great patience and perseverance, they rub the pulp between their hands until most of the seeds fall out. Later the seeds are roasted and ground into a powder. Mixed with sugar, it makes a favorite Papago sweet. The pulp, now free of seeds, was dried for another full day to be used as the foundation for jam or wine or stored as dried fruit for winter use.

While the women were busy with their chores, the men kept the fires burning with wood packed in from the desert.

DeGrazia had been busy making sketches, which he later used as a guide for an almost-life-size mural of the Papago Fruit Harvest on the walls of Tucson Press Club's early quarters.

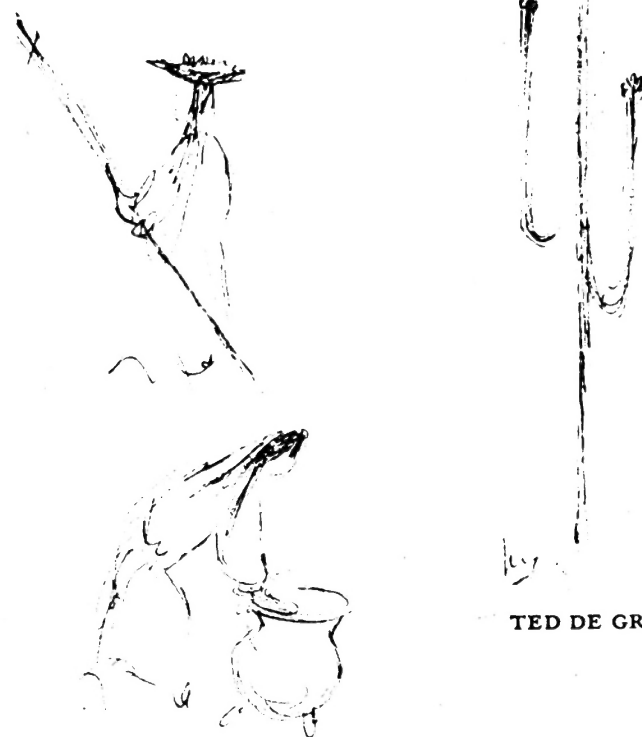
With the syrup boiled down to proper consistency and the seedless pulp dried, the main ingredients for jam were ready. Dried pulp mixed with water was put into the boiling olla and cooked for half an hour. It was stirred constantly to be sure that the pulp softened evenly. When it swelled, forming a gelatin-like mass, it was transferred to a large mixing olla and beaten vigorously for half an hour.

By the time the Papagos and the birds had gathered all the saguaro fruit, everyone was sure that it would be a blistering hot summer. The turned-up fruit pods had not enticed the rain god to send some water down to the parched earth. Now it was up to the medicine men to get ready to send up their prayers.

The Round House had been readied and the very large ollas placed inside at the far end. The wine-maker was called in, and donations of pulp and syrup soon began to come from families in the community. What goes on inside is known only to the community's patriarch, the elders and the medicine men.

PAPAGO SAGUARO HARVEST (Part II)

by Charles W. Herbert



TED DE GRAZIA

The Round House, about forty feet in diameter, is a low structure made of poles, brush and mud with one small opening to the east. A blanket covers the opening and there is a pole ramada in front. Depending upon the potency of the raw materials and the temperature, it may take a week or more to make the wine. One thing is certain. It will be plenty hot inside. The wine-maker spends a lot of time there working with the mixtures and following the wine-making ritual.

When the wine is ready, a rider is sent out through the community to inform families of the date set for the Rain Making Ceremony. Leaders of several neighboring communities are invited to come and offer their prayers also.

In the afternoon of the day before the ritual was set, families began to arrive close by the Round House, selecting anyplace that offered some shade. Abandoned houses and ramadas were favorite spots for camping out. By sundown many families had converged on the Round House area, exchanging greetings and talking.

Soon a figure came out of the Round House and began chanting a doleful song. The others joined in, then started dancing. The singing and chanting was spine-tingling, coming from the dancers whose bodies, swaying in rhythm, were silhouetted against the still pale sky. Soon the dancers were almost enveloped in a cloud of dust and the chanting was interrupted by loud coughing or an occasional coyote call.

After quite a spell of the same chanting by the medicine man and the response by the dancers, they took a break and sat down or laid down on the benches or canvas which they had brought along. The singing and dancing went on all night, while some mysterious things — maybe wine-tasting — went on in the Round House.

Bill Nelson had a number of goals he hoped to reach during this second time around as President. One was an inventory. With Ruth's ever able assistance it was completed.

Ruth supplied a list to be posted in the lockers and maintained in our records. To head off hectic hollering of WHERE'S WHATEVER? and WHO HAS WHICH? - to forestall further frantic fumbling at Fairtime for supplies -- herewith:

C O N T E N T S o f V A R I O U S L O C K E R S

KEYS
LOCKS
LOCKERS
are numbered
to correspond



THE PRESIDENT HAS THE KEYS

In Room 104

- Lockers #1 & #3 - Library supplies and books
- Locker #2 - Numbered tags for use in identifying plants at Fair - also wires for tags
- Unnumbered tags - Plant names on plastic tape
- Lights and cords - Display boxes
- Orange-colored velour table covers (3?)
- Locker #4 - Fertilizer (to sell)
- Locker #7 - BOOKMOBILE

In Room 101

- Locker #5 - Fertilizer (to sell) - Long clear plastic table coverings
- Locker #6 - Kitchen supplies

In Kitchen

- Locker #8 - Refreshment supplies

(CONCLUSION)

Soon after sunup the sky overhead was clear blue, but a hot haze hung along the horizon as the sun beat down with 110 degrees. The moving air was like a draft from a hot oven. Clouds of moving dust -- north, south, east and west -- pinpointed the coming in of other guests. There was no special announcement but they seemed to converge on the Round House from all directions. They were walking, riding horseback, riding in wagons or automobiles, each seeking a likely spot with some shade.

Horses were unhitched from the wagons and reins dropped on the saddle horses. An air of tension settled over the gathering. As the sun beat down more intensely there were calls from the spectators: "Hurry. Let's get going. It's HOT!"

In front of the ramada four large sheets of canvas had been spread out in a wide circle with one at each compass point. On each canvas sat a group of elders from another village. The chief of the ceremony stood in the middle getting everyone in proper position. The blank spaces between the canvas sheets were quickly filled with men and boys. Some riders came in leading their horses. Shy little girls stood in the back but soon edged in closer. There were more calls from the spectators for the ceremony to get started.

Three of the principal elders came out from the ramada and took positions in the center of the circle. Each took a turn at speaking. All the men in the circle bowed their heads as they listened, and most spectators were attentive despite the heat which was now at high-noon.

The wine-boys had disappeared into the Round House by this time, and as the speakers finished they came out bearing the eight baskets filled with wine. They offered them first to

the four groups of visiting elders then passed it along to the spectators, who were now packed in pretty close.

Drinking the saguaro wine is the essential part of the ritual to cleanse the body and make it worthy to call on the gods for rain for a parched land.

Two more elders came from the ramada and went to the eastern end of the circle. There they gave prayers for rain as they faced the east, then again as they faced the north, the south and west. After this they prayed for all the Papagos.

They called for the people to rejoice, as they walked around the circle singing and chanting. The leaders urged everyone to join the circle, to dance and sing together -- loud. They prayed again to each direction and asked the clouds to come and bring rain. Again and again they called on all to join together in the circle, which was already pretty large and lively.

Some of the women came out from under the ramada and sat in the circle. The boys went back for a second round of wine and passed the eight baskets to all spectators who wanted to join in the ceremony. Many women partook of the wine, as did a few of the boys who were trying to emulate their elders.

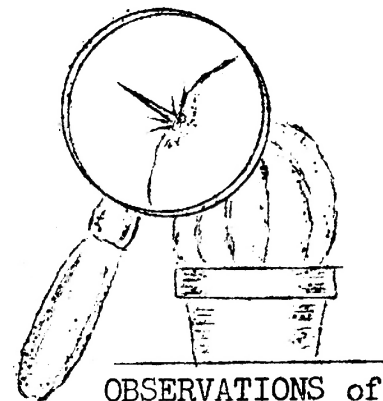
Dancing and singing all done and the wine all gone, the crowd dispersed, most of them going back to their homes. But for the elders and principal participants, this ritual was only the beginning. They would be attending a series of four, or possibly more, neighboring Rain Making Ceremonies. And they can make it -- that's for sure. They have the fortitude and would be pretty well cleansed and able to make a stronger plea to the rain god.

Then it would rain as it always does in July after the Rain Making Ceremony. ☒ ☒ ☒

POTS: CLAY OR PLASTIC?

Dr. Philip G. Corliss

The question of choice between clay and plastic pots is now almost academic since availability and advantages of plastic pots quite overshadow those of clay pots. I think it is in order to summarize the advantages of both types since many growers remember that not too long ago all plants were grown, and quite successfully, in clay pots. The principal advantages of plastic pots are:

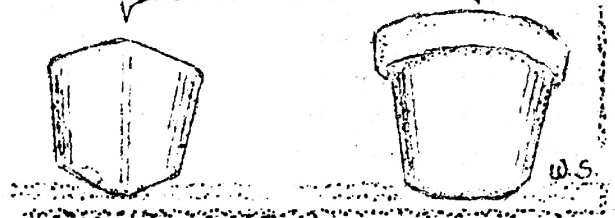


OBSERVATIONS of
Cacto-Phil Corliss

- 1 -- Plastic pots are much lighter than clay pots. This is important when considering the weight which shelves must support. Clay pots may weigh up to twenty times as much as plastic pots of comparable capacity!
- 2 -- Plastic pots are much less susceptible to breakage from being dropped or tapped to remove plants for repotting. This factor is modified by the fact that "economy" plastic pots are available, made of much thinner and more fragile walls. Like most plastics these pots will in time become "crystallized" and break very easily, as when lifted by the rim or tapped for repotting, etc.
- 3 -- Plastic pots are much easier to keep clean when in use--the outer surface may be wiped clean with wet or dry cloth. They are less likely to be stained by spillage of fertilizers containing iron, etc.

Dr. Corliss says the advantages of plastic pots overshadow clay pots.

He also says clay pots may be more esthetically desirable.



- 4 -- Plastic pots are much easier to clean for reuse because of their smooth, impermeable surface.
- 5 -- Plastic pots have much thinner walls, which permits the use of more pots in a given space. This is especially true of square pots.
- 6 -- Plastic pots require much less frequent watering as there is no loss from evaporation thru the walls as is the case with clay pots.
- 7 -- Plastic pots usually have more drainage holes.

- 8 -- There is less likelihood of damage to plants in repotting as roots do not cling to the walls, as is the case with clay pots.
- 9 -- Plastic pots, because of thinner walls and lighter weight are more easily stored. Again, the square pots are especially suitable in this regard.

I recommend the use of plastic pots of dark color--black or dark green--rather than white or light colors. Enough light is transmitted through the walls of light-colored plastic pots to stimulate the growth of green algae.

Whenever possible buy plastic pots with thick rather than thin walls. The space required is not much greater and they will last longer with less breakage, although they will cost more.

Most plastic pots are made of rigid (styrene) plastic but some round pots, especially in sizes of five inches diameter or more, are available in flexible (polypropylene) plastic. Breakage of the flexible pots is of course much less. I do not like them, however, for several reasons, one of which is the fact that they often do not have sloping sides and cannot be economically stored, regarding space.

There are still good reasons to use clay pots. The well-known fact that plants in clay pots develop roots next to the pot walls signifies that the plants seek the air provided through porous walls. A very porous soil mix must be used and allowed to dry out completely between waterings to provide aeration of roots in plastic pots.

Clay pots may also be more esthetically desirable, especially if used in the garden or in uncrowded collections.

Pots, either clay or plastic, with a diameter of less than three inches dry out too fast. They do not offer optimum conditions for culture or growth. They are acceptable only for display or plants for sale.

W A T E R C U L T U R E

Growing without soil.

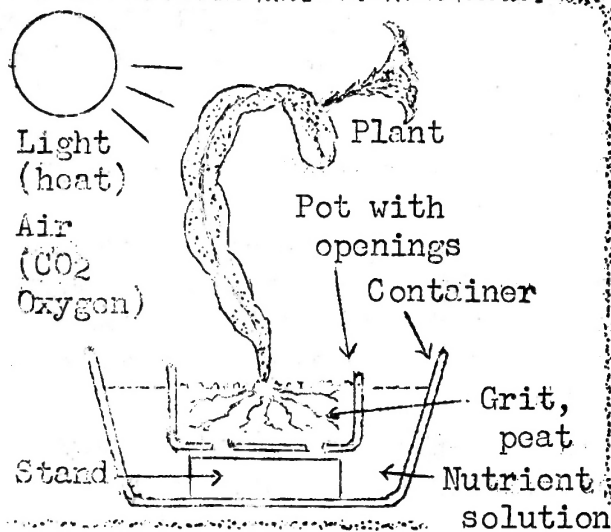
There was good interest in the proposed 'Water Culture' project at the November meeting. A dozen members signed up, a sufficient number to proceed with the project. They are:

Emery COTTEN

Eric GUNNARSON

Ione HUBNER

Joeff & Audrey JOHNSON



Water culture

Ken W KENDRICK

Nibby KLINEFELTER

Rick LATIMER

Martin L MOONEY

Doris F RAKE

Walter R SCOTT

Ruth STANTON

Bill WAITE

This project may develop into a very interesting and practical activity. It is open to other interested individuals at the December and following meetings.

Various aspects of water culture will be discussed in future issues of "E y F" so that those who are interested may be able to develop their own projects. The immediate goal will be a special club program at which individual efforts may be shown at a club meeting, and perhaps judged....even awards. Who knows??

Water culture is a fascinating method of growing plants without soil. It holds ever-increasing promise for the increase of food production in our economy. In fact the November 24th issue of "The National Observer" gives out with a very comprehensive report on "Green(house) Thumbs" together with some startling statistics on the present interest in the 'hobby'. The number of terrarium sales would indicate a "boom" in indoor gardening, and the extent of greenhouse purchases and construction is startling. The costs of some setups appear to be inflated but they may be in keeping with the times. Water culture is not mentioned specifically in the article but it surely is in the picture.

Of course in our local project we would not want to limit our activities exclusively to cacti or epiphytes. If some members have different ideas--tomatoes for example--that would be 'right on'. It is the method or the technique we are interested in.

There are many amateur, club or home gardeners who would like to grow plants without soil, if they only knew how to go about it. The word 'hydroponics' or water culture leads one to believe that the process is highly specialized and requires particular skills. Such is not the case. Anyone can do it.

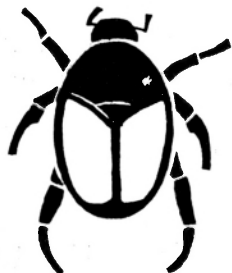
It is hoped in our case that all who are interested will: 1) Start thinking about the method. 2) acquire simple containers as shown in Franz Borg's article in the Oct. issue of 'E y F' page 4. and 3) Select one or more plants (epis, epiphytes, rhipsalis, etc) for a start.

Names and sources of useful chemical fertilizers will be discussed in a future issue. If you were not at the November meeting and would be interested, add your name to the above list.

WANTED: A small plant of *Rhipsalidopsis rosea*, preferably rooted. To Ed

OVERHEARD: A group of three was discussing the possibility of coming up with a slogan or by-line for 1974. One of the trio came up with--
"What do you say, Joe?"

ERADICATING THE JAPANESE BEETLE



BY KEN D. FRANKLIN

ENVIRONMENT SOUTHWEST

Popillia japonica
Japanese Beetle

From July 2 of this year when the first specimen of the Japanese Beetle was found in Balboa Park, until the foliage treatment program was suspended on September 14, there was great concern over both the appearance of the insect and efforts to suppress it. Here is the latest report on the eradication program. A second article will appear next year correcting some misconceptions concerning the Japanese Beetle.

■ On July 2, 1973, a single specimen of the Japanese beetle, *Popillia japonica*, was found on a lawn in Balboa Park, San Diego. This was the first find of this dreaded pest in California since it was discovered in Sacramento in 1961 and eradicated in 1965. Sixteen more beetles were found later, giving San Diego the dubious honor of the only established infestation of Japanese beetle west of Missouri.

Why all the fuss and furor over the finding of 17 specimens of a small insect?

A native of Japan, the beetle was recorded in the United States first near Riverton, New Jersey, in 1916, when 16 beetles were found. It has since spread over much of the eastern United States, from southern Maine to northern Georgia and as far west as Missouri. The loss of agricultural production and the extensive control measures run into millions of dollars annually. If allowed to spread naturally in San Diego, a similar loss would follow, not only for the County, but for California as a whole. Our agriculture, ornamental plantings, and native vegetation would suffer.

■ Grubs of the Japanese beetle feed on the roots and underground stems of grasses and other plants. Often this feeding goes unnoticed until the plants show stress or are killed. When grubs are numerous, they have caused serious damage to turf. Adult beetles feed on over 275 different kinds of plants. They often congregate in large numbers and feed on flowers, foliage, and fruit. Some of the more important hosts are corn, soybeans, peaches, pears, and roses.

In the eastern United States, the beetle spends about ten months of the year in the ground as a white grub. It is about one inch long when fully grown and lies in the soil in a curled position.

The adult beetles first appear on their favorite food plants in the late spring or early summer. They are a little less than one-half inch long, with a shiny green body and bronze-colored outer wings, and with six small tufts of white hairs along each side of their bodies under the edges of the wings. The male and female beetles look similar, but the males are usually slightly smaller. The adults are very active for four to six weeks and then gradually disappear. They fly only in the daytime and are particularly active on warm, sunny days.

From time to time, the female leaves the plant on which she has been feeding and burrows about three inches into the ground, usually where there is turf, to lay a few eggs. Then she returns to the plants and continues to feed. Following the feeding and mating activities, all the adults die.

By midsummer, the eggs hatch, and the young grubs begin to feed underground. In late autumn, they burrow four to eight inches deeper into the soil and remain inactive all winter. In early spring, they return to the turf area, where they continue to feed on roots until late spring. They then pupate and, in about two weeks, emerge from the ground as adults. This life cycle takes one year.

■ Federal and State governments are working together to control the Japanese beetle with surveys to find it, quarantines to keep it from moving to new areas, and treatment to suppress it. Meanwhile, safer and more effective means are being sought to combat it. Government workers use survey traps to find new infestations. Also, favorite host plants are examined for active beetles. Beetle-infested areas are placed under Federal and State quarantines to prevent spread.

Biological controls have proved less successful than chemical. The milky disease, harmless to humans, warm-blooded animals, and plants, attacks the immature form of the Japanese beetle. It lives in the soil for long periods and can kill successive broods of beetles; but the spores must be applied to areas which are already heavily infested, and its effects on the beetle population may not be evident for several years. While it may kill the grubs in the soil, it does not prevent beetles from flying in from untreated areas.

Several insect parasites that prey upon this pest have been brought from Asia. Only one of them, *Tiphia vernalis*, has been recovered after release in the United States, and the recovery rate has

been so low that it probably will never become established as an effective control agent.

■ The first specimen of Japanese beetle found in Balboa Park was not reported for 11 days. When it was tentatively identified, the County Department of Agriculture began an extensive detection program. County personnel inspected more than 4,620 private properties and those parts of Balboa Park within half a mile of Upas Street and Morley Field Road where the first beetle was found. In addition, 500 traps were set out, containing a lure specifically attractive to the Japanese beetle.

Up to July 20 the total catch was one beetle. Was this one a forerunner of an as yet unlocated infestation, or was it just a casual hitchhiker? That seemed possible, since single finds are occasionally made in California. On July 20, however, the second beetle was found near the site of the first. Then, with agonizing regularity, until July 30, 13 more Japanese beetles were found — all within the Park: nine in the rose garden behind the Museum, three near the War Memorial Building. Later, two more beetles were trapped outside the Park: one at El Cajon and Alabama streets and the other at 30th and Redwood streets.

County, State, and Federal authorities now planned the eradication of the Japanese beetle. All areas within half a mile of each beetle find were treated. Traps were set out and serviced weekly, and visual inspection was made up to one mile from each find. The County worked within the Park, and the State, outside the Park. Federal authorities provided expertise, traps, and pesticides.

Chemical control measures were started August 8. A total of 621 acres within the Park were treated, including the entire Zoo and scouting facilities and parts of the Naval Hospital and Highway 163. The State treated 80 blocks of residential area north and northeast of the Park. Chlordane 25G was applied to all turf areas and immediately watered into the soil to control the soil-inhabiting larvae. This was a one-time application, and it will not be repeated. Sevin 80S was applied to all green foliage to a height of 15 feet above the ground, to control adult beetles. Multiple applications of Sevin were made in the Park.

The foliage treatment program was stopped September 14, when adults would have completed their life cycle. The trapping and visual inspection have been reduced but will continue until spring.

Sometime before next summer the program will start again. 1974 should tell us whether the program to eradicate this important pest in San Diego has been successful.

CELESTIAL SPECTACULAR

DECEMBER 28th --- KOHOUTEK COMET

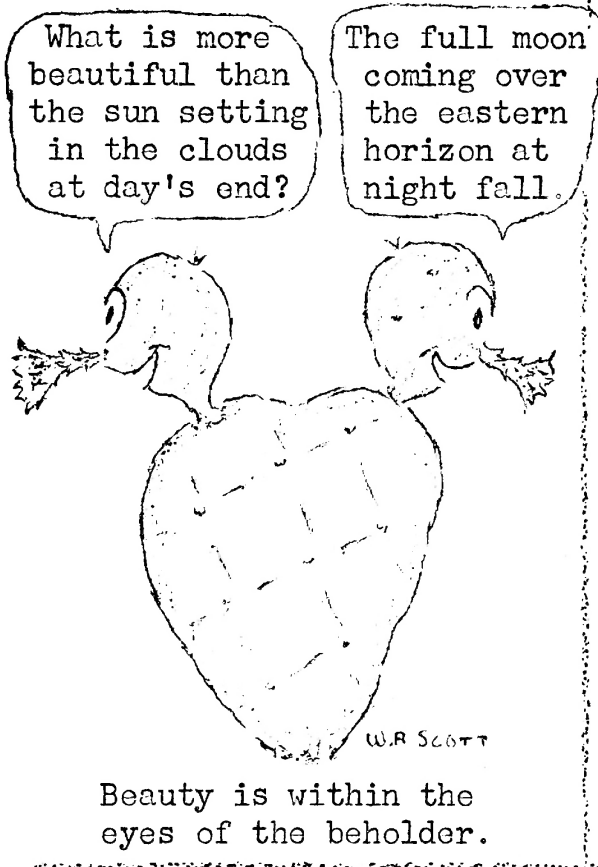
Everyone is eagerly awaiting the appearance of Kohoutek Comet. It will appear at its brightest on December 28th to highlight our Christmas season. It will be the most spectacular celestial sight of our time.

This approaching traveler from outer space will provide a show shortly after Christmas which very probably can be viewed by almost every person on earth. Some of us recall Halley's Comet much earlier in this century. It was regarded as spectacular. Maybe it was just a warmup for the Kohoutek show.

Kohoutek will be visible to the unaided eye very soon; it is visible with glasses now to those who know when and where to look. It will become more brilliant as it approaches the sun. The closest approach, said to be about 13,000,000 miles to the sun will be on December 28th, the date of our 'spectacular'.

What will everyone be doing on that date when the sun settles below the western horizon? Maybe it will be bright enough to be seen during daylight hours. What a coincidence, Kohoutek is an expender of fuel in its own right, maybe it will be the cause of a considerable saving of fuel on earth.

After December 28th the comet will begin its long journey to the outer reaches of our Solar System, maybe to return much later, but don't plan to wait for its return. The long journey will consume about 75,000 years. Lots of things, good and bad, are destined to transpire on this planet in that period of time.



The travelling mass (debris as it is called) constituting the comet consists of frozen gases and particles, all of which will increase in brightness as the solar winds of the sun tend to force them away from the sun, thereby forming a visible, lighted tail which at all times is pointed away from the sun. The tail of course travels as fast or much faster than the head of the comet, and in its departure the tail will lead the way.

An estimate of Kohoutek's nucleus ranges from 10 to 15 miles across with its attendant clouds of cosmic substances, dust, vapors, steam, etc which surround the head or nucleus, either preceding or trailing the nucleus will appear to be about twice the size of the moon. Astronomers, physicists and other scientists are diligently preparing to analyze, photograph and study all aspects of Kohoutek in its approach and passage in order to better understand the composition, behavior and travels of comets and also to obtain a better understanding of the origin and workings

of our solar system

We on earth have no reason to fear its approach or presence as it will not approach within 75,000,000 miles of us. It is believed that in the past a comet or comets have collided with the earth, but no collision is anticipated in the current instance.

Meteor showers sometimes follow the orbits of comets. If any of us are around long enough (unlikely) we may experience curtain calls in the form of meteor showers.

Kohoutek is destined to be the most analyzed, observed and written about comet in history. How fortunate that we in our time will be able to witness such a celestial spectacular on Dec. 28. Wouldn't that just tingle a cactophile's spines?

Carnegiea gigantea: The Saguaro and its Uses

JAN G. BRUHN¹

The saguaro, Carnegiea gigantea, is a tall cactus native to the desert area of southern Arizona and northern Sonora, Mexico. It has been used for centuries among the Indians of the region as a source of food and drink, as well as for a wide variety of other purposes. The cactus has taken a great place in the life of the Indians, most notably the Papago, who still collect the fruit and make a wine for ceremonial purposes from it. Several botanical, ethnobotanical and phytochemical studies have been made on the cactus, whose flower is the State Flower of Arizona.

Introduction

"The Saguaro seems to serve only two important functions—to entertain and cheer the desert traveller, and to furnish high places for the nests of woodpeckers. There is nothing about it with which to eat, drink or make; and we are very glad of it."

W. T. Hornaday (26).

The saguaro (pronounced sah-wáh-ro) or giant cactus, *Carnegiea gigantea* (Engelm.) Britton and Rose (synonym: *Cereus giganteus*) is a familiar plant to anyone that has seen a Wild West movie. Besides being a most decorative and "entertaining" plant, it has played an important role, not in a movie, but in the life of the Indians within its range. *Carnegiea gigantea* is a plant indigenous to southern Arizona and northern Sonora, Mexico. This area, known as the Sonoran desert, has not given primitive man many means of sustaining life. Still this is the home of the Pima and Papago Indians. To them, the most useful member of the desert flora certainly was the giant cactus. Extensively used for food and drink, as well as a wide variety of other purposes, it greatly influenced their lives. This is reflected not only in Indian legends, nursery tales and religious beliefs, but also in the fact that they still today utilize the saguaro as a food source.

The Spanish conquistadores and missionaries also valued the saguaro fruit as their reports on the "great thistle" show.

Modern man has not, however, shown the same reverence for the "monarch of the desert," as the giant cactus is sometimes called. Vandalism and "cactus rustling" as well as disease and lack of repopulation now threaten the saguaro. The botanical picture of *Carnegiea gigantea* is rapidly changing, but the aboriginal utilization of the plant is still with us, in the reports of the conquistadores, missionaries and explorers, and on the Indian reservations.

The purpose of this paper is (a) to show the great utility of the saguaro to primitive man, and (b) to compare the native uses with the phytochemical studies on the plant. As will be seen in the paper, nothing could have been more wrong than the introductory citation, and nothing more right than the following (30): "The giant cactus (*Cereus giganteus*), or sahuaro, . . . is by far the most noteworthy representative of plant life in the desert, being, in fact, one of the most remarkable plants on the globe."

Botanical Aspects of *Carnegiea gigantea*

The saguaro has been described by Britton and Rose (7), Standley (39), Krainz (28) and Shreve (38). The following material is compiled mainly from their studies.

The first description of the saguaro was made in 1848 by Emory (cf. 16), whose observations enabled Engelmann to name it *Cereus giganteus*. In 1908 Britton and Rose revised the genus *Cereus* and created a new, monotypic genus, *Carnegiea*, for the saguaro. The name now in use is *Carnegiea gigantea*. The common name in Arizona is "giant cactus" or "saguaro."

Carnegiea gigantea is the most northern of the many columnar cacti native to the American Southwest and Mexico. The name is not, however, adequate as there exist in Mexico larger cacti, e.g., the related "sagusa," *Pachycereus pringlei* (8).

The giant cactus is seldom higher than 12 meters, having a simple, upright stem, sometimes bearing 8–12 branches (Fig. 1). The skeleton of the saguaro consists of 12–24 woody ribs arranged in a circle. This unique feature gives the plant both strength and elasticity. No rings of annual growth are seen in the ribs, but the oldest saguaros have their age estimated to 150–175 years. The weight at this age can be as much as 6 to 10 tons. The high water content (80–95%) makes it possible for the cactus to flower and bear fruit even after severe droughts (41).

Flowers are not seen on the saguaro until it has reached an age of 50–75 years, at that age attaining a height of 3–4 meters. The waxy-white flowers appear in May and are followed 5 to 6 weeks later by the fruits.

The egg-shaped fruits are purplish red and 6–9 cm long. When ripe, the fruit splits open and shows the red pulp, in which the small black seeds are embedded. As many as 2000 seeds are found in each fruit. In spite of the great amount of seeds produced every year, the saguaro has failed to repopulate (4). A major disease of the saguaro, "bacterial necrosis" caused by the bacterium *Erwinia carnegiana* (6), destroyed about 30% of one saguaro stand from 1942 to 1961 (3). Normally, an injury is followed by the formation of hard callus tissue around the wound, thus preventing water loss (40). Vandalism is also recognized as a threat to the saguaro (44), although being protected by the law. The saguaro flower is the State Flower of Ari-

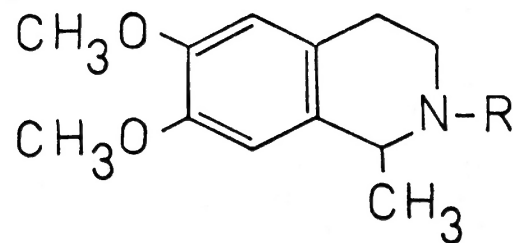
zona. In 1933, a Saguaro National Monument was established in Arizona to preserve huge stands of the saguaro (42). The present range of the saguaro is outlined in Fig. 2, and native names of the cactus and its products have been summarized in Table I. Good popular accounts of the saguaro have been given by Carlson (8) and Hodge (23).

The Alkaloids of *Carnegiea gigantea*

Three alkaloids have been isolated from *Carnegiea gigantea*: carnegine (22), gigantine (24) and salsolidine (2). These alkaloids are closely related to the tetrahydroisoquinoline alkaloids found in the peyote, *Lophophora williamsii*, and other cacti (1). Carnegine and gigantine are both physiologically active. Carnegine induces tetanic cramps in frogs (22) and gigantine has been claimed to cause hallucinogenic reactions when tested on squirrel monkeys and cats (24). Also dopamine has been found in the cactus (40). The cactus stem contains about 0.7% of the alkaloids (22), which has been noted by several travellers, trying to obtain water but finding it "bitter and unpleasant to the taste" (30). Fig. 3 gives the structure of the major alkaloids.



FIG. 2. The range of *Carnegiea gigantea*. Redrawn from Hodge (23), with the author's permission.



R = CH₃ Carnegine

R = H Salsolidine

FIG. 3. Structure of the major alkaloids.

¹ Department of Pharmacognosy, Faculty of Pharmacy, Box 6804, 113 86 Stockholm, Sweden. Submitted for publication 4 June 1970.

Ethnobotanical Aspects of *Carnegiea gigantea*

The earliest ethnobotanical report on the saguaro is probably to be found in the chronicles of the Coronado expedition, which passed through Sonora and Arizona during the years 1540–1542. The people of northern Sonora are described in the following way (43): "They drink wine made of the pitahaya,² which is the fruit of a great thistle which opens like the pomegranate. The wine makes them stupid. They make a great quantity of preserves from the tuna;³ they preserve it in a large amount of its sap without other honey."

This early statement emphasizes the two major aspects of saguaro ethnobotany: the use of the fruits for food and wine-making. Later reports have contributed more details, but to this very day these two methods of utilization predominate. Many a traveller has given his account of the saguaro, and an overview of tall cacti utilization has been compiled from recorded sources by Castetter and Bell (10). Lumholtz (30) discussed the various uses of the saguaro among the Papago, and good accounts of the harvest have been given by him, Thackery and Leding (41) and most recently by Herbert (21).

Harvest time comes in June, when the saguaro fruits ripen, and the Indians move to "cactus camps" in the saguaro "forests." It is interesting to note that regulations prohibiting the removal of fruit from the Saguaro National Monument have been eased so that the Papago can continue their tradition (42). The fruit is harvested according to ancient customs and eaten either fresh or dried. Lumholtz (30) has described a saguaro camp and the proceedings there.

"Early in the morning all the female members of the household could be seen proceeding on their fruit-gathering expedition, each armed with a large basket and the usual pole,⁴ about twenty feet long and made from two pieces of sahuaro rib. . . . Two or three hours later they returned, each carrying on her head her share of a heavy harvest. The skin with its spines had been removed in the field, so the inside of the huge water-tight basket presented an appetizing mass of crimson fruit pulp, as well as a great amount of similarly colored juice, which would keep for a few hours only. Most of the contents of the baskets was immediately emptied into large jars, to be boiled for about two hours, when the mass is strained in order to separate the numerous small black seeds. The juice is boiled for hours longer until it becomes sirup (*sitoli*), which is kept for future use in small earthenware jars, each neatly sealed with a piece of broken pottery and sticky mud. Being pleasant to the taste and much superior to molasses, I found this sirup excellent as part of my provisions." More than 50 years later, an almost identical account was given by Herbert (21). Fig. 4 gives a good impression of the harvest.

To prepare a liter of syrup, from 3–4 kg of fruit are required (41). The pulp, if sun-dried, will keep for a long time. It is eaten dry or moistened and can also be used to prepare syrup. The unstrained pulp is sometimes cooked to give a preserve (21). Greene (18) analyzed a sample of syrup and found 63% reducing sugars. The whole fruit contains approximately 7% sugar and 13% protein (air-dry basis) (18). He concludes: ". . . the fruit of the cactus compares favorably with common sources of sugar." The nutritional value of the fruit is thus high, and in times of prolonged droughts the saguaro must have been invaluable. Large amounts of the fruit are collected, an estimation for 1929 being about 45,000 kg of fruit (41), gathered by 600 Papago families.

The seeds were dried and stored for future use as food. They were eaten raw or ground to meal and paste (39). Having a hard coat, the seeds that were consumed raw passed the human body almost unchanged. Sometimes they were collected from the feces, dried and ground to meal. This "second harvest" has been reported from the Pima (35), the Papago (39) and the Seri Indians (33) of Sonora.

In later times, the seeds have been used mostly for chicken feed (28). Minor uses of the seeds were as a source of oil (10) and as a tanning medium for skin dressing (35). The seeds contain approximately 16% protein (18).

The fruit of the saguaro can not be reached with the hands, but a long saguaro rib (or two ribs joined together) with a short piece of attached wood makes it possible to push it down (35). This stick, called "kuibit" (21), is usually from 2 to 5 meters long. Certainly the saguaro, offering tools for its own harvest, must be considered a most co-operative plant!

The inner framework of the saguaro has been employed for many other industrial purposes. The chemical composition of the woody ribs is comparable to other hardwoods (5), and the various uses include housebuilding (10), and fencing, not only among the Indians, as shown by the following citation (44). "Ornamental fences made of saguaro ribs make an enchanting and native addition to any property in the Southwest, for it is indigenous, and blends well with the landscape."

The ribs were also used as splints for a broken leg (27), to make sticks for the Papago "stick game" (15) and as lances and arrows (39).

² Although many cacti and their fruits were utilized by the aborigines, the "pitahaya" mentioned is believed by both Safford (36) and Castetter and Bell (10) to refer to *Carnegiea gigantea*. (See also Table 1).

³ "Tuna" is a common name for cactus fruits (18).

⁴ A harvest tool.

The saguaro protects itself against injury by forming a hard callus tissue around wounds, such as woodpecker holes (40). These callus "bags" have been used by the Papago as "canteens and cups" (30). The callus tissue is highly ligniferous (5, 40), which makes it most effective in sealing the wounded part of the cactus. This, of course, also accounts for its use as water container.

The thorns of the saguaro were used for tattooing (10, 30), but this was not the only "artistic" use of a saguaro product. Archeologic excavations in Arizona have shown that the ancestors of the Pima and Papago, the so-called Hohokam, living about A.D. 1000, had discovered etching. It has been suggested that they used fermented saguaro wine for this purpose (20). A sample of saguaro wine that had been stored for a year contained 5% acetic acid (18).

Another reported product of the saguaro is a gum, said to be of only local importance (31).

The saguaro has also been used for drink. The fruit was sometimes soaked in water to give a soft drink (27), but the huge water content of the stem has not been employed by man (10), the high alkaloid percentage effectively preventing such use. The syrup mixed with water was also drunk (15). However, the most important drink prepared from the saguaro was no doubt a wine, fermented from the syrup and used in the paramount festival of the Pima and Papago year, the Rain Making Ceremony, which is still performed by the Papago (12), although it seems to be lessening in importance.

Ceremonial Uses

The making of the saguaro wine was, and is, an essential part of the Rain Making Ceremony. This ceremony takes place in July or early August and also celebrates the New Year. The years were formerly counted by harvests and the first month of the year was sometimes called "Harsany paihitak marsat" (Saguaro harvest moon) (35) in the Pima calendar. The ceremony, or festival, is called "Naváita," derived from "návait," wine (30, cf. Table I). The ritual is so dependent on the wine that one is tempted to call it the Wine Making Ceremony. The best description of the proceedings has been given by Densmore (15).

The wine-making started with the mixing of the syrup with cold water, one part syrup diluted with four parts water (18). The mixing was done by young men (30) working under the direction of a "taster," who decided the proportions. The mixture was then poured into large jars, "ollas," which had been placed in the "Big House," a lodge erected for this purpose. The door was closed and outside a fire was made to supply the necessary heat for fermentation. Fermentation took about 72 hours (10) and the ollas were all the time under the eyes of "watchers."

TABLE I
NATIVE NAMES OF *CARNEGIEA GIGANTEA* BRITT. & ROSE AND ITS PRODUCTS.

Plant part or preparation	Native name	Tribe	Reference No.	Comments
Entire plant	Saguaro	Common	(7,39)	Also spelled sahuaro, suguaro, suwarro (7).
	Hoshan	Papago, Pima	(9)	
	Ha'rsany	Pima	(35)	
	Harsee		(41)	
Fruit	Pitahaya	Common	(10,36)	Acc. to Safford (36) this is a general name for <i>Cereus</i> fruits. Casterter and Bell use it for <i>Lemaireocereus Thurberi</i> (10). A common name for cactus fruits is "tuna" (18).
	Tjúni	Papago	(30)	
	A-a, a-ag	Walapai	(27)	
	Nol-bia-ga	San Carlos Apache	(27)	
Seed	Kaitj	Papago	(30)	
Syrup	Sítoli	Papago	(30)	
	Sistor		(41)	
Wine	Tiswin	Common	(15,18)	"Tiswin" is derived from the Nahuatl word "teyhuinti," which means "intoxicating" (37), and is also used for other alcoholic drinks (29).
	Sawado	Papago	(27)	
	Saguaro	"	(27)	
	Haren	"	(27)	
	Ha'san na'vai	"	(15)	
	Na'vait	"	(30,41)	

In the meantime, outside the lodge, medicine-men were trying to locate rain, and the people were singing and dancing (15, 30). The wine was served as soon as it was ready. The people were seated outside the lodge, chiefs and other prominent men being seated at selected places and served first. The wine was offered to everyone, although in older times only men drank. Many songs were sung during the distribution of the wine. After the first serving a traditional speech was made, a plea for rain to come. Then the rest of the wine was passed around. The ceremony was now over, but every household had brewed its own wine and a general drinking and rejoicing followed (30). No additions were made to the wine, which in its composition resembles port or sherry (18) and has an alcohol content of about 5%. The ruby-red wine "had a very agreeable odor and taste" (18).

The effect of the wine has been described as a "good feeling" (15) and was said to last a night and a day. Densmore (15) was also informed that "songs" (*i.e.* dreams) were received under the influence of the wine, but this was denied by other informers. The effects seem to be dependent on the time for fermentation, as Hrdlička reports (27). "The haren (*cf.* Table I) takes two days to make, and it lasts in good condition one day and one night. The first day it is not very intoxicating and is said to leave few or no bad effects; after that it grows more alcoholic, and its effects are more unpleasant. To make it strong without so much of the bad taste the Indians cover with blankets the jar in which it ferments."

The unpleasant effects mentioned by Hrdlička may have been the nausea and vomiting induced by large quantities of the wine (10). Thackery and Leding (41) quote an early report, the diary of Francisco Garcés, from 1776, giving details of the Pima Indians' "general drunkenness." Garcés ". . . complained of these excesses to the governor, who told me that it only happened a few times and in the season of saguaro, and adding that it made his people vomit yellow and kept them in good health."

Ezell (17) has discussed this account and concludes that the drinking of the wine had also an element of curing, as well as weather and crop control. Garcés' report on the possible purifying powers of the wine is the only description of a "drug use" of *Carnegiea gigantea*. The related species, *Pachycereus pecten-aboriginum* and *P. pringlei*, have however been utilized for cancer cures (19).

All the common names of the giant cactus are likewise applied to the wine, as seen from Table I. The author has not found any other explanation of the name *saguaro*, and its equivalent *sawado*, than the following, which evidently connects the name with the effects of the wine. Russell, in his treatise on the Pima Indians (35), in a footnote quotes Alegre,⁵ an 18th century missionary to Sonora. Discussing the diseases of the Indians, Alegre says (35, p. 43): "El mas temible entre ellos es, el que llaman *saguaidodo* ó vomito amarillo." ("The most terrible of these is the one called *saguaidodo* or yellow vomiting.") This disease is not caused by the wine, but apparently has the same effect.

The drinking of saguaro wine could sometimes form part of the "Víkita" (15, 30), a harvest ceremony of the Papago at which men, called "nawitecu" or clowns, were dressed to look like saguaros (32). According to Lumholtz, saguaro seeds and ribs were used by the Papago in another ceremony too (30). This took place in early spring and the meaning of it was to make sure a good saguaro harvest.

A few examples may be given here to show the influence of the saguaro on the Indian mind. The group of stars called Ursa Major is known as the "Cactus Hook," having an imagined resemblance to the above-mentioned "kuibit" (15). More than astronomy, the saguaro has influenced the Pima and Papago myths and tales, who sometimes tell of people turning into saguaros (35). In one nursery tale a naughty boy who has run away says: "I will turn into a saguaro, so I shall last forever, and bear fruit every summer" (35, p. 247). According to the tale this is how the saguaro came to be. It is not difficult to understand that the Papago consider it a crime to cut down a saguaro (30) or that they will curve a road to save a saguaro (41).

Discussion

As seen from the above, the ethnobotanical facts are well in line with the phytochemical findings. However, we may point out some differences.

It is sometimes stated that primitive man has been especially keen at detecting and using psychoactive plants. The saguaro has apparently not been used in this way, despite the isolation of the reportedly hallucinogenic gigantine from the cactus. Be-

sides, gigantine is only a minor constituent of the alkaloid fraction.

The curious effects of the saguaro wine might however be worthy of investigation. The "yellow vomiting" and also the "receiving of songs" are interesting to compare with the effects of the Peruvian "guayusa," which is used for ritual cleansing through vomiting and reported to cause "pequeños sueños" ("little dreams") (34). The guayusa (*Ilex* sp.) contains caffeine, which also has been found in a cactus, *Cereus jamacaru* (1).

The peyote intoxication, based on *Lophophora williamsii*, is often accompanied by nausea and vomiting (25). In addition to mescaline, the peyote cactus contains tetrahydroisoquinoline alkaloids. It has been suggested that the formation of tetrahydroisoquinolines in the human body could cause the negative effects of alcohol (11). Could such compounds, present in the saguaro stem, form in the fermenting wine, or are the effects caused by the alcohol alone? There are apparently no alkaloids to be found in the fruit.

The useful saguaro has of course been looked upon with eager eyes, and its possibilities have been discussed. One author suggests that alkaloids in the plant may be of industrial value (13) and that a soft drink, "a delicious and novel beverage" (14), can be produced from the fruit by modern fermentation methods.

If, however, modern man is allowed to use the saguaro freely, there can be no hope for the cactus. Even now, protected by the law, the slow-growing saguaro is on the retreat. There seems to be only one way of conserving the vanishing cactus giants (44): "—leave the saguaros alone in their natural surroundings, and they will remain to grace the landscape in their solitary splendor."

⁵ Alegre's work, "Historia de la Compañía de Jesus en Nueva-España," was left incomplete in 1767 (10), and not issued until 1841.

Acknowledgments

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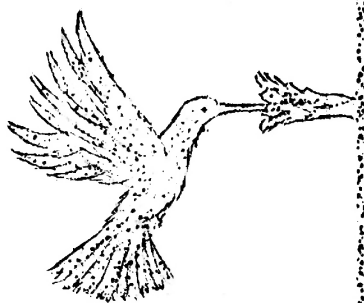
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LIVING JEWELS IN OUR SUCCULENT GARDEN

Ed and Betty GAY, Tarzana

Our half acre of cacti and other succulents, ten years after its beginning, has become the home of many creatures besides ourselves. Insects, lizards, tree squirrels, and especially birds, all have their niches here.

Among the birds -- comical sparrows, cheerful linnets and finches, predatory jays, clumsy crows, strutting doves -- our favorites are the tiny humming birds. Their petite size and often bright plumage--pearly gray enhanced by flashes of iridescent ruby and emerald -- make them seem like living jewels as they whirl about the garden. They are mainly of the "Anna" variety, which is the most common type in Southern California.



Living Jewel

At first they appeared during the summer months, migrating further south in the winter. Now, with some flower or other in bloom every day of the year, nectar is in good supply and we always have humming birds in the garden. One surprise was that haworthias and aloes from Africa where no humming birds exist, seem to be a favorite food source.

Returning from a May field trip a few years ago, we found a delightful surprise on the trailing stem of a Sedum paraguayensis which hangs in the patio. A nest half as large as an egg shell, elegantly constructed of tiny twigs cushioned with spiderweb strands, was beautifully camouflaged in the curve of the grayish stem. It held two tiny, black-skinned scraps of life--baby humming birds.

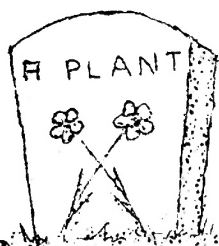
Their busy little mother quickly learned to ignore us. The father bird apparently was a travelling type. Mother had the entire responsibility of caring for the chicks. Constantly she battled to fill the eager little gullets. Returning from a foraging trip, she would zip down upon the leaf tip of a tall Aloe thraskii from which she could survey the patio area with a quick glance. Satisfied that it was safe, she would zoom in narrowing circles to the nest. The two gaping beaks of her fledglings were always waiting for her. Into them she quickly transferred the stored food -- nectar and insects -- from her own craw, jabbing her beak up and down in a series of quick stuffing motions. It seemed certain that each chick would be pierced through and through -- but no, in a moment she would be gone while they were still clamoring for more. Their growth could almost be measured each day -- pinfeathers, actual feathers, longer beaks -- still longer -- and longer. Soon the almost-grown birds were bulging over the sides of the nest. In this, our first close association with them, it was impossible not to be involved in the life of the little family. Always before, humming birds had seemed almost unreal -- a whirl of wings and a high-pitched cry as one of them would dive upon an open blossom, hovering and sipping for a moment, then darting out of sight. All at once the three were part of our family, only a glance away from our kitchen and den windows.

Suddenly the weather turned hot, and the little mother perched on the rim of the nest, her outstretched wings shading her panting babies from the afternoon sun. Ed lost no time in tacking a scrap of saran screen to the edge of the rafter to shade the nest. We invested in a feeder, filled with water sweetened with raw sugar -- more healthful, we hoped, than the refined variety which is good enough for us. And the sedum to which the nest was attached! It had become rather straggly and was overdue for repotting when the nest appeared. Seldom has a more unprepossessing succulent received such loving care as it did thereafter. The bare, lank, misshapen stem supporting the nest suddenly must be protected at all costs; unthinkable that it might wither and drop before the fledgelings were launched. Watering the hanging pot, directly above the nest, became a challenge -- enough to sustain the plant, but not so much that it would drip on the baby birds.

LIVING JEWELS -- continued:

The watering chore gave us an excuse each day to fraternize for a few moments with the little birds, who quietly accepted an occasional bit of stroking on the head. In no time at all, though, they were teetering on the edge of the nest, whirring their tiny wings -- then one day, just one mis-step and they were launched. For several days they hid from danger in the citrus trees bordering the patio, still dependent on their mother for food. Longer and longer flights each day were motivated by their curiosity and increasing hunger, so that soon they were free-flying adults.

Since the habit of the "Anna" species is to stay close to home, this brood and several later ones from the same nest (plus some new ones) have populated our cactus garden with a whole colony of living jewels -- our humming bird neighbors, beautiful ornaments for a succulent garden.



300,000,000 years ago

OUR 'SAPROPHYTIC' CIVILIZATION

Our highly mechanized, saprophytic* civilization is based largely upon the dead and partly decayed remains of plants of past ages, some 300- to 350 million years ago.

All coal was formed from plants. Petroleum and natural gas are produced by chemical changes in the bodies of plants and perhaps of animals that fed upon plants.

Although these materials are sometimes referred to as 'mineral fuels' they are organic, and they are the products, direct or indirect, of plant activities.

If we increased our use of water power to a maximum, we still could not maintain ourselves independently of plant fuels. Some facts of life are coming abruptly to our attention in the year 1973. They have been too long in receiving proper recognition and they will be changing our way of life. . . . Ye Ed

*Saprophyte: Biol. An organism that lives on dead organic matter.
Saprophytic, adjective.

Page -- -- -- IN THIS ISSUE

- 1 --- POINSETTIA, The Christmas Flower -- Ye Ed
- 2 --- CSSA BIENNIAL CONVENTION 1975 coming to San Diego
- 3 --- YOU GOTTA BELIEVE IT (Victor Turecek), Thanks to Jan G. BRUHN
- 4 ---
- 5/6 --- NIBBY'S NOTEBOOK, Nibby Klinefelter
- 7/8 --- " " cont'd and "The SAGUARO HARVEST"
- 9 --- Dr. Philip G. CORLISS "Pots--Clay or Plastic"
- 10 --- WATER CULTURE PROJECT
- 11 --- Ken D. FRANKLIN: "Eradication of the Japanese Beetle"
- 12 --- CELESTIAL SPECTACULAR --- Kahoutek's Comet, Ye Ed
- 13/14 --- Jan G. BRUHN, "Carnegia Gigantea, the Saguaro and Its Uses.
- 15/16 --- " " " " " continued.
- 17 --- Ed and Betty GAY "LIVING JEWELS IN OUR SUCCULENT GARDEN"
- 18 --- " " " " continued.
- 18 --- This page: OUR SAPROPHYTIC CIVILIZATION, and IN THIS ISSUE
- 19 --- OFFICERS, NOMINEES 1974 and "HANDS ACROSS THE BORDER"

SAN DIEGO CACTUS & SUCCULENT SOCIETY

Affiliate of the
Cactus & Succulent Society of America

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NOMINEES FOR 1974 -- Election at the December meeting:

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SECRETARY - Frances LANGER, San Diego, CA
TREASURER - John A KORVER, Escondido, CA

DIRECTORS, 3-year terms:

H. Warren BUCKNER, Lemon Grove, CA
August PFEIFFER, San Diego

MEETINGS: Meetings during the year of 1974 have been scheduled for the 2nd Saturday of the month (unless otherwise scheduled) at 1:30 p.m. THE DECEMBER meeting is scheduled for the third Saturday--December 15th. Meeting room has been changed once again on us, it will be in Room 104.

MEMBERSHIP in the Society is open to all individuals interested in succulent plants. Dues are \$5.00 per year, the club year being from Jan. 1 to Dec. 31. Membership includes the Clubs bulletin "Espinaz y Flores" a monthly publication.

"HANDS ACROSS THE BORDER"

BOX IT AND BRING IT !

For a number of years past, in fact as far back as Ye Ed's memory goes in Club matters, the members have expressed their appreciation to Bob and Suzanne TAYLOR for their complete cooperation in club activities in a way which is simplicity itself.

Members have looked thru their homes and garages and possessions for food, canned goods, kitchen or cooking utensils, blankets, wearing apparel, shoes and clothing---you name it!! All such items given to the Taylors find their way to the homes across the border and to the children who are much less fortunate than most on this side.

With the "Hands Across the Border" project in mind, every club member is asked to make a search of his home area and box and bring any and all items to the December meeting. Everything will bring life anew south of the border where each item will bring comfort, happiness and joy into the lives of many youngsters down Baja Way.

And you may be assured every item will find its way into the hands of families and youngsters on the basis of need!

BOX IT AND BRING IT to the December 15th meeting. Muchas gracias
y vaya con Dios!

Dec. 1973

Walter R. Scott
3430 Wilshire Ter.
San Diego, Ca. 92104
Return Requested

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