

# SAGUAROWOOD

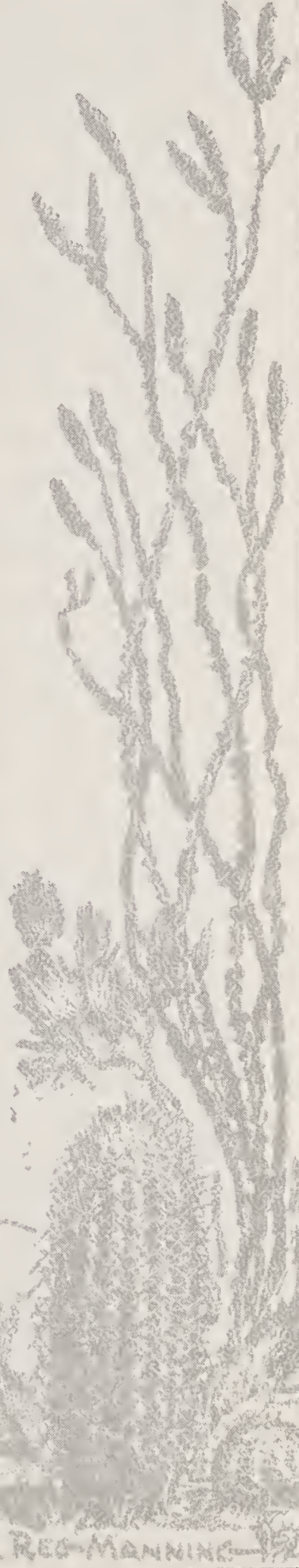
## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Volume XXX

January, 1976

No. 1



RES-MANNING

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year. Annual subscription including membership, \$10.00.

Editor, W. Hubert Earle

Associate Editor, Lillian Diven

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## Arizona Cactus and Native Flora Society

EXECUTIVE BOARD: Chairman of the Board, John Rhuart. President, Mildred May. Vice President, Edward Burrall. Treasurer, Tom Goodnight. Secretary, Lillian Mieg. Chief Counsel, Richard B. Snell. Reg Manning, Alice Feffer, Naomi Kitchell, Henry Triesler, Eric Maxwell, W. H. Chester, Margaret Caldwell.

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Cover: *Myrtillocactus geometrizans* (See page 8)

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## Desert Botanical Garden of Arizona

### STAFF

Director . . . . .	W. H. Earle
Research Botanist . . . . .	Dr. Howard S. Gentry
Superintendent . . . . .	Rodney G. Engard
Curator of Herbarium . . . . .	J. Harry Lehr
Assistant Horticulturists . . . . .	Russell Haughey, Tom Caldwell
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Maintenance and Bookstore . . . . .	Lynn Trainum, Donald C. Shelstad
Plant Accessions . . . . .	Sherry Couch
Student Horticulturist . . . . .	John Moresco

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Garden Open Daily 9 a.m. to 5 p.m. including holidays

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ANNUAL MEMBERSHIP: Individual \$10.00, Family \$15.00, Sustaining \$25.00, Benefactor \$50.00, Elementary or High School Student \$2.00. LIFE MEMBERSHIP \$100.00. FOUNDER MEMBERSHIP \$500.00.

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# Editor's Notes

1975 was another year of accomplishments and satisfactions. I feel that the most important happening was the Garden's Board's decision to expand and to hold monthly planned meetings. The added enthusiasm and vigor will benefit the Garden greatly.

Two very necessary additions to the Garden staff were made in 1975: Sherry Couch, plant accessionist and "person in charge of growing plants from seed," is doing work that has needed doing for a long time. Janice Moats, our part-time bookkeeper, is handling a job that became increasingly complex over the years.

A recent generous gift to the Garden came from Board Vice President Edward Burrall and his wife, Marguerite. They gave the Garden \$7,500 toward the completion of our new Aloe Garden, which is planned to include a Birdwatchers' Walk. The work is now in hand, and will be completed in 1976.

Last summer the Brooklyn Botanic Garden asked your Editor to contribute an article on desert terrariums — plus photos — to their forthcoming new handbook. This story is now part of "Terrariums, a Handbook," the most recent of a series that is part of the Brooklyn Botanic Garden Record. These handbooks are sold

all over the country — and if you're interested in terrariums, you can find the new handbook in our own Bookshop.

We were pleased to be asked to join the "experts" who write for this series, and were even more pleased to receive this note from Elizabeth Scholtz, Brooklyn Botanic's Director: "May I add my word of thanks to you for those excellent photographs. Your picture story is a good addition to an altogether fine Handbook."

In this issue of the Bulletin you will find the Classification List for our 29th Annual Cactus Show, coming up next month. Some new classifications have been added, and others, of lower interest, have been dropped.

I particularly want to draw your attention to the deadlines for entering exhibits. The entries in the Photography and Arts Sections must be entered by Wednesday, February 18th, 5 p.m. All other entries can be entered Thursday, February 19th, (but not before then) 9 to 5 p.m.; Friday, the 20th, 9 a.m. to 9 p.m. (the first time we've planned evening hours); and on Saturday, the 21st, from 9 a.m. until noon. The entries must be registered by noon, not just carried in at 11:59. We have to be strict about this, since the number of entries each year gets larger and larger. In last year's Show there were 986 individual entries.

The roster of judges for the various sections is all set, and we are very pleased with the qualifications of these fine people who have agreed to judge the Show.

As you can see, the "Show" spirit is getting to us already. We hope it's getting to you, too. We will need a lot of you good Volunteers this year. Run through the "Check List" elsewhere in this issue and check off the jobs you can help us with. Then let us know. Your help is very important to the success of the Show.

## FOR DESERT GARDENS

(This is another in a series of articles on Australian native Acacias, called Wattles in their homeland, suitable for horticultural use here.)

*Acacia stenophylla* A Cunn. is a handsome arid-land tree common in the Murray River drainage area and other parts of southeastern Australia. It occurs in the open and in thickets on flood plains and along dry streambeds.

In cultivation the tree reaches at least 25 ft. in the Phoenix area. The bark of the gracefully curving, pendant branches is maroon on newer growth. "Leaves" are actually broadened petioles, smooth, gray-green, entire, linear and striate. They are 3 to 6 mm wide and from 15 to 40 cm. long. They are broadly spaced and alternate on the stems. The more or less hoary appearance of the phyllodes is due to the presence of short scattered hairs. Flowers occur in creamy yellow heads of 25 to 30 flowers on 2 to 6 peduncles, 6 to 10 mm long, from a central rachis.

The calyx is reduced to 5 short pubescent lobes. Petals are five. They, too, are

pubescent. The legume fruit is 10 to 15 cm long, light tan, and constricted between the seeds. The broadest dimension (about 1 cm) occurs across the longitudinally arranged seeds. The funnicle is short and scarcely folded. This last characteristic is diagnostic in species determination of Australian Acacias. The funnicle is the strand of tissue by means of which seeds are attached to the fruit wall.

The plant commonly reproduces by seed germination, but is known to root-sucker in the wild and in cultivation. This is a relative newcomer to cultivation in the Valley. Plants pictured here are of two types. The tall twin-trunk tree is 25 ft. high, and has "leaves" up to 16 in. long. It was planted in 1970 in an irrigated pasture as a single-stemmed one-gallon plant. The other has been growing here at the Garden for eleven years with only occasional watering. It is a shrubby 12-ft. individual.

This has proved to be an attractive tree in areas where filtered shade with little litter is required, especially when desert-like landscaping is wanted.

—RGE



# Arizona Cactus

## SMOOTH MOUNTAIN PRICKLY PEAR

*Opuntia compressa*  
var. *microsperma*

Cactaceae

*Opuntia compressa* (Salisbury) var. *microsperma* (Engelmann) is a low-growing prickly pear found throughout northern Arizona, growing in gravelly soil or in the leaf mold of the oak-juniper-pine forests, at 600-2200 meters elevation. It is either a single plant or a large, very low cluster, never more than 7.5 cm high.

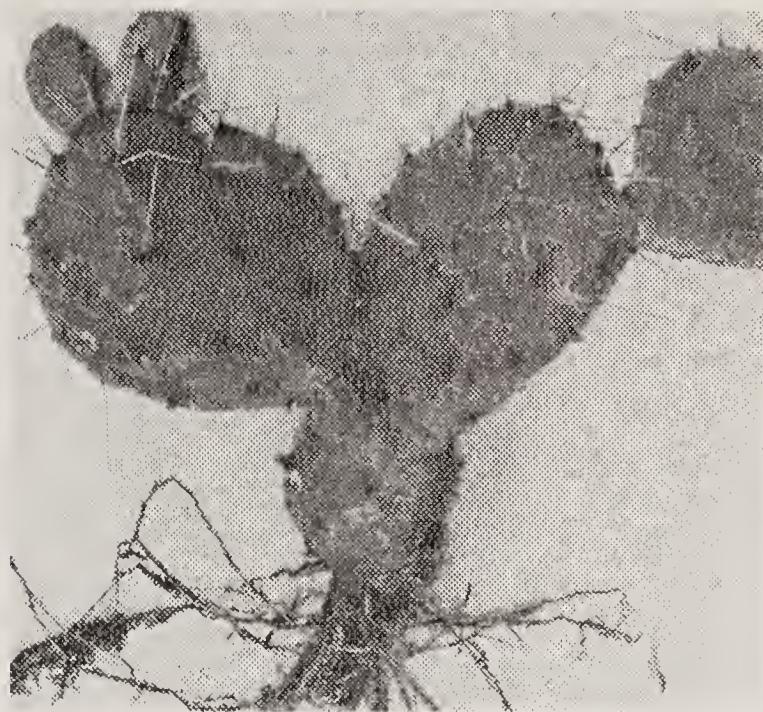
Browsing animals will eat these few-spined plants, and will sometimes dig through the snow to get at the desiccated pads, which have a little food value in cold weather.

The plant has long, fibrous roots that spread out only 4 to 5 cm below the surface of the soil.

The pads are dark green, 8 to 10 cm long and 5 to 10 cm wide. The spines are usually one to three, of different lengths. The



*Acacia stenophylla* in bloom at the Garden in mid-November, 1975.



The whitish spines of this *Opuntia* are very slender and break easily.

forms of *O. compressa* var. *microsperma* are exceedingly variable.

The yellow flowers, 5 cm in diameter, appear in early April to late June, depending on elevation. They are followed by a greenish-red edible fruit, 2.5 to 5 cm long and 2.5 cm wide, which contains white seeds that are 4 to 5 mm broad.

Type locality: Upper Guadalupe River, Texas.

Distribution: Western Wisconsin to Texas, eastern slopes of the Rocky Mountains, northern New Mexico, and Arizona.

### REFERENCES

Benson, *Cacti of Arizona* (2nd Edition)  
Earle, *Cacti of the Southwest*

—WHE

## CORRECTION

CLASSIFICATIONS LIST for Cactus Show, Section IV, Planters. Reference is to the wrong footnote. The correct note is: "Grown by exhibitor at least 6 months".

# OUR HERBARIUM: AN ANNUAL REPORT

Our herbarium continued its growth in 1975 and the number of accessions has now reached a total of 13,000. The following brief statistical summary will reveal the source of some of these accessions during the past year. We received 1292 specimens in our continuing exchange program with other institutions, particularly Brigham Young and Central Missouri State Universities. Contributions to our herbarium numbered 309 and almost 200 of these were a gift from Dr. Gentry's personal herbarium. Our own contributions to other herbaria totalled 101 sheets, most of them to Arizona State University as part of the continuing cooperation which exists between our institutions.

Throughout the year, the staff continued its collecting activities and on one of these

forays Rodney Engard collected a specimen of *Buddleja scordioides* H.B.K., the first authenticated collection of this plant in Arizona. In addition, the writer collected *Ammi majus* L. (Bishop's Weed) within the confines of Phoenix, a species new to the flora of Arizona, but a common component of the weed flora of California. In August, and again in September, your Curator spent two three-day periods in the Santa Catalina Mountains and collected over 200 specimens while there.

Finally, over 100 different species of North American *Carex* are now represented in our herbarium as the result of the writer's continuing studies in that genus.

—J. Harry Lehr

## CACTUS SHOW VOLUNTEERS

We've said before, though it can't be said too often, that without the fine work of Garden Volunteers the Cactus Show would be a flop, a fizzle, a dud.

Starting this month, and building week by week, pre-Show work is taking more and more of the staff's and regular volunteers' time. We need your help now, during the Show, and even after it.

Here is a check list of jobs-for-volunteers connected with the Show. Will you check the ones you want to do and let us know?

- |   |  |
|---|--|
| <input type="checkbox"/> Typing                             | <input type="checkbox"/> Acting as host/hostess        |
| <input type="checkbox"/> Filing                             | <input type="checkbox"/> Being guard or 'traffic cop'  |
| <input type="checkbox"/> Sales in Shop                      | <input type="checkbox"/> Helping with publicity        |
| <input type="checkbox"/> Selling Nature Walks               | <input type="checkbox"/> Keeping attendance count      |
| <input type="checkbox"/> Restocking in the Shop             | <input type="checkbox"/> Answering visitors' questions |
| <input type="checkbox"/> Registering entries<br>before Show | <input type="checkbox"/> Lettering, posters, etc.      |
| <input type="checkbox"/> Mailing/Stuffing envelopes         | <input type="checkbox"/> Distributing posters          |
| <input type="checkbox"/> Tabulating the Show                | <input type="checkbox"/> Handling phone calls          |
| <input type="checkbox"/> Listing entries, Exhibitors        | <input type="checkbox"/> Miscellaneous chores          |
| <input type="checkbox"/> Figuring totals during Show        | <input type="checkbox"/> Guides on paths               |
| <input type="checkbox"/> Helping set up Show                | <input type="checkbox"/> Running errands.              |
|   | <input type="checkbox"/> Anything at all!              |

How many days a week? On weekends? An occasional evening? When? Now? During the Show? After? Call 947-2800 and tell us.

## ASPECTS OF OUR GARDEN



Almost as much as the Saguaro, *Opuntia engelmannii* is a "trademark" of Arizona's desert. This very abundant Prickly Pear has large pads, bright yellow flowers, and grows in clumps that can reach a diameter of twenty feet. From April to June it blooms in desert and grassland throughout the state. (Photographed here at the Desert Botanical Garden.)

## OUR TALL CACTI

Rivals of the Saguaro in bulk, if not in height, these four big cacti—plus the one on the cover of this issue—are among the oldest in the Garden.



At left: An eighteen-foot Senita, *Lophocereus schottii*, planted here in 1940. It is native to Sonora and Baja California in Mexico, and Arizona, where there are a very few plants growing along the southern border of Organ Pipe National Monument. The Spanish named it Senita, or Old Lady, because of the gray "hair" (bristles, actually) that develops at the tops of mature stems.

At right: Totem Pole Cactus, 15 ft. high and 10 ft. wide, planted by W. H. Earle as two small plants in 1951. This odd, thornless cactus is *Lophocereus schottii* var. *monstrosus forma obesa*, a variety of the Senita above. It is found only in a thirty-acre area of central Baja California, and since it produces no seed, can be propagated only from cuttings. Plants in the Garden are taller and handsomer than those in the original habitat.



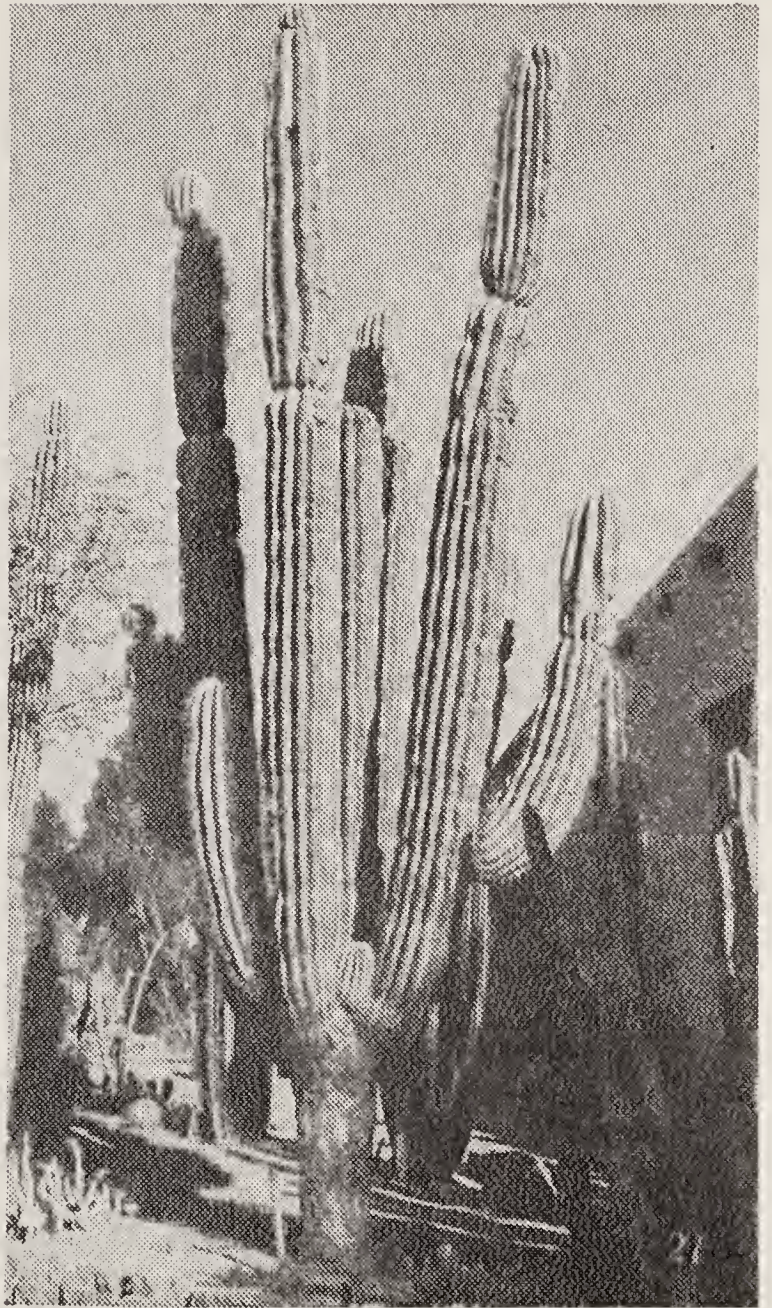




At left: *Opuntia maxima*, one of the largest Prickly Pears, has been cultivated for so many centuries that its origin is unknown. We planted this specimen in 1964, when it was 3½ ft. high and had only five pads. Now it is over 12 ft. high. It blooms infrequently, but when it does, it produces orange-red flowers more than 3½ in. across, the largest flowers in the genus *Opuntia*.

At right: Elephant Cereus, *Pachycereus pringleii*, is a massive, 20-ft. cactus from San Fernando, Baja California. It was planted here in 1939, one of the first cacti for the newly-established Garden. We estimate its weight at about 65 lbs. per cubic foot.

On the cover: *Myrtillocactus geometrizans*, Garambullo, 15 ft. tall and nearly as broad. One of the heaviest plants in the Garden, sharing honors with the Elephant Cereus. When planted here in 1948 it was 5 ft. high, had 3 branches. It is native to central and southeast Mexico.



## THE 1976 SEED LIST

The Garden has just published its 1976 Index Seminum, the annual list of seeds collected by the Garden Staff and offered without charge to botanical institutions, research stations and universities in the United States and abroad.

With a total of 56 plant species, this year's list is slightly shorter than last year's. It is again remarkable for the number of plant species available in seeds for the first time. The 1976 List includes 37 species never before offered, and two more that appeared on our List for the first time last year. Ten of the new offerings are seeds of plants in the Agave Family.

Fourteen species that appear on the List have not, to our knowledge, been listed by any other institution before now. Date of collection and information on collection locality are supplied for each species.

Although most of the seeds were field-collected (by Dr. Gentry, Rodney Engard and others) at various locations in Mexico and Arizona, ten items on the list are seeds of plants growing here at the Garden. One agave plant, for instance, was collected by W. H. Earle in May 1960. It was replanted

in the Garden, and flowered here in the summer of 1975.

Having now whetted your appetite, we must inform you that the Seed List is not available to Garden Members or to anyone not actively engaged in botanical research. Collecting and preparing the seed of rare plants is an arduous, time-consuming job, and the amount of seed collected is generally barely sufficient to fill requests from botanists.

But, for the first time, seeds of four of the listed plants ARE available to Garden Members. *Nolina bigelovii* (Bear Grass), *Agave kaibabensis*, *Fouquieria splendens* (Ocotillo), and *Pachycereus pecten-aboriginum* (Cardon) were collected in sufficient quantity for us to be able to offer them on the list of eleven plants from which new and renewing Garden Members can choose two packets of seeds. A card listing all eleven will be sent to you with your membership renewal notice.

The Seed List serves a valuable purpose and enhances the Garden's reputation among other botanical institutions. We hope the "Members' list" will give you pleasure.

### GARDEN DEVELOPMENT PROJECT NO. 3

YOU CAN HELP THE GARDEN identify every plant in a permanent way by contributing toward the purchase of an extra-heavy-duty LABELING MACHINE.

Our present labeler is a hand-held one that embosses letters and numbers on half-inch-wide soft-metal tape. In some climates the soft zinc or aluminum labels last a long time. Here, zinc lasts barely a year, and aluminum labels become brittle and illegible in less than two years. We need permanent accession labels on every single plant, plus wide, legible, informational labels on the plants that border the Garden paths.

An industrial-size labeling machine, somewhat larger than a big typewriter and operated by lever or treadle, will emboss stainless monel metal tapes up to three inches wide. With it we can print two-line or three-line labels of any length, showing in large letters the individual plant's botanical name, common name, family and country of origin—information we cannot display for Garden visitors with the equipment we now have.

Projected costs of industrial-size labeling machine .....\$1400.00

YOUR GIFT OF FUNDS FOR THIS PROJECT IS TAX-DEDUCTIBLE.

WILL YOU HELP DEFRAY ALL OR PART OF THE COST?

The Director will be happy to supply information about the current development projects both large and small. Telephone 947-2800.

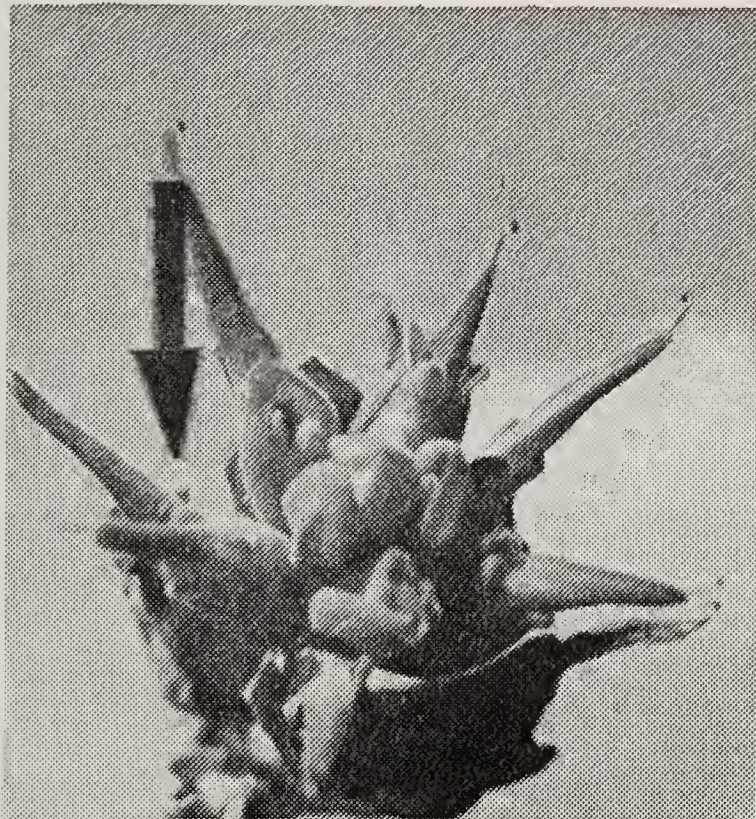
# Arizona Wildflower

## WHOLELEAF PAINTBRUSH *Castilleja integra*

Scrophulariaceae  
Snapdragon Family

Of the thirteen or more species of Indian Paintbrush that grow in Arizona, this one, the Wholeleaf or Foothills Paintbrush, is probably the most colorful.

In the eastern states as well as the western ones, the Indian Paintbrushes are familiar wildflowers, but few people realize that the bright colors — yellows, pinks and various shades of red — aren't in the flowers at all. The flowers are inconspicuous. It is the bracts, which are modified leaves, and which surround the flowers in a brushlike spike at the top of the stem, that supply the eye-catching color. (The Poinsettia is another plant whose "petals" are really brightly-colored bracts.)



Arrow points to the nearly-invisible tip of the pale green flower.

This particular Paintbrush, one of the three most common in the state, is distinguished from the others by its leaves, which are "whole" or entire—the others have leaves that are variously cleft or lobed. It is also remarkable for the large size of the bracts, which are bright crimson or rose, and have more color than the bracts of most other Paintbrushes.

*C. integra* is a four-to-sixteen inch plant of the pine-oak habitat, growing at 3000-7500 ft. elevations, and blooming from March through September. The plant is more or less white-hairy, although the upper surfaces of the narrow, 2½-inch leaves are smoother and less hairy than the rest of the plant. The true flower is a slender two-lipped tube, rarely more than an inch



*C. integra* photographed in early August, growing among pines.

long, and pale green, sometimes tipped with pale red.

Some species have a wide variation in coloring. This species, though usually a brilliant red, has also been found with red-tipped yellow bracts.

Plants in this genus are often parasitic on other plants, particularly on Sagebrush (*Artemesia*) in northern Arizona. Why this should be so is something of a mystery, for, unlike many parasites, Paintbrushes have both chlorophyll for photo-synthesis and adequate root systems for the intake of water and minerals.

Our New Year's wish for you is that all the wildflowers you see in 1976 will be as colorful and easy to identify as Paintbrushes!

Distribution: Mesas and mountains throughout most of Arizona, Colorado, western Texas, New Mexico, Arizona and Sonora.

REFERENCES:

Kearney & Peebles, Arizona Flora.  
MacDougall, Grand Canyon Wild Flowers.  
Patraw & Janish, Flowers of the Southwest Mesas.

—LD

## FIELD TRIPS

IMPORTANT: Reservations are essential. Field Trips are now limited to 25 participants, with preference given to Garden Members. Non-members will be put on a waiting list, and should check back with our office on the Friday before the Field Trip. Telephone 947-2800. Fee for non-members, \$1.00 per person.

Saturday, February 7th WHITE TANK MOUNTAINS, west of Phoenix. Moderate hiking. Driving about 80 miles round trip.

Saturday, March 6th. FISH CREEK CANYON, about halfway along the Apache Trail. A favorite trip for early wildflowers. A little hiking, but terrain is rather rough. Driving about 90 miles round trip.

All field trips leave the Garden promptly at 8:30 a.m., return before 5:30 p.m. Bring lunch, wear suitable clothing.

## GARDEN ACTIVITIES

### JANUARY

Thurs.	1st	NEW YEAR'S DAY	
Sat.	3rd	FIELD TRIP—Painted Rock Dam	8:30 A.M.-4:45 P.M.
Tues.	6th	CACTOMANIACS—Meeting	8:00 P.M.
Wed.	7th	CLASS—Deserts . . Their Plants	2:30 P.M.
Thurs.	8th	ILLUSTRATED LECTURE—Arizona Cacti	3:00 P.M.
Wed.	14th	CLASS—Succulent Plants	2:30 P.M.
Thurs.	15th	ILLUSTRATED LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	21st	CLASS—Culture of Succulent Plants	2:30 P.M.
Thurs.	22nd	ILLUSTRATED LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sun.	25th	CENTRAL ARIZON & SS—Meeting	2:00 P.M.
Wed.	28th	CLASS—Identification of Desert Trees & Shrubs	2:30 P.M.
Thurs.	29th	ILLUSTRATED LECTURE—Arizona Birds & Animals	3:00 P.M.

### FEBRUARY

Tues.	3rd	CACTOMANIACS—Meeting	8:00 P.M.
Wed.	4th	CLASS—Culture of Desert Trees & Shrubs	2:30 P.M.
Thurs.	5th	ILLUSTRATED LECTURE—Mexican Cacti	3:00 P.M.
Sat.	7th	FIELD TRIP—White Tanks Mt.	8:30 A.M.-4:45 P.M.
Wed.	11th	CLASS—Field Trip: Cave Creek Dam	8:30 A.M.-4:15 P.M.
Thurs.	12th	ILLUSTRATED LECTURE—Western Australian Wildflowers	3:00 P.M.
Wed.	18th	Deadline for CACTUS SHOW Art Entries	5:00 P.M.
Fri.	20th	All other CACTUS SHOW Entries received today and until 1:00 P.M. on the 21st	
Sun.	22nd thru	29th ANNUAL CACTUS SHOW	Daily 9-5 P.M.
Sun.	29th		

# SAGUAROUND

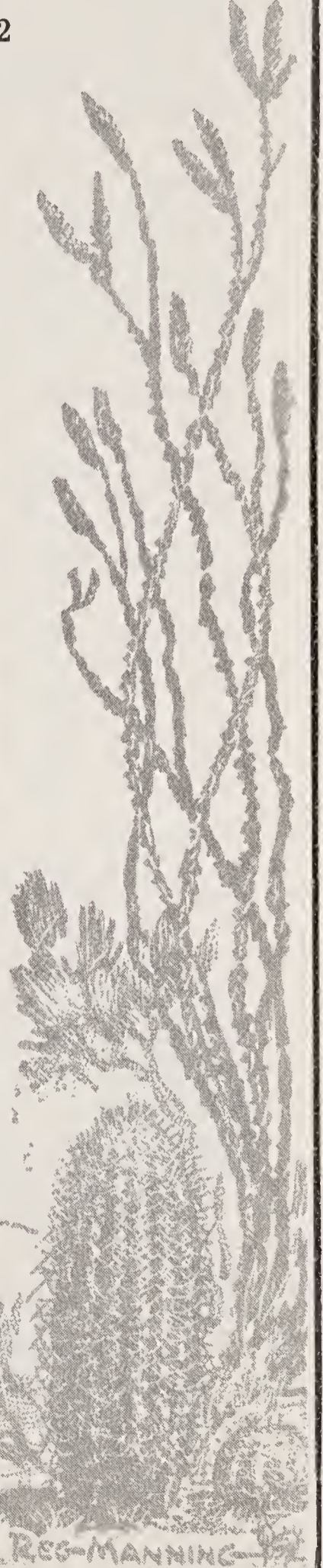
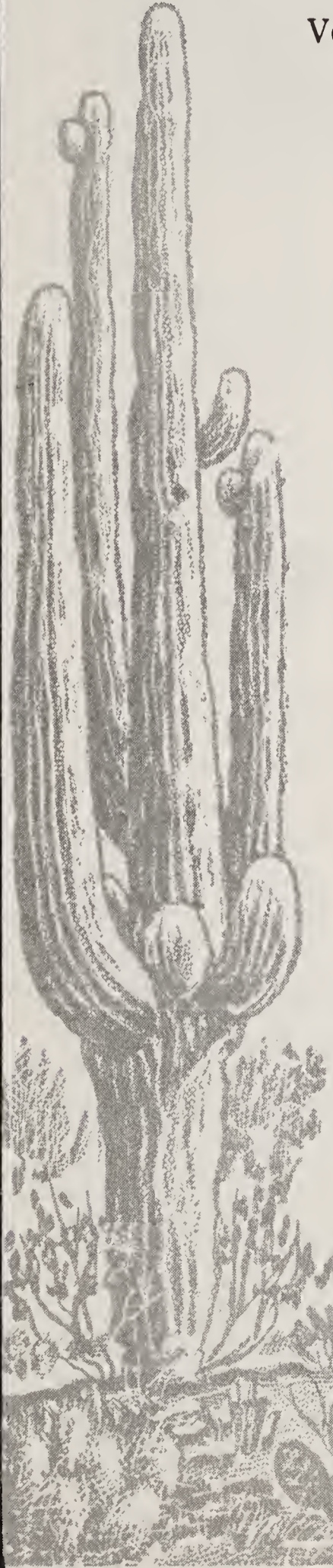
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Cover: *Aloe vera* (*A. barbadensis*)

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# Editor's Notes

Warning: Did any of your succulent plants, your aloes, cacti, euphorbias, etc., get frozen during January's sudden freeze? We strongly advise against trimming the damaged areas now. Do not do any trimming until the plants have had several months of heat. The plants themselves will seal off the frozen sections, and then you can do the trimming by gently bending the leaf or stem until it "pops off."

The 29th Annual Cactus Show is already generating interest. Before the end of January we had eager exhibitors wanting to register their entries immediately, and got phone calls from a couple of people who thought the Show was always held at the beginning of February.

Our co-sponsor, the Phoenix Gazette, and other Arizona newspapers will publish stories about the Show several times before opening day and during the Show. The Gazette is printing 500 small posters for the Show, which we will place in local restaurants, motels, travel agencies, stores, etc.

A number of people have already volunteered to work before and during the Show, but we'd like to repeat that we have jobs for anyone who will give us a day or so of help. Don't forget that volunteers are treated to a fine hot lunch during Show

week. Thelma MacDougall has already made up the menus, and she and her helpers will have some tasty lunches ready for hungry volunteers. Elsewhere in this issue you will find a check-list of volunteer jobs. We hope you'll give us a hand.

The judges for the different sections of this year's Show are all experienced, highly-qualified people. You can be sure that entries they award prizes to will be worthy of distinction. For the Arts section, the judges are Isabel Holt, an artist (and Garden Member) who has had a number of one-man shows and who has judged several shows in recent years; and Del Decil, a widely-exhibited artist who is also a recognized judge. Camille Kimse will judge the photography section. She has just retired from business, having operated a well-known camera store for 35 years. As a photographer she has exhibited in international salons, and as a judge she has participated in many workshops, as well as serving as judge in our 1975 Show. The arrangements and dish gardens sections will be judged by three members of the National Judges' Association of the National Council of State Garden Clubs, Betty Schimek, Althea Staggs and Mrs. S. R. Stevens. Members of this organization have generously served as judges for our Show for the last fifteen years.

Judges for the Cacti and Succulents sections will be Virginia Martin and Vivienne Doney. Miss Martin, of Arcadia, California, is the Secretary of the Cactus & Succulent Society of America, has judged shows in California and in Hawaii, and served as judge of our Show in 1968. Mrs. Doney operates a cactus and succulent plant nursery in Monrovia, California, has judged many shows in her own state, and judged our Show in 1972.

(Continued on page 24)

## JOHN H. EVERSOLE

As this issue goes to press, we have just learned of the death of John H. Eversole, Chairman Emeritus of the Board of Directors of the Garden. Mr. Eversole became a Board Member in 1947, and was chosen Chairman of the Board in 1950, serving in that capacity until his resignation in 1975. His contributions to the Garden's growth were many. Typical of them was the way he gave his wholehearted assistance in our difficult early days. We think this excerpt from the article by our late Director, W. Taylor Marshall (Saguaroland Bulletin, December, 1954), is worth reprinting now.

"In April of 1947 our Garden was in great danger of complete extinction because on the first day of that month Mrs. Webster had died and her will provided for a trust fund for the support of the garden, without which we could not continue, but the will also required us to have a membership in excess of 200 as a condition to inheriting.

"The writer had just taken over the directorship of the garden in December 1946 and found only 12 active members on

the books but this had been increased to about 50 members by April 1st.

"We had now to bring the membership to 200 in the remaining weeks before the will was filed for probate.

"I remember a very nice couple who had spent several days in the garden taking pictures, and the next time they came I spoke of the necessity of getting new memberships and invited them to join our Society. They were John and Lois Eversole.

"Later that same year when our attorney was killed in an auto accident the Executive Board appointed John Eversole to fill his unexpired term and to act as our attorney, a position he filled through all the difficult period of the settlement of the Webster Estate, devoting many hours to our legal business without cost to us."

Mr. Eversole continued to work for the Garden for nearly twenty-nine years. The Garden's Board, Members, and Staff extend their sympathy to Mrs. Eversole and the Eversoles' son, George.

## Arizona Wildflower

### CHECKER-MALLOW

*Sidalcea neomexicana*

Malvaceae  
Mallow Family

In the same family as the garden Hollyhock, Checker-Mallow has a family resemblance to the much larger and much more familiar plant.

The flowers, as you can see in the photographs, are very similar to those of the old-fashioned garden hollyhock, and so are the round, flat fruits.

But what about the leaves? Yes, there's a similarity, too, in spite of what you see in these photographs. The top leaves, which you see here, are divided into three long,

thin leaflets. The leaves along the middle of the stem are broader, deeply cut into five to nine lobed segments, and could remind you of geranium leaves. It is the bottom leaves, quite unlike the others, that resemble the round, slightly scalloped leaves of the familiar Hollyhock.

Checker Mallow, *Sidalcea neomexicana*, is an attractive high-country wildflower in Arizona, growing at elevations of 5,000 ft. to 9,500 ft. It is a summer flower seen in good numbers along streams and in wet mountain meadows. We remember seeing scores of the plants in bloom in mid-August in one of the boggy meadows on Mingus Mountain. That was, of course, before our current three-year drought. Now, even the meadows are dry, and Checker-Mallow is much harder to find.

Here is what to look for: A slightly





This "wild hollyhock" is one of Arizona's moisture-loving plants.

sprawling plant in damp areas, that is eight to thirty inches tall, and has handsome rose-purple flowers one inch to two and a half inches across. The three kinds of leaves are another help in identification. We can't recall another plant with such an assortment of leaf shapes. Stems and leaves are slightly hairy. A plant may have a single stem or several stems.

This is the only *Sidalcea* in Arizona, though there are other members of the Mallow Family in the state, including the very common desert Globe-Mallow, *Sphaeralcea ambigua*. The Mallow Family



also includes such familiar plants as cotton, okra and hibiscus.

**DISTRIBUTION:** In Apache, Coconino and Yavapai counties in northern Arizona, and in the Chiricahua and Huachuca Mountains of Cochise County in southeastern Arizona. Elsewhere, from Wyoming and Idaho south to northern Mexico and west to California.

#### REFERENCES

Kearney & Peebles, Arizona Flora  
MacDougall, Grand Canyon Wild Flowers  
Nelson, Rocky Mountain Plants

—LD

## FIELD TRIPS

**RESERVATIONS ARE ESSENTIAL.** Field Trips are limited to 25 participants, with preference given to Garden Members. Non-members are put on a waiting list, and should check back with our office on the Friday before the Field Trip. Telephone 947-2800. Fee for non-members, \$1.00 per person.

Saturday, March 6th. **FISH CREEK CANYON**, about halfway along the Apache Trail. A favorite trip for early wildflowers. A little hiking, but terrain is rough. Driving about 90 miles round trip.

Saturday, April 3rd, **PERALTA CANYON**, at the base of the Superstition Mtns. Good for wildflowers even in dry years. A three-mile hike on the steep but good trail into the canyon. Round trip mileage 100 miles. (Make reservations early for these popular trips.)

All Field Trips leave the Garden at 8:30 a.m. promptly, return before 5:30 p.m. Bring lunch, wear suitable clothing.

## PRAY FOR RAIN!

Or, if you can, do a rain dance. Unless we have very good rains in the next two months, the prospects are poor for any kind of spring wildflower display.

The average annual rainfall in this area is 7.83 inches. Rainfall for the last three years has been 6.54 in., 6.28 in., 5.23 in. The difference an inch or two of rain makes in other parts of the country is negligible. Two inches less than average in Boston, Chicago, or Atlanta would be a loss of something like four per cent, and would have almost no effect.

But the 5.23 in. rainfall we had last year meant that we got only 66 per cent of

normal, and that makes a tremendous difference.

1973 was a great year for wildflowers. Most of that year's rain fell in the early spring, and plants also benefited from the good rains of late 1972. But since then we have had nearly three years of dry, dry weather, and although it is too soon to talk of any drought pattern, there's nothing to indicate that things will change, either.

So, pray for a lot of nice rain between now and April — except for the week of the Cactus Show. That's the only way we'll get the great show of wildflowers we all look forward to in the springtime.

### CACTUS SHOW VOLUNTEERS

The 29th Annual Cactus Show is PRACTICALLY HERE. So, if you haven't signed up for one of the many volunteer jobs connected with the Show, DO IT NOW!

Last year's Show, manned mostly by you volunteers, drew 17,000 visitors, was covered by many newspapers, and by any standards, was a tremendous success. Your help will make this year's Show a success, too.

Here's the check list of jobs again. Will you let us know which ones you want to do?

- |   |  |
|---|--|
| <input type="checkbox"/> Typing                             | <input type="checkbox"/> Acting as host/hostess        |
| <input type="checkbox"/> Filing                             | <input type="checkbox"/> Being guard or 'traffic cop'  |
| <input type="checkbox"/> Sales in Shop                      | <input type="checkbox"/> Helping with publicity        |
| <input type="checkbox"/> Selling Nature Walks               | <input type="checkbox"/> Keeping attendance count      |
| <input type="checkbox"/> Restocking in the Shop             | <input type="checkbox"/> Answering visitors' questions |
| <input type="checkbox"/> Registering entries<br>before Show | <input type="checkbox"/> Lettering, posters, etc.      |
| <input type="checkbox"/> Mailing/Stuffing envelopes         | <input type="checkbox"/> Distributing posters          |
| <input type="checkbox"/> Tabulating the Show                | <input type="checkbox"/> Handling phone calls          |
| <input type="checkbox"/> Listing entries, Exhibitors        | <input type="checkbox"/> Miscellaneous chores          |
| <input type="checkbox"/> Figuring totals during Show        | <input type="checkbox"/> Guides on paths               |
| <input type="checkbox"/> Helping set up Show                | <input type="checkbox"/> Running errands.              |
|   | <input type="checkbox"/> Anything at all!              |

How many days a week? On weekends? An occasional evening? When? Now? During the Show? After? Call 947-2800 and tell us.

## ASPECTS OF OUR GARDEN



Papago Park is an area of 1100 acres of natural desert in the middle of a metropolitan area with 1,000,000 inhabitants. This scene from the Desert Botanical Garden (which occupies 150 acres of the park) shows one of the century-old saguaros and one of the wind-carved buttes that are features of our desert-in-the-city. Also shown, red-flowered ocotillos.

# Arizona Cactus

## TREE CHOLLA *Cylindropuntia imbricata* Cactaceae

This is the tree cholla of the Chihuahuan Desert that occupies the same place there that Cane Cholla, *C. spinosior*, does in the Sonoran Desert. Most of the desert in Arizona is, of course, the Sonoran Desert, but the westernmost extension of the Chihuahuan Desert reaches across southern New Mexico into southeast Arizona.

*Cylindropuntia imbricata* is an upright, open arborescent cactus, usually three to seven feet high, sometimes reaching ten feet, and occasionally reaching fifteen feet when it grows up through a tree. It has a definite short trunk bearing long



*C. imbricata* is one of the best chollas for desert landscaping.

horizontal-to-upright branches with joints five to fifteen inches long and about an inch in diameter.

The heavily tubercled branches have a much cleaner outline than do those of *C. spinosior* or the fuzzy branches of *C. bigelovii*, the Teddy Bear Cholla. Each tubercle has an areole from which rise eight to thirty spines covered with grayish, papery sheaths.

The terminal purplish-red flowers are large and appear in clusters, creating a handsome bouquet. Each flower is 1½ in. to 2½ in. tall, and 3 in. broad. Flowers are wheel-shaped and will remain open for several days.

The yellow fruits are quite fleshy at maturity. They are 1 to 1½ inches long and 1 in. broad. Both fruits and flowers are eaten by browsing animals. The fruits bear a few tan seeds, ⅛ in. in diameter, which have poor germination, due to the bony aril common in many *Opuntias*.

This plant grows in gravelly and sandy soils, usually in grasslands and plains, in the higher parts of the Chihuahuan Desert. In Arizona it is found in southern Gila County, northeast Pima County, and northwest Cochise County. It grows quite heavily in the Lincoln National Forest along the Arizona-New Mexico border, and extends eastward into Texas and south into Chihuahua, Mexico.

It is an attractive plant in desert gardens, and cultivation is quite easy. All you have to do is plant one of the ten-to-twelve-inch stems in the ground. Water it after it has had a chance to put out roots, in a few weeks. It should flower in about four years, and become a small tree in no more than thirty or forty years. This cactus from higher elevations actually does very well here in the lower desert. Its slow growth is no disadvantage, and it makes

almost no litter — unlike some other chollas.

Type locality: Webb County, Texas.

Distribution: Southeast Colorado, eastern Arizona, New Mexico, western Texas, Chihuahua.

#### REFERENCES

Benson, Cacti of Arizona  
Earle, Cacti of the Southwest

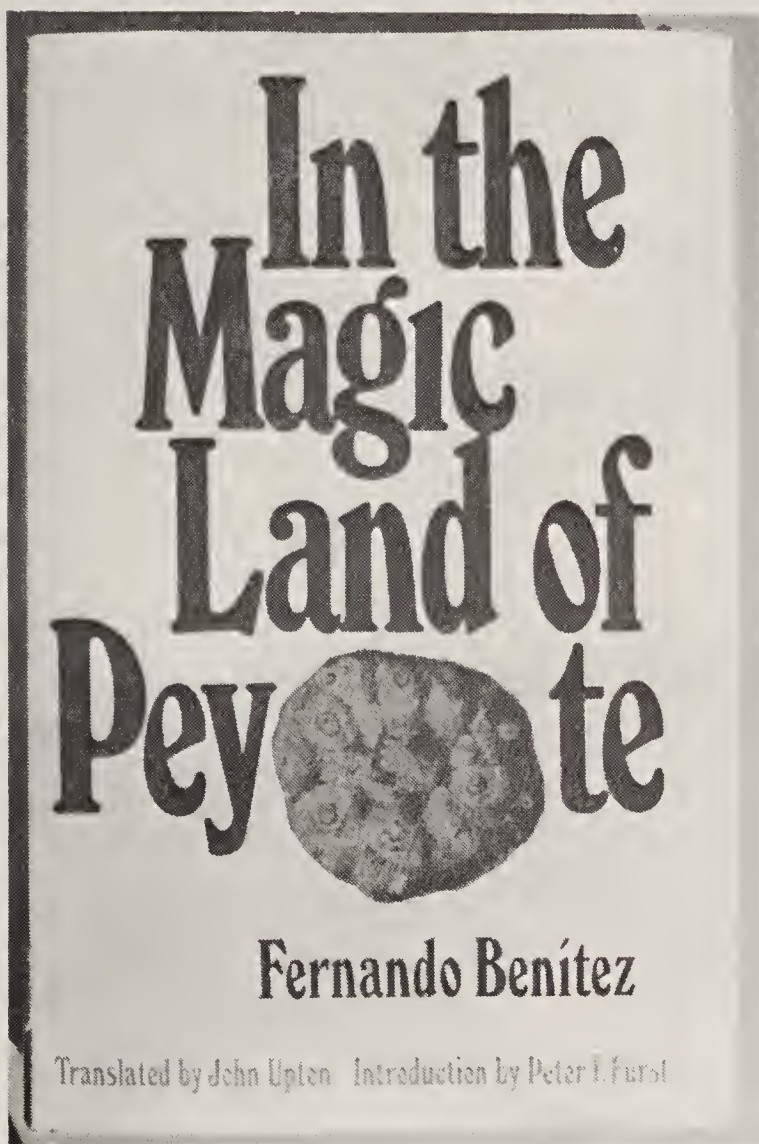
—WHE

## CHANGE OF ADDRESS

We have to pay 12c to the Post Office for every BULLETIN returned to us, and 13c more to mail it out again.

So, when you're going to move, please let us know at least four weeks in advance. It would be nicer if we could spend the money for plants.

## Book Review



IN THE MAGIC LAND OF PEYOTE, Fernando Benitez. University of Texas Press, Austin and London, 1975, xxvii, 198 pp., illustrated. \$9.75.

The introduction and the photographs of Peter T. Furst, and the translation by John Upton add to the value of Benitez' "En la tierra magica del peyote," first published

in 1968 as part of Vol. II of the author's monumental "Los indios de Mexico."

This is a most readable book, the breadth and depth of the author's knowledge making it much more interesting than many of the current pseudo-mystical books that stress only the hallucinogenic properties of the small sacred cactus, *Lophophora williamsii*.

The Huichol Indians make annual pilgrimages from their home in the Sierra Madre Occidental to Catorce, in the state of San Luis Potosi, "to find one's life" and use the peyote cactus in religious rites as a fulfillment of fundamental needs in their lives. Benitez, although not an Indian, was allowed to observe and participate in their various ceremonies. Benitez' qualifications to write about this particular subject are outstanding. A historian, editor, journalist and social critic, well-read in anthropology, and deeply interested in all aspects of Indian life, he sees peyote and the Huichol peyote-users in perspective. This book should not be confused with the sordid accounts of sensationalists. Basically, it is one man's account of one pilgrimage, but it also includes legends, history, anthropology and warm personal comments. It is well worth reading.

(This book is available in the Garden's Bookshop.)

—WHE

## FOR DESERT GARDENS, *Eucalyptus spathulata*

We have referred in past Bulletins to a new eucalyptus grove at the Garden. This is the first of what we hope will be a series of reports on the successful introduction of desert-adapted *Eucalyptus* species to the Valley.

When most Arizonans think of *Eucalyptus* they picture a large, graceful, brittle, messy tree. Most of us are familiar only with *E. rostrata* (*E. camaldulensis*) and perhaps *E. polyanthus*, both of which are really too large for the average Valley home lot. Of the over five hundred described species of *Eucalyptus*, all from Australia or nearby islands, many are adapted to the hot, dry "Red Center" of central and western Australia.

Until fairly recently the only species available to us were those from eastern and southwestern Australia, species that do best where the rainfall pattern is the Mediterranean type. Now, however, nurserymen are beginning to realize that "just because it will grow in California," where most of the Valley's landscape plants originate, a plant is not necessarily adaptable to the dry, extended heat of southern Arizona.

*Eucalyptus*, a genus of the Myrtaceae, is

easily recognized by the presence of an operculum, a conical cap which covers the flower bud. The barks, which are variable, are a useful aid in identification. Smooth-barked species are known as Gum Trees, scaly-barked species are called Bloodwoods, species with thick, fibrous barks are referred to as Stringybarks, and species with hard, furrowed, black bark are referred to as Ironbarks.

The eucalyptus that is the subject of this article is *E. spathulata* Hook., a small (25 ft. or less), single-or-multiple-trunked, open-crowned, smooth-barked gum tree, or a shrub 6 to 8 ft. tall. The overall effect is in harmony with the Arizona desert landscape. In a vague way, it reminds us of an olive tree. It is finer-textured, and softer in appearance, but the dark gray-green color of the leaves, and the overall shape are similar.

Leaves are linear, linear-lanceolate, or oblong-lanceolate, straight or slightly falcate. They are approximately three inches long. We have not seen the plant in flower or fruit, but descriptions given are as follows.

Peduncles are short and axillary, laterally flattened, but not very broad.



The rounded, spreading *E. spathulata* is very different from the more common tall *Eucalyptus*.

They contain the flowers. The calyx tube is obovoid, thick, about one-quarter of an inch long. The operculum is a somewhat conical cap which covers the many stamens in bud and falls entire as the stamens expand at anthesis. The operculum is cylindrical, obtuse, narrower than the calyx and about twice as long. The stamens are many, erect, slightly flexed, about one-half inch long. Anthers are oblong and parallel-celled. It is the stamens that are the showy part of Eucalyptus flowers.

The fruit is an obovoid, woody capsule, three-quarters of an inch long and nearly as much in diameter, contracted at the orifice. The orifice is further closed by the rather broad, flat rim. The capsule is sunk into the receptacle, but the points of the valves sometimes protrude slightly.



The smooth bark adds to the appeal of this small Australian gum tree.

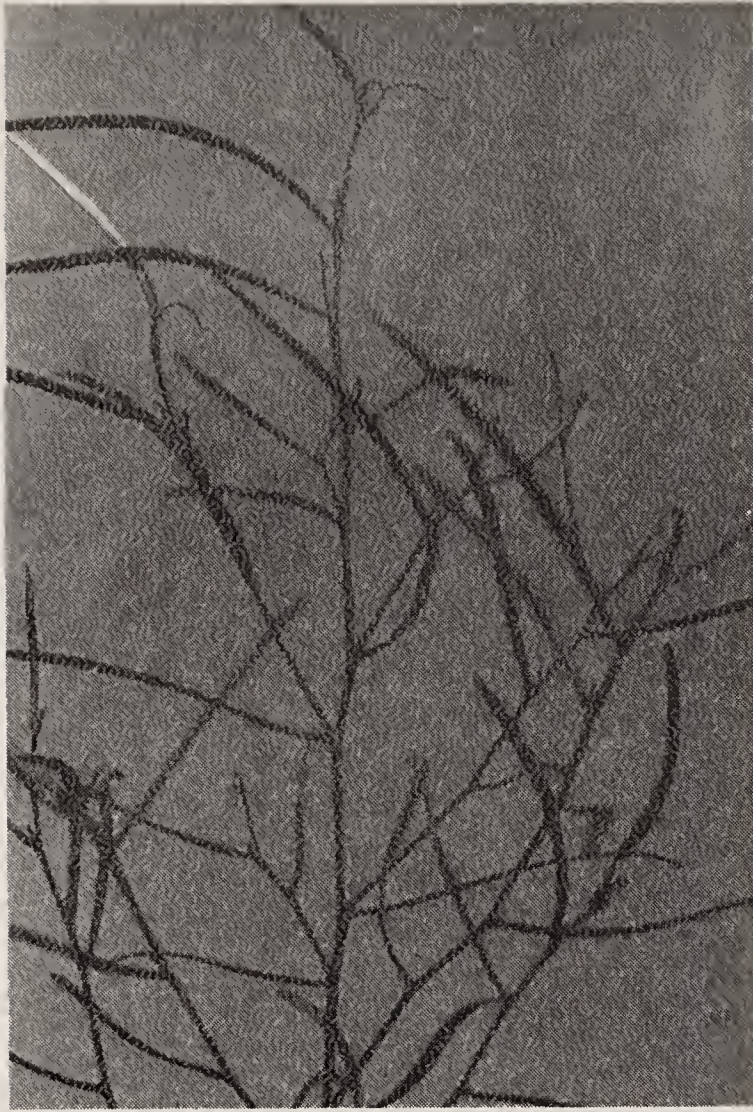
The native range of *E. spathulata* is West Australia between Perth and King George's Sound, where rainfall is 7 to 15 inches.

The smaller plant pictured here is on a drip-irrigation system, and is four feet high, having doubled its size since being planted in April, 1975. The mature plants pictured are part of the landscaping of the American Express Co.'s head office on North 24th Street, Phoenix. They were planted from 24-inch boxes about four years ago, and have reached a height of about twenty feet.

*E. spathulata* appears to have real possibilities, and we look forward to seeing



Though only 4 ft. tall, this young *E. spathulata* is an attractive plant.



this distinctive tree used in desert landscapes in the future.

REFERENCES

Bentham, Flora Australiensis  
 Willis, Dictionary of Flowering Plants and Ferns

—RGE

The narrow, gray-green leaves of *E. spathulata* are shaped like scimitars.



EDITOR'S NOTES—

(Continued from page 15)

One last reminder. You might take a look at the cacti and succulents in your own garden to see if you could thin out some plants now. Quite a few Members do this and contribute the extra plants to be sold during the Show. It's a very nice way to help your Garden.

GARDEN ACTIVITIES

FEBRUARY

Tues.	3rd	CACTOMANIACS—Meeting	8:00 P.M.
Wed.	4th	CLASS—Culture of Desert Trees & Shrubs	2:30 P.M.
Thurs.	5th	ILLUSTRATED LECTURE—Mexican Cacti	3:00 P.M.
Sat.	7th	FIELD TRIP—White Tanks Mt.	8:30 A.M.-4:45 P.M.
Wed.	11th	CLASS—Field Trip: Cave Creek Dam	8:30A.M.-4:15 P.M.
Thurs.	12th	ILLUSTRATED LECTURE—Western Australian Wildflowers	3:00 P.M.
Wed.	18th	Deadline for CACTUS SHOW Art Entries	5:00 P.M.
Fri.	20th	All other CACTUS SHOW Entries received today and until 1:00 P.M. on the 21st	
Sun.	22nd thru Sun. 29th	29th ANNUAL CACTUS SHOW	Daily 9-5 P.M.

MARCH

Tues.	2nd	CACTOMANIACS—Meeting	8:00 P.M.
Sat.	6th	FIELD TRIP—Fish Creek Canyon	8:30 A.M.-4:45 P.M.
Wed.	10th	CLASS—Deserts . . Their Plants	2:30 P.M.
Thurs.	11th	ILLUSTRATED LECTURE—Arizona Cacti	3:00 P.M.
Wed.	17th	CLASS—Succulent Plants	2:30 P.M.
Thurs.	18th	ILLUSTRATED LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	24th	CLASS—Culture of Succulent Plants	2:30 P.M.
Thurs.	25th	ILLUSTRATED LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sun.	28th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.
Wed.	31st	CLASS—Identification of Desert Trees & Shrubs	2:30 P.M.



# SAGUAROUND

## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

MARCH, 1976

No. 3



REPORT OF THE  
29th ANNUAL CACTUS SHOW  
AND  
AWARD WINNERS

REG-MANNING-72

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year. Annual subscription including membership, \$10.00.

Editor, W. Hubert Earle

Associate Editor, Lillian Diven

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Vol. XXX

MARCH, 1976

No. 3

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## Arizona Cactus and Native Flora Society

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### COVER:

Henry Triesler's *Adenium obesum*

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## Desert Botanical Garden of Arizona

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Student Horticulturist . . . . .	John Moresco

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Garden Open Daily 9 a.m. to 5 p.m. including holidays

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ANNUAL MEMBERSHIP: Individual \$10.00, Family \$15.00, Sustaining \$25.00, Benefactor \$50.00, Elementary or High School Student \$2.00. LIFE MEMBERSHIP \$100.00. FOUNDER MEMBERSHIP \$500.00.

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## REPORT OF THE 29th ANNUAL CACTUS SHOW

Our 29th Annual Cactus Show was very successful in three most important aspects. Attendance was approximately 15,000, which means that there were many visitors who saw our grounds, as well as the Show, for the first time. Since the growth of our Garden depends on new friends as well as old ones, we think this is an encouraging "statistic".

The notably varied exhibits were entered by quite a few new exhibitors alongside the ranks of the devoted past exhibitors. This is another healthy sign, welcomed by everybody who is interested in the quality of the Show.

The income from the Show — voluntary admissions, bookstore sales, nature walks and plant sales — which is an important source of money for our operating expenses, reached a satisfying figure. In particular, plant sales brought in half again as much as they did last year, due in great part to the plants donated by generous friends of the Garden. This was an indication to us of the great local interest in cacti and other desert garden plants, and augurs well for our scheduled sale of unusual plants on April 10th and 11th.

The success and the high standards of our Annual Cactus Shows have not passed unremarked. A number of Flower Show managers from other parts of the country made a point to visit the Garden during Show Week to learn about our procedures and the way we display exhibits. Cactus fanciers will be pleased to know that their special interest is becoming more and more popular in flower shows throughout the country, and the Desert Botanical Garden's Show is the standard of excellence. The spreading reputation of the Cactus Show also resulted in many out-of-towners and out-of-staters making a special trip to Phoenix for the Show. The two largest groups were the Las Vegas Cactus Club and the Tucson Cactus and Botanical Club, who came by charter bus.

An innovation this year was the locating of the Photography Exhibit in our Herbarium. For the first time this Section had a really fine place to display entries, and the judges and photographer-volunteers are convinced that, as a result, we can expect more and better entries in this Section in next year's Show.

It would be impossible to praise our volunteers too much. Without them, there simply could be no Show.

This year we would like to report in more detail than usual the work our volunteers did.

Christa Roberts, for example, came up from Coolidge and stayed at a nearby motel so that she could spend three full days here. Whether Show visitors had elementary or highly specialized questions about the exhibits, they could always get helpful and accurate answers from this very knowledgeable lady.

Other "experts" (a term they themselves don't claim, despite their wide experience) who were great sources of information, much appreciated by visitors, included Henry Triesler, Phil Hennessey, Fran Tolleson and Walter Groll. The Central Arizona Cactus and Succulent Society members, who worked so hard with us before and during the Show, supplied many "information experts."

Manning the plant sales area (along with staff members) were volunteers who have had long practical experience in growing plants, and so were equipped to give practical advice to purchasers. They included George Andersen, Tom Birt, Mary Getz and Charles Merbs.

To have all these people available to share plant knowledge with visitors made the difference between a good Show and a helpful, informative Show.

Pre-Show volunteers did jobs that were dull, grubby and most necessary. For four solid days Frances Samson worked with the staff setting up the display tables, moving

furniture, banging in nails, fetching and carrying — work “above and beyond the call of duty”. Angeline Nicosia was another who worked like a Trojan before and during the Show — with set-up, tabulation, typing, selling — when and where she was needed for both extra-busy weekends. The other volunteers who slaved along with the staff in the weeks before the Show, registered Show entries, worked during the Show (and in some cases afterwards) were Margaret Caldwell, Dorothy O’Rourke, Gen Evans, Bob Moulis, Warner Dodd, Harriet Bonney, Audrey Ferguson, Lee Staver, Delma and Steve Thorne, Walter Groll, Alice Lemmon, Genevieve Oppen, Fran Shellington, Virginia Spangler, Elizabeth Fritz, Lillian Diven, Peg Gill, Wendy Hodgson.

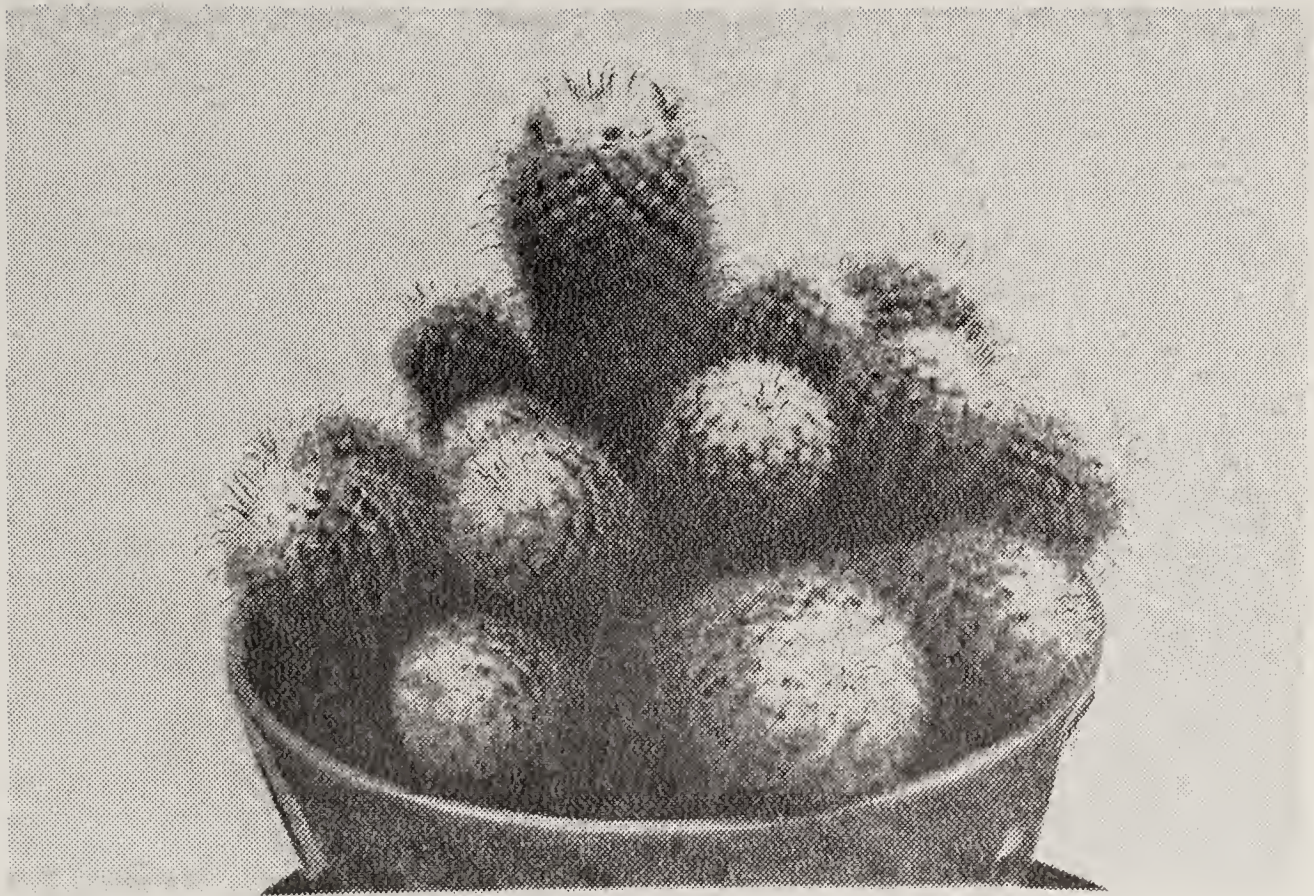
The week before the Show opened, posters arrived from our co-sponsors, the Phoenix Gazette. The problem was to get them posted right away before opening day, in stores and other places where they would be seen by as many people as possible, besides the hotels and motels where Lynn Trainum distributes our brochures and other information. In response to frantic phone calls, Garden members and friends quickly came to the Garden, picked up posters and distributed them widely and wisely. Thanks for this last-minute help goes to Marlys Dannenberg, Bill Tucker, Mary Getz, Tom Birt, Frank Hennessey, Nevelyn Hopkins, Genevieve Oppen, Peg Gill, Audrey Ferguson, Charles Merbs and Karen Amacker. (Most of them worked during the Show, too.)

Lela Turner deserves a paragraph to herself, if not a full page, for all she did. Lela has been a Garden member since 1948, and a winner of blue ribbons since her first entries in the 1952 Cactus Show. This year, besides her regular work in the bookstore, she did just about everything — washed windows, brought food for the staff before the Show, fed volunteers during the Show, was hostess and “arrangements information lady” during the Show, and collected more blue ribbons for arrangements, of course. In our records of who did what during the Show, you’ll find an attempt to list Lela’s jobs and hours crossed out, followed by the true description: “Every day, everywhere.”

Feeding all the staff and other volunteers a hot lunch for eight consecutive days takes skill in planning and execution. In command for her tenth year was our culinary general, Thelma MacDougall. Her “troops” included Nevelyn Hopkins, Alice Phillips, Janet Alsever, Lela Turner, Lucille Earle, Dorothy O’Rourke, Rose Cox, Gen Evans, Betty Schrieber, Lillian Mieg, Lola Engard, Angie Nicosia. One member of the staff (no name, please) says that he gained 14 pounds during the Show, in spite of working nearly twelve hours a day.

The response to the “Cactus Show Check List of Chores” that appeared in the last two issues of the Bulletin was wonderful. Experienced volunteers took over jobs they knew well from past Shows, new volunteers asked for jobs they felt they could do best, or simply checked “anything at all”. Each one gave us as many as five full days of hard work. If we had the space (about twenty more pages) we’d like to praise each one individually. They deserve it. But we must mention Mrs. E. R. Parsons who spent a full day in the bookstore. The lady admits to being over ninety.

And so we’ll close the report of this year’s Show with a list of the volunteers we haven’t yet mentioned — with our deepest thanks for their generosity with their time and effort. They are: Khrybel Amberg, Lela Barber, John Barron, F. L. Bernier, Frances Boland, Kay Cousin, Zoe Dodd, Alice Feffer, Muriel Freeman, Helen Friedrichs, Eleanor and Carl Groschke, John Hales, Roger Hawk, Mildred Hunt, Lucille Ives, Becky Jenkins, Margaret Jenkins, Irene McLaughlin, Ellen Martin, Helen Medley, Selma Olson, Wendell Phillips, Jean Rice, Virginia Sanger, Ed Schrieber, Carmen Tacchella, Ruby Tucker and Mildred Yenchius.



Judged the Best Mammillaria in the Show was this *Mammillaria bombycina* exhibited by Phil Hennessey.

## TWENTY-NINTH ANNUAL CACTUS SHOW AWARD WINNERS

### SWEEPSTAKES AWARDS

(Accumulation of the most award points in the specific group)

CACTI: Fran M. Tolleson, 9641 N. 4th Ave., Phoenix

LEAF SUCCULENTS: F. M. Tolleson

ARRANGEMENTS: Kay Frank, 5306 N. 9th St., Phoenix

### TROPHY AWARDS

CACTUS: F. M. Tolleson

MAMMILLARIA: Phil Hennessey, 2008 W. Indianola, Phoenix

COLLECTION OF 4 CACTI: F. M. Tolleson

CACTI SEEDLINGS: Charles Merbs, 8408 S. Newberry Ln., Tempe

SUCCULENT SEEDLINGS: C. Merbs

CRESTED CACTUS: Robert Moulis, 13431 N. 33rd Pl., Phoenix

LEAF SUCCULENT: F. M. Tolleson

COLLECTION OF 4 LEAF SUCCULENTS: R. Moulis

DESERT BONSAI: Alice Feffer, 7349 Clearwater Pkwy., Scottsdale

EUPHORBIA: Henry C. Triesler, Jr., 324 E. Sheridan St., Phoenix

AEONIUM: F. M. Tolleson

CRASSULA: Martha Passwater, 7014 N. 15th St., Phoenix

DISH GARDEN: F. M. Tolleson



This *Bursera microphylla* won a trophy for Alice Feffer in the Desert Bonsai Class.

PATIO PLANTER: H. C. Triesler, Jr.

CENTERPIECE: Lela Turner, 324 W. Siesta Way, Phoenix

ARRANGEMENT AGAINST WALL: L. Turner

MINIATURE ARRANGEMENT: Belle G. Strandberg, Box 110, Black Canyon Stage, Phoenix

PHOTOGRAPHY — BLACK & WHITE PRINT: Duane A. Martin, 1837 E. Granada Rd., Phoenix

PHOTOGRAPHY — TRANSPARENCY: Charles L. Thompson, 169 'I' Ave., Peoria Phoenix

PHOTOGRAPHY — TRANSPARENCY: Charles L. Thompson, 169 'i' Ave., Peoria

ARTS — OIL: Zoraida Twitty, 520 W. Lamar Rd., Phoenix

ARTS — WATERCOLOR: Pat Moody, 2323 N. 29th Pl., Phoenix

ARTS — ACRYLIC: Howard D. Amacker, N. Fuller St., Los Angeles, Calif.

ARTS — BOTANICAL ILLUSTRATION: Wendy C. Hodgson, 828 W. 2nd St., Tempe

COMMERCIAL EXHIBIT: Evans Cactus Garden, 5221 E. Van Buren, Phoenix

EDUCATIONAL EXHIBIT: Kent Newland, P.O. Box 86, Superior

## RIBBON AWARD WINNERS

### SECTION I, CACTI. CLASS A, INDIVIDUAL POTTED SPECIMENS

1. ARIOCARPUS. 1st, Mrs. Richard Wiedhopf. 2nd, 3rd and 4th, Phil Hennessey.
2. ASTROPHYTUM. 1st, F. M. Tolleson. 2nd, Margaret Kaduck. 3rd, H. Triesler. 4th, R. Moulis.
3. COLUMNAR CEREUS. 1st, F. M. Tolleson. 2nd, H. Triesler. 3rd, Emma Oscarson. 4th, Donald Shepard.
4. CORYPHANTHA. 1st, M. Kaduck. 2nd, Jonathan Webb.
5. ECHINOCACTUS. 1st, M. Kaduck. 2nd, H. Triesler. 3rd, Lowell Bakken.
6. ECHINOCEREUS. 1st and 2nd, M. Kaduck. 3rd, E. Oscarson. 4th, Margaret Caldwell.



The Best Crested Cactus in the Show was this *Normanbokea valdeziana* entered by Robert Moulis.

7. ECHINOMASTUS. 1st, M. Kaduck. 2nd, F. M. Tolleson. 3rd, Martha Passwater.
8. ECHINOPSIS. 1st, Walter Hatfield. 2nd, Lillian Lugibihl. 3rd, Mrs. Richard Enz. 4th, Ki Hermann.
9. FEROCACTUS. 1st, H. Triesler. 2nd, L. Bakken.
10. GYMNOCALYCIUM. 1st, F. M. Tolleson. 2nd, H. Triesler. 3rd, Mrs. R. Wiedkopf. 4th, E. Oscarson.
11. LOBIVIA. 1st, E. Oscarson.
- 12a. MAMMILLARIA (pots up to 3"). 1st and 2nd, R. Moulis. 3rd and 4th, F. M. Tolleson.
- 12b. MAMMILLARIA (pots 3" to 10"). 1st and 4th, R. Moulis. 2nd, F. M. Tolleson. 3rd, E. Oscarson. 4th, Genevieve Oppen.
- 12c. MAMMILLARIA (pots 10" and over). 1st and 3rd, Phil Hennessey. 2nd, R. Moulis. 4th, M. Kaduck. 4th, E. Oscarson.
13. MELOCACTUS. 1st, F. M. Tolleson. 2nd, E. Oscarson. 3rd, D. Shepard. 4th, Lewis Steichman.
14. NEOPORTERIA. 1st, 2nd and 4th, F. M. Tolleson. 3rd, E. Oscarson.
15. NOTOCACTUS. 1st, F.M. Tolleson. 2nd, M. Kaduck. 3rd, P. Hennessey. 4th, L. Bakken. 4th, E. Oscarson.
16. OPUNTIA. 1st, L. Steichman. 2nd, D. Shepard.
17. PARODIA. 1st, H. Triesler. 2nd and 3rd, P. Hennessey.
18. PEDIOCACTUS. (no entries)
19. REBUTIA. 1st, H. Triesler. 2nd, 3rd and 4th, P. Hennessey.
20. STENOCACTUS. 1st, C. Merbs. 2nd, M. Passwater. 3rd, L. Steichman.
21. THELOCACTUS. 1st, M. Kaduck. 2nd, R. Moulis. 3rd, G. Oppen. 4th, H. Triesler.
22. TURBINICARPUS. 1st, F. M. Tolleson.
23. ANY OTHER GENUS. 1st, M. Kaduck. 2nd, L. Bakken. 3rd, G. Oppen, 4th, E. Oscarson.
24. SEEDLINGS. 1st and 3rd, C. Merbs. 2nd, Shannath Merbs. 4th, F. M. Tolleson.
25. PELECYPHORA. 1st, 2nd and 3rd, F. M. Tolleson. 4th, L. Lugibihl.
26. EPITHELANTHA. 1st and 2nd, F. M. Tolleson. 3rd, M. Passwater. 4th, H. Triesler. 4th, C. Merbs.
27. ESPOSTOA. 1st and 2nd, G. Oppen.



Judges and visitors admired Charles Merbs' *Stenocactus*. The judges awarded it a blue ribbon.

28. OBREGONIA. 1st, M. Kaduck. 2nd, F. M. Tolleson. 3rd, P. Hennessey.

29. HAMATOCACTUS. 1st, 2nd and 3rd, F. M. Tolleson.

CLASS B, CRESTED OR MONSTROSE.

1. OWN ROOT. 1st and 2nd, R. Moulis. 3rd and 4th, F. M. Tolleson. 4th, Richard Kreisler.

2. GRAFTED. 1st, R. Moulis.

CLASS C, GRAFTED.

1st and 2nd, R. Moulis. 3rd and 4th, P. Hennessey.

CLASS D. COLLECTIONS.

1st, F. M. Tolleson. 2nd, Mrs. R. Wiedhopf.

SECTION II. SUCCULENTS OTHER THAN CACTI. CLASS A, INDIVIDUAL POTTED SPECIMENS

1. AEONIUM. 1st and 2nd, F. M. Tolleson. 3rd, Mary Emery. 4th, M. Passwater.

2. AGAVE. 1st, H. Triesler. 2nd, F. M. Tolleson. 3rd, E. Oscarson. 4th, S. Merbs.

3. ALOE. 1st and 2nd, F. M. Tolleson. 3rd, H. Triesler. 4th, R. Moulis.

4. CONOPHYTUM. 1st, 2nd and 3rd, F. M. Tolleson.

5. CRASSULA. 1st and 3rd, M. Passwater. 2nd, F. M. Tolleson. 4th, Sharlene Harris.

6. DUDLEYA. 1st, H. Triesler.

7. ECHEVERIA. 1st and 2nd, F. M. Tolleson. 3rd, Kathy McCombs.

8. EUPHORBIA. 1st and 2nd, H. Triesler. 3rd, M. Passwater. 4th, G. Oppen. 4th, M. Kaduck.

9. GASTERIA. 1st, 2nd and 4th, H. Triesler. 4th, Bonnie Rodriguez.

10. HAWORTHIA. 1st and 4th, D. Shepard. 2nd, F. M. Tolleson. 3rd, K. McCombs.

11. HOYA. 1st, Belle Strandberg. 2nd, F. M. Tolleson. 3rd, Emelia LaTempa.

12. KALANCHOE. 1st and 4th, F. M. Tolleson. 2nd, Judy Burggraaf. 3rd, E. Oscarson.

13. LITHOPS. 1st, 2nd and 3rd, F. M. Tolleson. 4th, C. Merbs.

14. OTHER MESEMBRYANTHEMUMS. 1st, M. Emery. 2nd, Mrs. H. Bool. 3rd, K. McCombs. 4th, F. M. Tolleson.

15. PLEIOSPILOS. 1st, K. McCombs. 2nd, F. M. Tolleson.





At left, Fran Tolleson's *Aloe variegata*, Best Succulent in Show. Right, Margaret Kaduck's *Astrophytum capricorne var senile*.

- 16. SEDUM. 1st, F. M. Tolleson. 2nd, L. Steichman.
- 17. ASCLEPIADS. 1st and 3rd, H. Triesler. 2nd, Mrs. H. Bool. 4th, K. McCombs.
- 18. YUCCA (no entries)
- 19. ANY OTHER GENUS. 1st and 2nd, C. Merbs. 3rd, L. Steichman.
- 20. SEEDLINGS. 1st and 2nd, C. Merbs. 3rd, F. M. Tolleson.
- 21. ADROMISCHUS. 1st and 2nd, M. Passwater. 3rd, F. M. Tolleson.
- 22. SENECEO. 1st, 2nd and 4th, F. M. Tolleson. 3rd, B. Strandberg.
- 23. SEMPERVIVUM. 1st, 2nd and 3rd, F. M. Tolleson.
- 24. FAUCARIA. 1st, 3rd and 4th, M. Passwater. 2nd, F. M. Tolleson.
- 25. URBINA. 1st, M. Kaduck. 2nd and 3rd, M. Passwater.
- 26. COTYLEDON. 1st, H. Triesler. 2nd, F. M. Tolleson. 3rd, B. Rodriguez. 4th, M. Passwater.

CLASS B, COLLECTIONS. 1st, R. Moulis. 2nd, F. M. Tolleson.

### SECTION III, DESERT TREES AND SHRUBS.

CLASS A, TREES. 1st, D. Shepard. 2nd, E. Oscarson. 3rd, H. Triesler.

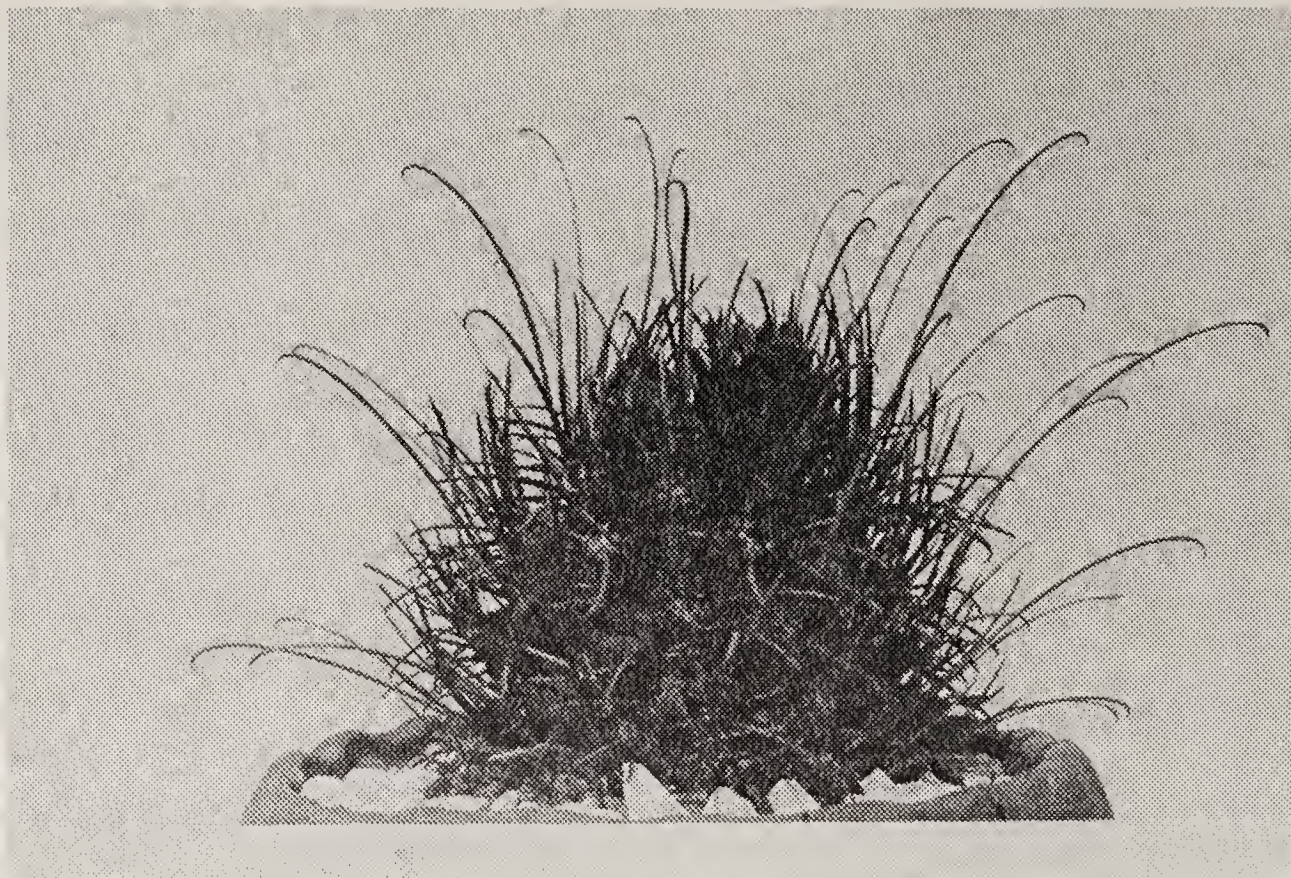
CLASS B, DESERT BONSAI. 1st, Alice Feffer. 2nd, H. Triesler. 3rd, F. M. Tolleson. 4th, Lamont Potter.

CLASS C, CAUDICIFORMS. 1st, 4th and 4th, F. M. Tolleson. 2nd and 3rd, H. Triesler.

### SECTION IV. PLANTERS

CLASS A, DISH GARDENS.

- 1. CACTI. 1st, L. Lugibihl. 2nd, David MacMillan. 3rd, Edwin George. 4th, Dottie Battiest. 4th, E. Oscarson.



*Echinomastus uncinatus*. This plant won Margaret Kaduck one of the six blue ribbons she collected at the Show.

2. OTHER SUCCULENTS. 1st, F. M. Tolleson. 2nd, B. Rodriguez. 3rd, E. Oscarson. 4th, M. Passwater.

3. CACTI & SUCCULENTS. 1st, Mrs. Ted Allen. 2nd and 4th, G. Oppen. 3rd, Jacqueline Evans. 4th, F. M. Tolleson.

CLASS B, TERRARIUMS.

1st, F. M. Tolleson. 2nd, D. Shepard.

CLASS C, HANGING PLANTERS.

1st and 2nd, F. M. Tolleson. 3rd, Mrs. H. Bool.

CLASS D, STRAWBERRY JARS.

1st, R. Moulis.

CLASS E, PATIO PLANTERS.

1st and 2nd, H. Triesler. 3rd, June R. Payne. 4th, F. M. Tolleson.

SECTION V, ARRANGEMENTS.

CLASS A, CENTERPIECES

1. CACTI. 1st, L. Turner.

2. SUCCULENTS. 1st, B. Strandberg. 2nd, L. Turner.

3. CACTI & SUCCULENTS. 1st, L. Turner. 2nd, Kay Frank. 3rd, E. Oscarson.

4. DRIED ARIZONA DESERT MATERIAL. 2nd, L. Turner. 3rd, Pat Beauvais.

CLASS B, ARRANGEMENTS ON OR AGAINST WALL.

1. CACTI. 1st, L. Turner. 2nd, Kay Frank.

2. SUCCULENTS. 2nd, Kay Frank. 3rd, L. Turner.

3. CACTI & SUCCULENTS. 1st, L. Turner. 4th, Kay Frank.

4. DRIED ARIZONA DESERT MATERIAL. 1st, Joan Gossman. 2nd, B. Strandberg. 3rd, L. Turner. 4th, E. Oscarson. 4th, Kay Frank.

CLASS C, CORSAGES.

1. CACTI. (no entries)

2. SUCCULENTS. 1st, Kay Frank. 2nd, B. Strandberg. 3rd, Myrtle Browne.

3. CACTI & SUCCULENTS. (no entries)

4. DRIED ARIZONA DESERT MATERIAL. 1st, Mrs. C. H. Morris. 2nd, M. Browne. 3rd, Kay Frank. 4th, B. Strandberg.



Joy Lee Weber combined a gnarled buckwheat shrub and red chilis for her dried-materials centerpiece.

#### CLASS D, BUTTON ARRANGEMENTS.

1. CACTUS. 1st, Kay Frank. 2nd, B. Strandberg. 3rd, B. Rodriguez.
2. SUCCULENTS. 1st, B. Rodriguez. 2nd, Kay Frank.
3. CACTI & SUCCULENTS. 1st, Kay Frank. 3rd, B. Rodriguez.
4. DRIED ARIZONA DESERT MATERIAL. 1st, Joan Smith. 2nd, M. Browne. 3rd, B. Strandberg. 4th, B. Rodriguez.

#### CLASS E, MINIATURE ARRANGEMENTS.

1. CACTUS. 1st, Kay Frank.
2. SUCCULENTS. 1st, Kay Frank. 3rd, B. Strandberg.
3. CACTI & SUCCULENTS. 1st, Kay Frank. 2nd, M. Browne.
4. DRIED ARIZONA DESERT MATERIAL. 1st, B. Strandberg. 2nd, J. Gossman. 3rd, M. Browne, 4th, Kay Frank.

#### SECTION VI. PHOTOGRAPHY.

CLASS A, BLACK & WHITE PRINTS. Landscapes: 1st, Duane A. Martin. 2nd, Hobart Pribbenow. 3rd, Richard E. Dale. 4th, Walter J. Groll, Sr. Wildlife: 1st and 2nd, John H. Walter. 3rd, Donald Inscho. Plants: 1st, H. Pribbenow. 2nd and 4th, Pieter Burggraaf. 3rd, Alois Maag.

CLASS B, COLOR PRINTS. Landscapes: 1st and 3rd, Nickala McNichols. 2nd and 4th, H. Pribbenow. 4th, W. Groll. Wildlife: 1st and 4th, W. Groll. 2nd, Ken Kingsley. 3rd, Margaret Kurzius. Plants: 1st and 4th, George F. Bradley. 2nd, H. Pribbenow. 3rd and 4th, Charles Thompson. 4th, W. Groll. 4th, N. McNichols.

CLASS C, TRANSPARENCIES. Landscapes: 1st, W. Groll. 2nd, Earl Case. 3rd, M. Genevieve Evans. 4th, K. Kingsley. Wildlife: 1st and 4th, M. Kurzius. 2nd and 3rd, Frances Shellington. 4th, K. Kingsley. Plants: 1st, C. Thompson. 2nd, Marcia Schaffer. 3rd (tied), Walter Schulze and Greg Hauswirth. 4th, Jordan Francis. 4th, Olivine Cochrane. 4th, Dorothy O'Rourke. 4th, E. Case. 4th, A. Maag. 4th, W. M. Salminen.

SECTION VII, ARTS, DESERT SUBJECTS

CLASS A, OILS. 1st, Zoraida Twitty. 2nd, Margaret Sloan. 3rd, Olga Tissarewsky-Topolowa. 4th, Khrybel Amberg. 4th, Arthur C. Hays. 4th, Betty Sieswerda.

CLASS B, WATERCOLORS. 1st, Pat Moody. 2nd, Harriette Mularz. 3rd, Pat De Witt. 4th, Aileen Masters. 4th, Grace Schoonover. 4th, Ruth Blomeyer.

CLASS C, ACRYLICS. 1st, Howard D. Amacker. 2nd, Zoraida Twitty.

CLASS D, GRAPHICS. 1st and 3rd, Barbara Hovatter. 2nd, Doris Griswold. 4th, Lila Shellhorn.

CLASS E, OTHER MEDIA, MIXED MEDIA. 1st, Aileen Masters. 2nd, Edna Hostetler. 4th, Kay Frank.

CLASS F, BOTANICAL ILLUSTRATION. 1st, 2nd and 3rd, Wendy Hodgson.

SECTION VIII, EDUCATIONAL EXHIBITS.

1st, Kent Newland. 2nd, Central Arizona Cactus & Succulent Society. 3rd, Kay Frank.

## GARDEN ACTIVITIES

FIELD TRIPS — **reservations are essential.** Field trips are now limited to 25 participants. Telephone the Garden, 947-2800.

Saturday, April 3rd. Peralta Canyon in the Superstitions.

Saturday, May 1st. Box Canyon, southeast of Florence Junction. A new field trip area.

All field trips leave the Garden promptly at 8:30 a.m. and return before 5:30 p.m. Bring lunch, wear suitable clothing.

### MARCH

Tues.	2nd	CACTOMANIACS—Meeting	8:00 P.M.
Sat.	6th	FIELD TRIP—Fish Creek Canyon	8:30 A.M.-4:45 P.M.
Wed.	10th	CLASS—Deserts . . Their Plants	2:30 P.M.
Thurs.	11th	ILLUSTRATED LECTURE—Arizona Cacti	3:00 P.M.
Wed.	17th	CLASS—Succulent Plants	2:30 P.M.
Thurs.	18th	ILLUSTRATED LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	24th	CLASS—Culture of Succulent Plants	2:30 P.M.
Thurs.	25th	ILLUSTRATED LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sun.	28th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.
Wed.	31st	CLASS—Identification of Desert Trees & Shrubs	2:30 P.M.

### APRIL

Thurs.	1st	ILLUSTRATED LECTURE—Arizona Birds & Animals	3:00 P.M.
Sat.	3rd	FIELD TRIP—Peralta Canyon	8:30 A.M.-4:45 P.M.
Tues.	6th	CACTOMANIACS—Meeting	8:00 P.M.
Wed.	7th	CLASS—Culture of Desert Trees & Shrubs	2:30 P.M.
Thurs.	8th	ILLUSTRATED LECTURE—Mexican Cacti	3:00 P.M.
Sat.	10th	SALE OF UNUSUAL PLANTS	9-5 P.M.
Sun.	11th	SALE OF UNUSUAL PLANTS	9-5 P.M.
Wed.	14th	CLASS—Field Trip: Pinnacle Peak	8:30 A.M.-4:15 P.M.
Thurs.	15th	ILLUSTRATED LECTURE—Western Australian Wildflowers	3:00 P.M.
Thurs.	22nd	ILLUSTRATED LECTURE—Arizona Cacti	3:00 P.M.
Sun.	25th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.
Thurs.	29th	ILLUSTRATED LECTURE—Arizona Wildflowers	3:00 P.M.

# SAGUARO

## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

April 1976

No. 4



REG-MANNING-PL

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year. Annual subscription including membership, \$10.00.

Editor, W. Hubert Earle

Associate Editor, Lillian Diven

Vol. XXX

APRIL, 1976

No. 4

## Arizona Cactus and Native Flora Society

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Cover: *Acacia craspedocarpa*

## Desert Botanical Garden of Arizona

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Garden Open Daily 9 a.m. to 5 p.m. including holidays

ANNUAL MEMBERSHIP: Individual \$10.00, Family \$15.00, Sustaining \$25.00, Benefactor \$50.00, Elementary or High School Student \$2.00. LIFE MEMBERSHIP \$100.00. FOUNDER MEMBERSHIP \$500.00.

# Editor's Notes



Right after the Cactus Show, while the Auditorium's display tables were being taken down and the regular furniture moved back, the Show Committee met to begin plans for the 1977 Show. From their own notes and from notes and suggestions made by the Staff and the volunteers during the Show they worked out ideas for improvements and possible changes, and evaluated the changes we had made in this year's Show. For instance, the location of the Photography Section in the Herbarium proved most successful, and only some minor changes were suggested for next year. Another idea that proved successful was the placing of membership applications in conspicuous spots throughout the Garden and in every copy of our Nature Walk pamphlet. It resulted in a record number of new memberships, and will be repeated next year.

We're happy to report that the Garden Development Project No. 2, which we told you about in the December Bulletin, is now a reality. We had a pressing need for new, large trash receptacles along the Garden paths. Mr. Leonard Swanson, of Cave Creek, Arizona, has given us eight large and three small flue liners — which are high-fired clay pipes usually used to build chimneys. They are square in cross sec-

tion, with rounded corners, and the large ones are seventeen inches across, an ideal size for litter containers. Standard rubber rings will hold disposable plastic trash bags. The smaller ones, eight and a half inches across, will be modified to become pathside ashtrays. They'll make an attractive and useful addition to the Garden.

Another important item was given to us by Alice Feffer. We have had one wheelchair for the use of visitors since 1962, but we very much needed a second. Mrs. Feffer learned of our need and generously gave the Garden a new wheelchair that is manoeuvrable, lightweight, and collapsible for storage.

John Rhuart, Donald Hutton and your Editor gave donations in memory of the Garden's late Chairman Emeritus, John H. Eversole, to be used for purchasing books for our Library.

The Garden, which has been working for many years to encourage the use of native trees and shrubs in landscaping, will hold its first Plant Sale on April 10th and 11th. You will find details elsewhere in this issue.

The April issue of Arizona Highways has an illustrated article we would like to call to your attention. Both story and photographs are by your Editor. The title is "Exploring a new world at the Desert Botanical Garden", and the article deals with the Garden's past, its research, and some of its current attractions. The issue also contains some fine color pictures of wildflowers.

On April 5th your Editor will be in Cincinnati, where he has been invited to speak on the cultivation and care of cacti and succulents at the Greater Cincinnati Garden Center, one of the largest and most

(Continued on page 48)

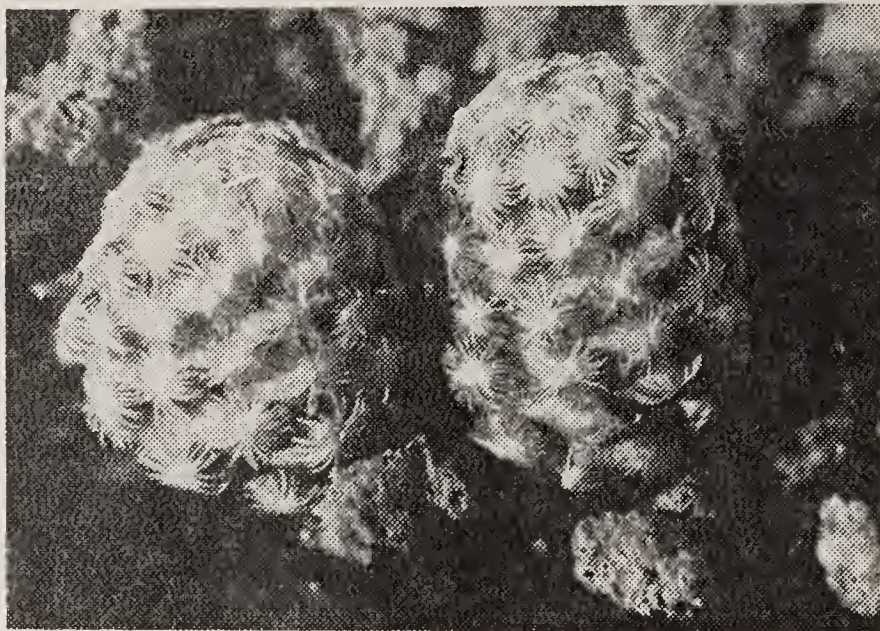
## OUR VERY SMALL CACTI

In the January Bulletin you saw pictures of our giants. Here are our midgets. None over two inches tall when full-grown, they're the cacti most visitors ignore, yet they include some of the rarest plants, some of the most intricately patterned, and some of the most attractive when flowering. Don't call them "cute." When you look closely, they are as impressive as the giants.

To start with the smallest cactus we know of, here's *Mammillaria goldii* from Sonora, Mexico (right). Although it may grow to a height of 1¼ in. in cultivation, in the wild a mature plant is usually no bigger than a gumbdrop. It may be the smallest of all mature cacti.

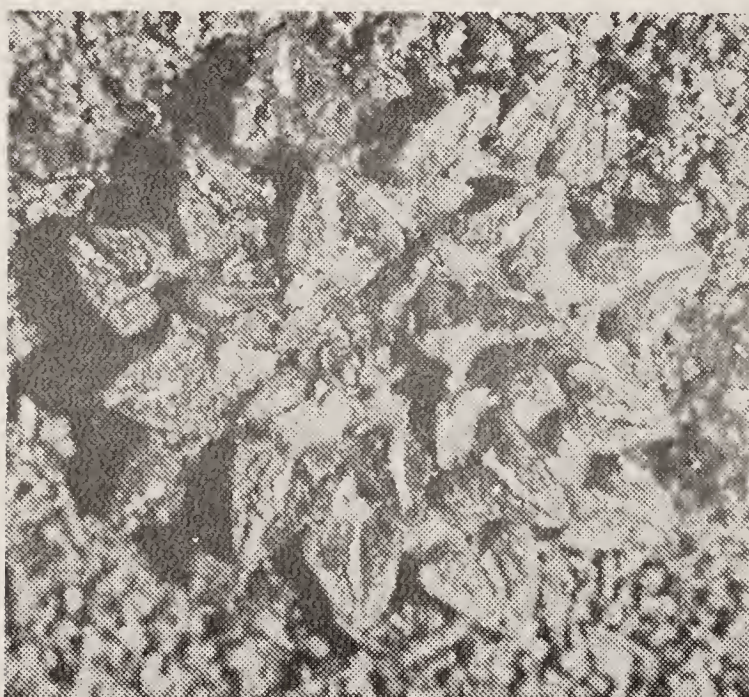
Below left is the "shortest" cactus, *Ariocarpus kotschbeyana*, from the Chihuahuan Desert of north-central Mexico. Our specimen of the Living Rock Cactus rises a good quarter-inch above the ground, but in its habitat it can be found in dry lake beds, covered with dried mud, and really visible only when the large purple flower, big enough to cover the entire plant, is in bloom. Even more strange — it's found "underground." As the mud dries and deep cracks checker the surface, plants contract, and their tops are below ground level.

At right, below, is *Toumeyia peeblesiana*, fully mature, and three-quarters of an inch

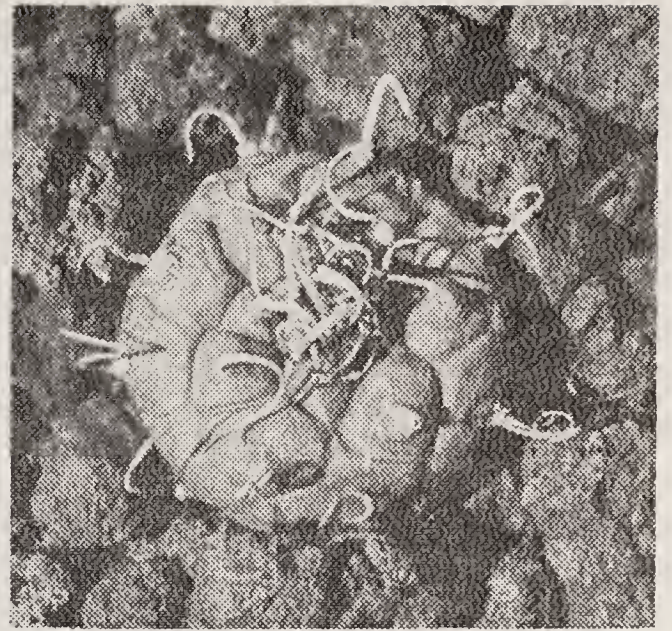
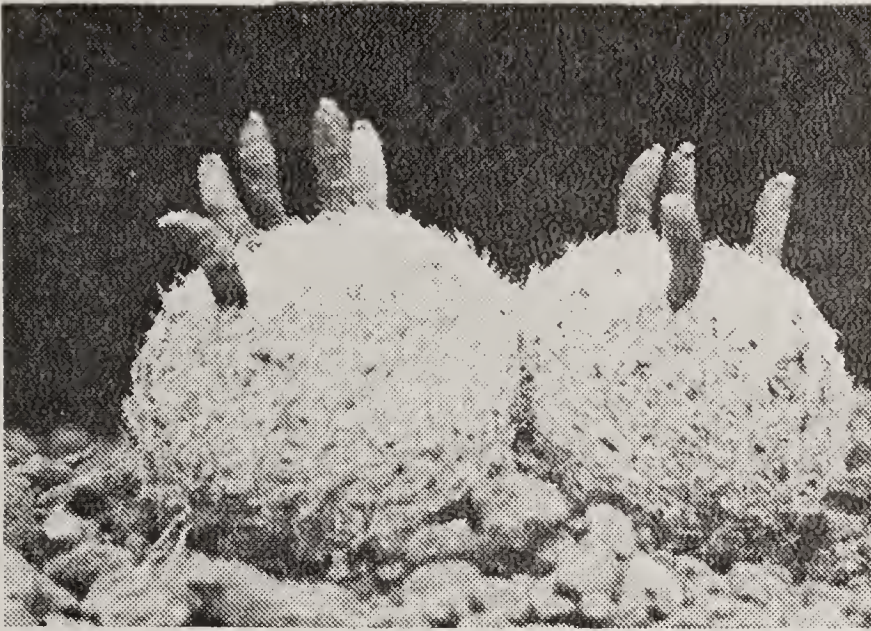


tall. This is a plant from northeast Arizona that bears maroon buds, as tall as the plant, which open into yellow flowers.

On the opposite page, the top left photo is of *Mammillaria lasiacanthus*, the Golf Ball Cactus. These globular, white-spined little cacti are one inch tall. The bright red fruit is one-half of an inch long, a good size for such a small plant. The fruit is edible, but hardly large enough to give you more than a tiny sample. The Chihuahuan Desert is the home for *M. lasiacanthus*,







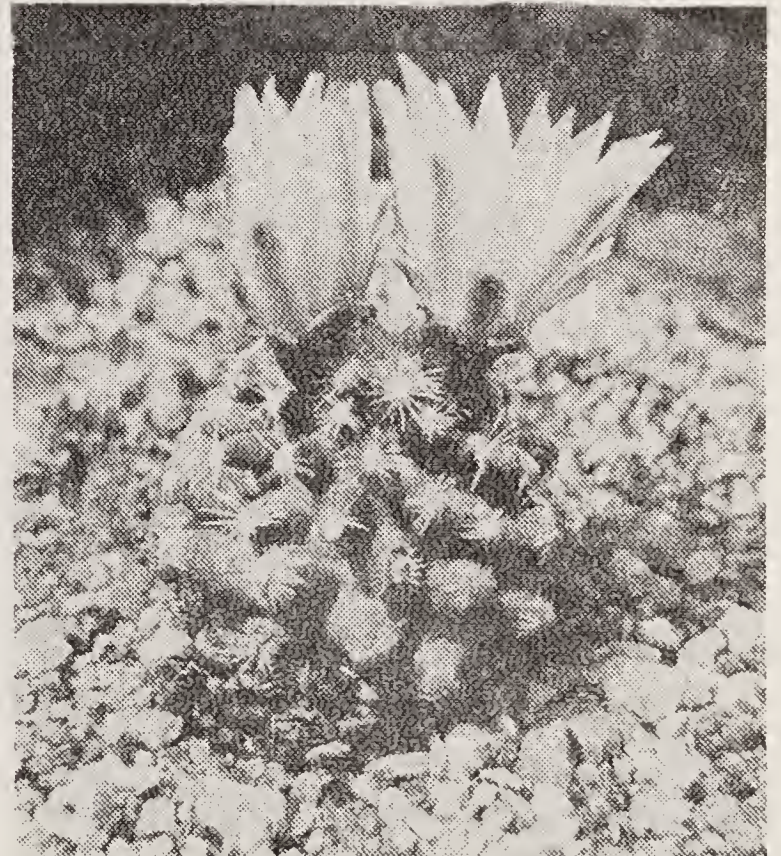
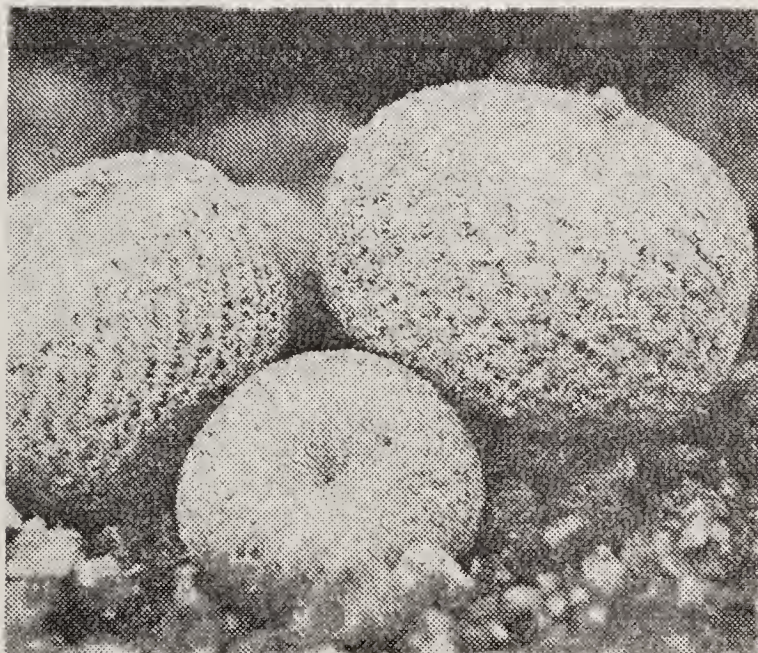
and it is found in Arizona only in the far southeast where the Chihuahuan Desert reaches its most northwesterly limits.

Top right is *Turbinicarpus polaskii*, a fairly rare Mexican cactus from San Luis Potosi. The plant photographed is an inch and a quarter in diameter, and about the same in height. You won't find this plant on open display in the Garden — it looks, to the untrained eye, so much like peyote that specimens in the open Lath House tended to disappear.

At bottom left is the familiar little Button Cactus, *Epithelantha micromeris* — familiar, that is, in collections. It is very rare in Arizona, hasn't been found here for many years. This plant is another from the Chihuahuan Desert. The taller one in the photo is an inch and a quarter tall.

The last picture on this page is of *Toumeyia knowltonii*, a native of Colorado and New Mexico. It is three-quarters of an inch high, and carries pink flowers that are three-quarters of an inch long. Imagine a twenty-five-foot saguaro with flowers the same size as the plant!

All the plants on these pages are fully mature. They flower and bear fruit. Sometimes specimens are a little larger than the ones shown here, depending on environment, and sometimes smaller, but no matter how old they get, they'll never outgrow the "midget" class.



# Arizona Cactus

## STAGHORN CHOLLA *Cylindropuntia versicolor* Cactaceae

The botanical specific name indicates that the plant is vari-colored, for the stems are green or purple and the flowers are many shades from yellow to red. This handsome plant, with its pleasingly colored stems, is the dominant cholla in the Tucson area. Like most chollas, Staghorn Cholla cannot be used successfully in landscaping unless it has plenty of "elbow room" in which to expand.

The Staghorn — or Elkhorn, or Deerhorn — Cholla has a silhouette resembling a stag's rack of antlers, as the various common names suggest.

*Cylindropuntia versicolor* is an arborescent cactus one to two meters tall, although it occasionally grows as tall as four meters in favorable soil and with shelter. It has a short trunk and is often as wide as it is tall. The lightweight, woody skeleton is typical of chollas.

Branches become quite long, with attached elongated joints 12-30 cm long, and 1.5-2 cm in diameter. The branches bear prominent tubercles, three to five times as long as they are broad. An areole at the top of each tubercle bears 5-11 spreading spines that are up to 1 cm long, surrounded by reddish-brown glochids. Spines are dark red and have papery sheaths that are deciduous after a few months.

A single plant has flowers of just one color, but the color may be yellow, greenish-yellow, red or reddish-brown. Plants growing side-by-side are likely to have different-colored flowers. Flowers



In winter the stems of *C. versicolor* turn red or purple from the cold.

are rotate, 3-6 cm in diameter. The fruit is green with a tinge of purple, spineless, not strongly tubercled, 2.5-4 cm long and 2 cm in diameter. Fruits hang on for several years, and gradually turn yellow. The rounded seeds are about 1 cm in diameter. The fruits are eaten by browsing animals.

Distribution: Southern Arizona in well-watered bottom lands, at 2000-3000 ft. elevation.

Type Locality: Tucson, Arizona.

### REFERENCES

Benson, Arizona Cacti

Earle, Cacti of the Southwest

—WHE

If you haven't seen the Garden's emblem on display here, you can't imagine how great it is! More about it and our plans very soon.

## ASPECTS OF THE DESERT



In April, as you drive west from Phoenix, you'll find masses of the rose-purple Sand-verbena, *Abronia villosa*, in the many dry streambeds along the highway. In the sand dunes near Yuma it is at its best, covering large areas with its delicate night-scented flowers.

# UNUSUAL PLANT SALE OF UNUSUAL PLANTS — April 10th and 11th

Here's news for you desert gardeners. You can buy the normally unavailable new and unusual plants that you've seen or read about (often in the Saguaroland Bulletin) here at the Garden during our Plant Sale on April 10th and 11th, 9 a.m. to 5 p.m.

More than a year ago we began to plan this first big sale, and have been working in the Garden and with selected growers to get together ample amounts of uncommon cacti, succulents, trees, shrubs and other desert and dry-area plants that we know from our own experience will thrive in Arizona gardens. There will also be some fine indoor succulents for sale.

We are, to tell the truth, excited about the Plant Sale. We will be offering for the first time anywhere a wide spectrum of natives and dry-area plants, especially among the trees, shrubs and other perennials, that will add tremendous beauty to your garden.

Most of these plants you can find nowhere else, although some that the Garden has helped introduce into horticulture are just beginning to be available by special order through top-grade nurseries. Sometimes, however, you want to meet plants face-to-face before you buy them. You'll be able to meet them at the Garden's Plant Sale.

The Plant Sale will be held at the Garden on Saturday, April 10th and Sunday, the 11th. But, FOR MEMBERS ONLY, there will also be a preview-sale on Friday, April 9th, from 4 p.m. until sundown. We believe we'll have plenty of these seldom-seen plants for the sale, but it's possible that the rarer ones will be gone before Sunday afternoon, hence the preview-sale as a service to Garden Members.

A great advantage of the Garden's Plant Sale is the fact that our "salesmen" will be staff members and Member Volunteers who can give you accurate instructions for the planting and care of these unfamiliar plants. All plants will be accurately labelled, or course.

The following list of the Plant Sale's major items should certainly make any gardener's green thumbs itch. All trees, shrubs and other perennials will be in 1-gallon cans. Some of the cacti and succulents will be potted, others bare-root or cuttings.

If the Plant Sale is the success we think it will be, there'll be a lot of happy desert gardeners, and a modest profit for our non-tax-supported Garden. And it may well show that we should make the Sale of Unusual Plants an annual event.

## Cactus

- Totem Pole, *Lophocereus schottii monstrosus*
- Golden Barrel, *Echinocactus grusonii*
- Torch Cactus, *Trichocereus spachianus*
- \*Club Cereus, *Stetsonia coryne*
- \*Mexican Organ Pipe, *Lemaireocereus marginatus*
- \*Octopus Cactus, *Rathbunia alamosensis*
- \*Moon Cereus, *Eriocereus jusberti*
- \*Peruvian Cereus, *Cereus peruvianus*
- PLUS: large clumped Easter Lily Cactus (*Echinopsis* spp.), various small South American cacti, assorted cactus cuttings and potted specimens.
- (\*Large stem cuttings, root easily.)

## Trees

- Blue Palo Verde, *Cercidium floridum*
- Palo Brea, *Cercidium praecox*
- Arizona Rosewood, *Vauquelinia californica*
- White Thorn, *Acacia constricta*
- Texas Ebony, *Pithecolobium flexicaule*
- Willow Pittosporum, *Pittosporum phillyraeoides*
- Hackberry, *Celtis reticulata*
- PLUS: Boojum Trees (*Idria columnaris*) of several sizes in larger cans.

## Shrubs and Other Perennials

- Squawberry, *Lycium fremontii*
- Parry Penstemon, *Penstemon parryi*

Mohave Beard-tongue, *Penstemon pseudospectabilis*  
 Eaton Firecracker, *Penstemon eatoni*  
 Australian Cassia, *Cassia sturtii*  
 Brittlebush, *Encelia farinosa*  
 Hopbush, *Dodonea viscosa*  
 Jojoba, *Simmondsia chinensis*  
 Hummingbird-trumpet, *Zauschneria latifolia*  
 Goodding's Verbena, *Verbena gooddingii*  
 Fringe-leaf Verbena, *Verbena ciliata*  
 Quailbush, *Atriplex breweri*

Desert Milkweed, *Asclepias subulata*  
 Orange Hummingbird Plant, *Jacobinia ghiesbreghtiana*  
 Mexican Evening Primrose, *Oenothera speciosa*  
 Sotol, *Dasylyrion wheeleri*  
 Mountain Yucca, *Yucca schottii*  
 Aloes (several species)

**Indoor Plants**

Aeoniums, Echeverias, Crassulas, Kalanchoes.

**AN AUSTRALIAN NATIVE, *Acacia craspedocarpa***

*Acacia craspedocarpa* F. Muell. is an Australian desert-adapted acacia that has adapted well to conditions in our Garden and has excellent horticultural possibilities. This species is a dense, rounded shrub to 3 m tall. It is rather slow-growing. A cultivated plant here at the Garden, planted out in 1961, is now about six feet tall. It was allowed to branch low, and was later pruned into a low-branching tree form. The flowers are yellow and

appear sporadically through the early and middle winter months. Fruiting is in March and April.

Flowers are sessile in dense cylindrical spikes about 10-15 mm long, on peduncles that are about 20-25 mm long. The spikes occur singly from the axils of the last few mature phyllodes on the distal end of the twigs. Phyllodes, you may recall, are the flattened petioles of bladeless leaves which characterize Australian acacias. In



The bright yellow flower spikes, over 1/2 in. long, near the tips of branches.



This small tree's "leaves" are phyllodes, thick and grayish-green.

this species they are gray-green and broad, and occur alternately on the stem. They are obovate in shape, frequently apiculate, and have a stout, short (1-2 mm) petiole in a total length of 15-18 mm. Three main nerves are faintly distinguishable. They have green reticulate veining between them to the margins. The phyllodes are extremely thick and leathery.

Fruit is hard, leathery, tan when mature. It is broadly ovate to elliptical, with very coarse raised veining originating from a major vein near each margin. Size ranges between 20 and 40 mm in length, and averages 15 mm in width. The fruit is indehiscent and is generally harvested here by our local round-tailed

ground squirrels just before ripening, despite our vigilance, since we want to collect the fruit ourselves.

*A. craspedocarpa* has proved excellently adaptable to our local growing conditions and environment. It has never been damaged by frost, insects or drought. Once established, one of our plants maintained slow growth without supplemental watering for more than ten years in a shallow, caliche, nearly sodic soil. Seed collected in the Garden is now in the hands of a local nurseryman and the plant will soon be on the market in small numbers. All the care it needs is full sun and protection from rodents.

—RGE

## THE GARDEN'S AUSTRALIAN SECTION

In recent years the Australian section of our Garden has taken on increased importance. Australia's huge areas of desert and semi-desert are the homes of many vigorous and attractive plants that do well in our desert gardens, and more that should do well. The Desert Botanical Garden is learning just how well. Some of the plants (for example, *Acacia craspedocarpa* in the preceding article) we have already helped introduce into the nursery trade. Others are sure to follow.

Aside from the Australian wildflowers on display here, such as Sturt's Desert Pea and Running Postman, we are cultivating many trees and shrubs. The following list presents only the plants currently growing here. We have started, or are about to start, planting seeds of many other Australian natives, and will continue to give you information on the most promising.

<i>Acacia acuminata</i>	<i>Acacia rhetinodes</i>
<i>Acacia aneura</i>	<i>Acacia rigens</i>
<i>Acacia burkittii</i>	<i>Acacia rostellifera</i>
<i>Acacia cambagei</i>	<i>Acacia salicina</i>
<i>Acacia colletioides</i>	<i>Acacia sophorae</i>
<i>Acacia coriaceae</i>	<i>Acacia stenophylla</i>
<i>Acacia craspedocarpa</i>	<i>Acacia sturtii</i>
<i>Acacia cuthbertsonii</i>	<i>Acacia subcaerulea</i>
<i>Acacia eremaea</i>	<i>Acacia subcaerulea</i> var. <i>sessilis</i>
<i>Acacia ericifolia</i>	<i>Acacia tetragonophylla</i>
<i>Acacia glaucoptera</i>	<i>Acacia tunida</i>
<i>Acacia inophloia</i>	<i>Acacia victoriae</i>
<i>Acacia laeta</i>	<i>Acacia xiphophylla</i>
<i>Acacia lanuginosa</i>	<i>Alyogyne hakeifolia</i>
<i>Acacia ligulata</i>	<i>Atriplex muelleri</i>
<i>Acacia microneura</i>	<i>Atriplex rhagodioides</i>
<i>Acacia multispicata</i>	<i>Atriplex semibaccata</i>
<i>Acacia puce</i>	<i>Callistemon linearis</i>
<i>Acacia restiaceae</i>	<i>Callistemon macropunctatus</i>

Calothamnus quadrieidus	Eucalyptus flactoniae
Cassia artemisioides	Eucalyptus foecunda
Cassia chatelaineana	Eucalyptus forrestiana
Cassia desolata	Eucalyptus jugalis
Cassia eremophila	Eucalyptus leptocalyx
Cassia helmsii	Eucalyptus leptophylla
Cassia oligoclada	Eucalyptus leucoxydon-rosea
Cassia phyllodenia	Eucalyptus maculata
Cassia sturtii	Eucalyptus microtheca
Casuarina stricta	Eucalyptus oleosa
Dodonea cuneata	Eucalyptus orbifolia
Dodonea lobulata	Eucalyptus ovata
Dodonea microzyga	Eucalyptus parramattensis
Dodonea viscosa	Eucalyptus pauciflora
Eucalyptus amphifolia	Eucalyptus platypus
Eucalyptus behriana	Eucalyptus polyanthemus
Eucalyptus botryoides	Eucalyptus rudis
Eucalyptus burdettiana	Eucalyptus spathulata
Eucalyptus camaldulensis	Eucalyptus sturtii
Eucalyptus campaspe	Eucalyptus torquata
Eucalyptus capitellata	Grevillea leucopteris
Eucalyptus diptera	Melaleuca quadrifidus
Eucalyptus diversifolia	Sterculia diversifolia
Eucalyptus dwyeri	

## RECENT PLANT ACCESSIONS

During an average year, the Garden acquires about four hundred new species of desert plants for display and experimental work. (The total of individual plants is two to three times that amount.) Among recent acquisitions, the following are of more than usual interest to the Staff and to Garden members.

Four species of the genus *Conophytum*, a South African succulent akin to *Lithops*. They are outstanding examples of "mimicry" plants — looking so like the rocks they grow among that they are nearly invisible until they bloom. These four species, the Garden's first *Conophytums*, are very uncommon in cultivation. They were grown from field-collected seed by Harry Johnson of Fallbrook, California. You may see them in a locked glass cabinet in the Leaf Succulent House.

*Isomeris arborea*, a handsome yellow-flowered shrub in the Caper Family, native to California, Baja California and Sonora. It has occasionally been used

horticulturally in California, but not in our area. We think it should do well in full sun or partial shade here, and expect it to become popular in desert landscaping in spite of its ill-scented foliage.

*Crassula barbata*, an odd globular *Crassula* that looks incredibly like a *Mammillaria*. Our newly acquired specimen was a gift from Dr. Gerald Barad who collected it at Skitterkloof in the Karoo Desert of South Africa. This is a rather touchy plant to grow. It will be put on display here shortly.

Another gift from Dr. Barad was the rare *Euphorbia echinus*, which he collected at Oued Massa in southwest Morocco.

Three natives which our Garden has introduced into the nursery trade are now on display here, and Members with desert gardens can see how the plants will look in their own gardens. They are *Salvia greggii*, *Salvia mojavensis* and *Melampodium leucanthum*. They were described in our November Bulletin.

Another new native, *Aquilegia chrysantha*, is the Golden Columbine, found in soggy meadows at much higher elevations. At the Garden we have planted it next to the faucet below the Auditorium porch, where it is doing surprisingly well. We expect it to flower next spring.

Other rarities include *Agave hurteri*, collected by Dr. Gentry in San Cristobal, Guatemala, and some as-yet-unidentified bulbs of the *Amaryllis* family from South Africa. This group of plants has never been exploited in our area, and we are giving them a trial in Arizona's desert environment. Sometimes such "unlikely but possible" plants turn out to be valuable additions to gardens in climates quite different from their original habitats.

## EDITOR'S NOTES

(Continued from page 39)

active centers in the country. Situated in Eden Park, it contains demonstration

gardens, educational buildings, and the Krohn Conservatory, where the 1947 Biennial National Cactus and Succulent Society convention was held. I am also scheduled to spend April 6th at the Conservatory to work with them on identification of cacti and succulents.

In early May I'll be leaving to join Jorge Rau of St. Gallen, Switzerland and Ibiza, Spain on a tour of European botanical gardens. Mr. Rau is a long-time member of our Garden, and has made several collecting trips in Mexico with us. This will be a fine opportunity to meet many garden directors who are also members of the I.O.S., the International Organization for Succulent Plant Study. I expect to do some informal lecturing and some work on identification. In all, the trip will last three to four weeks. A report on it will be in a future issue of the Bulletin.

## GARDEN ACTIVITIES

FIELD TRIP RESERVATIONS ARE ESSENTIAL. Field trips are now limited to 25 participants. Telephone the Garden, 947-2800.

Saturday, April 3rd. Peralta Canyon in the Superstitions.

Saturday, May 1st. Box Canyon in the Mineral Hills south of Florence Junction. A new field trip area that is scenic and geologically interesting. A longish hike is planned. Round trip from the Garden about 150 miles.

Field trips leave the Garden promptly at 8:30 a.m. and return before 5:30 p.m. Bring lunch and water, wear suitable clothing.

### APRIL

Thurs.	1st	ILLUSTRATED LECTURE—Arizona Birds & Animals	3:00 P.M.
Sat.	3rd	FIELD TRIP—Peralta Canyon	8:30 A.M.-4:45 P.M.
Tues.	6th	CACTOMANIACS—Meeting	8:00 P.M.
Wed.	7th	CLASS—Culture of Desert Trees & Shrubs	2:30 P.M.
Thurs.	8th	ILLUSTRATED LECTURE—Mexican Cacti	3:00 P.M.
Sat.	10th	SALE OF UNUSUAL PLANTS	9-5 P.M.
Sun.	11th	SALE OF UNUSUAL PLANTS	9-5 P.M.
Wed.	14th	CLASS—Field Trip: Pinnacle Peak	8:30 A.M.-4:15 P.M.
Thurs.	15th	ILLUSTRATED LECTURE—Western Australian Wildflowers	3:00 P.M.
Thurs.	22nd	ILLUSTRATED LECTURE—Arizona Cacti	3:00 P.M.
Sun.	25th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.
Thurs.	29th	ILLUSTRATED LECTURE—Arizona Wildflowers	3:00 P.M.

### MAY

Sat.	1st	FIELD TRIP—Box Canyon	8:30 A.M.-4:45 P.M.
Tues.	4th	CACTOMANIACS—Pot Luck Supper	6:30 P.M.
Sun.	30th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.



# SAGUAROUND

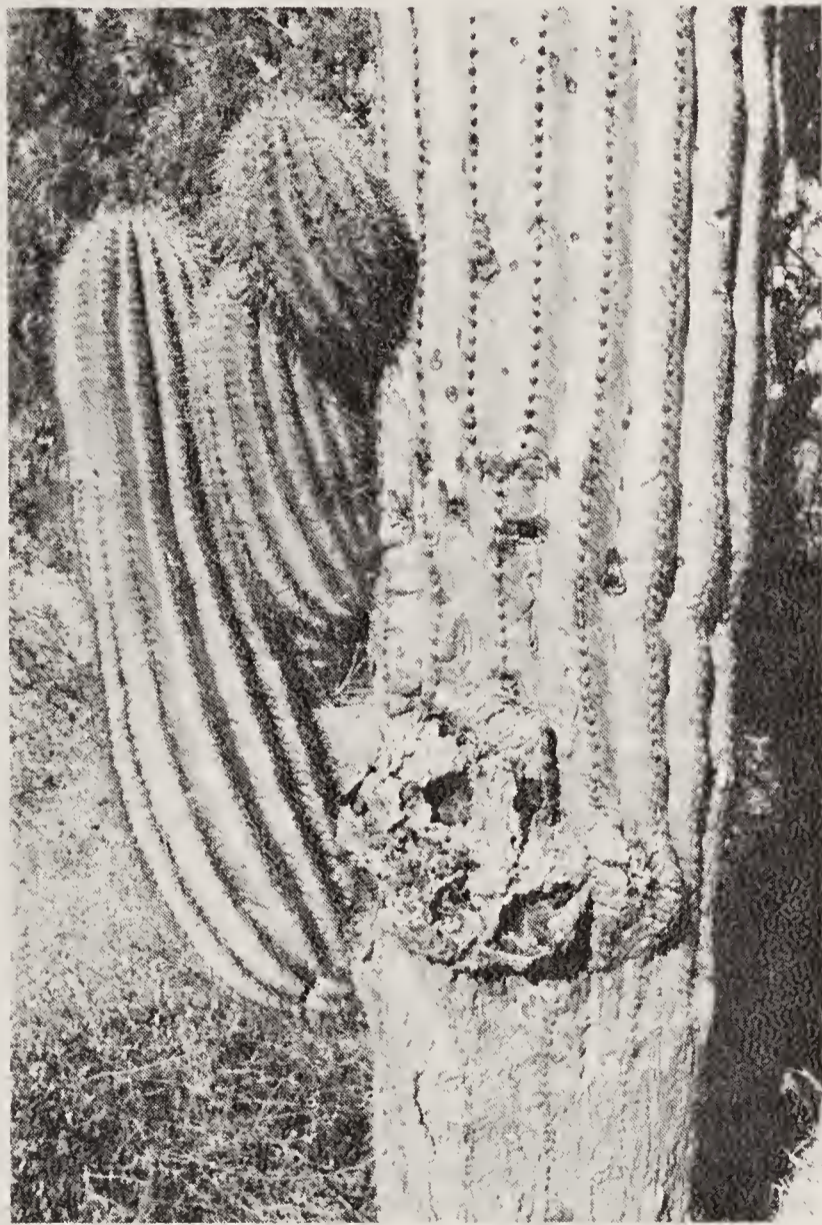
## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

May, 1976

No. 5



REG-MANNING

# SAGUAROLAND BULLETIN

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Editor, W. Hubert Earle

Associate Editor, Lillian Diven

Vol. XXX

MAY, 1976

No. 5

## Arizona Cactus and Native Flora Society

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Cover: Saguaro infected with crown gall  
(See page 59)

## Desert Botanical Garden of Arizona

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# Editor's Notes



The trip to Cincinnati last month, mentioned in the April issue, was enough to give any man a dangerously swelled head. The Park Board Volunteers, who had invited Your Editor to speak on cacti and leaf succulents, wined, dined and lionized him, and offered the warmest hospitality imaginable. The setting for his lecture was the new Playhouse, a handsome place where about five hundred plant enthusiasts from Ohio, Indiana and Kentucky gathered for the 1½ hour talk, followed by a question and answer period and then by a reception.

The following day was spent with the Volunteers' Educational Board and staff members of the Krohn Conservatory, identifying plants in their cactus and succulent greenhouses. Cincinnati's recent improvements include revitalizing the conservatory, where many plant labels had been lost during the past twenty-five years. The identity of one plant stumped me that day, and still puzzles me. Dogwood trees and redbud were all blooming, and that added to the pleasure of the visit.

The Park Board Volunteers are a fascinating group of dedicated women, organized slightly more than two years ago, and already having a membership of 180 docents. Each docent is given an in-

tensive six-weeks training course. Docents lead tours, present programs in schools, speak before garden clubs, operate a successful plant and gift shop, work among the plants, and learn the common and botanical names of the plants in the conservatory. They are a terrific, highly-motivated group, and their program should be duplicated in other botanical gardens.

April tenth and eleventh saw the Garden's first Plant Sale, and what a success it was! Publicity hadn't been very extensive, since we had never held an event like this before and wanted to use this first sale as a kind of test, but you should have seen the crowds that came to buy the various desert plants that are generally not found in the nurseries!

Garden members flocked in on Friday evening, for the preview sale we had arranged just for members. Many of them carried marked copies of the list of plants that appeared in the April Bulletin, intending to buy three or four of the items on the list. But in most cases their enthusiasm took over and they went home with about double what they planned to buy.

Saturday found people waiting at the gate for the Garden to open at nine. We kept no check on attendance, but the check-out line was usually thirty feet long, and we had to refill the display tables again and again. It was hard to keep a running count of the plants sold, but one check of a list of 33 desert plants shows that 704 items were sold, and that doesn't include cacti, leaf succulents, and some of the trees.

Sunday, though good, was very much slower. We hadn't considered the habits of weekend gardeners — get the plants on Saturday, put them in on Sunday. Next year we plan to hold the Plant Sale on Saturday only, plus the Friday preview for Members.

(continued on page 58)

# Arizona Cactus

## SMOOTH CHAIN-FRUIT CHOLLA

*Cylindropuntia fulgida*  
var. *mammillata*

Cactaceae

This cactus confuses people who are usually able to tell the different chollas apart. It looks to them like a chain-fruit cholla — but not quite. Not quite spiny enough, not quite tall enough, not quite gray enough.

*C. fulgida* var. *mammillata* is indeed a chain-fruit cholla, but it differs enough from the more familiar *C. fulgida* to be considered a separate variety by most botanists. Britton and Rose considered it synonymous with *C. fulgida*, saying, "in herbarium and greenhouse specimens we can find no constant differences," but agreed that "in the field, however, one can see two rather distinct forms which differ in armament, the typical plant being the more spiny."

But to most botanists the differences justify giving this plant the status of a variety. The differences are certainly apparent to the layman. Consider the matter of height. *C. fulgida* is three to twelve feet high, but var. *mammillata* is only two to four feet high. The other outstanding difference is in the "smoothness" of var. *mammillata* — not that the plant is really smooth, but in comparison with the dense, conspicuous spines of *C. fulgida* that obscure the plant stems, it almost merits the term.

*C. fulgida* var. *mammillata* has particularly prominent tubercles. There are 2 to 6 spines per areole (*C. fulgida* has up to 12), and the spines are slender, inconspicuous and sparse, so that the plant's stems are visible, and the plant itself appears green instead of silvery or



yellowish. Var. *mammillata* is more branched and more compact than the rangier, taller *C. fulgida*.

It occurs with the typical plant, often replacing it at higher elevations, but does not intergrade with it, since both plants reproduce asexually, through joints or sterile fruits that drop to the ground and take root.

This cholla is found in sandy or gravelly soils at elevations between 1000 and 2500 ft. It grows in Pinal and Pima Counties in Arizona and in adjoining Sonora, Mexico.

It is as easily propagated as other chollas, and is perhaps more attractive in desert gardens than *C. fulgida*.

The reticulated wood of the stems is used in the manufacture of invariably ugly lamp stands, picture frames and other novelties. It can be put to better use as kindling for a quick fire at a desert camp.

Type locality: Western Sonora, Mexico.

### REFERENCES

Benson, Cacti of Arizona

Britton & Rose, Cactaceae

Earle, Cacti of the Southwest

—WHE

# Book Review

**NATIVE TREES AND SHRUBS** for Landscape Use in the Desert Southwest, Charles M. Sacamano and Warren D. Jones, 40 –v pp., 8½ x 11 in., 50 black and white photographs. Bulletin A82, College of Agriculture, University of Arizona, Tucson, 1975. \$1.50.

For anyone interested in desert landscaping, this is an essential book. Native trees and shrubs give much more beauty to desert gardens than the overused trio of saguaro, yucca and ocotillo, but until very recently desert gardeners weren't aware of what natives to use, how to use them, and above all, where to get them. The tremendous success of the desert plant sale at the Desert Botanical Garden last month — the sale is now planned as an annual event each spring — showed just how great is the desert gardener's desire for new, dependable plants.

But desert gardening is different from regular lawn-and-roses gardening, and a really good book on the subject has been needed for a long time. How do you prepare the soil? How often do you water? How big will it get? All these questions and many more are answered by the authors of this handsome new book, as helpfully and clearly as anyone could want.

Twenty-eight trees and thirty shrubs, nearly all illustrated with good photographs, get individual treatment. First the mature height and spread of the plant. Next, the hardiness zone — high-altitude desert, mid-altitude or low-altitude. Then a good description in non-technical terms that includes flower color, plant shape and texture, and other distinctive features.

The paragraph on landscape value gives both plus and minus features of the plant, and lists possible uses in landscaping.

Most useful is the paragraph, for each separate plant, on maintenance requirements and propagation. Soil, watering, pruning needs, frost tenderness,

common problems, all are discussed. As for the propagation of these native plants, the information in this book is especially helpful, since many of the plants are still unavailable in nurseries. The reader is told which plants propagate readily from seed or cuttings, which ones must be grown in pots and which must be set directly in a permanent location because of their growing habits.

The opening section on the basics of desert landscaping and the soil-preparation and watering requirements of desert plants is really outstanding. The authors seem to have anticipated nearly every question a gardener could ask, and have explained not only what to do but why. It's hard to believe that anyone could get so much information into five pages, but they've done it.

At \$1.50 a copy, this is a tremendous value, but purchasers should be warned — you'll see so many native plants you simply must have, you'll end up spending more money than you planned.

**NATIVE TREES AND SHRUBS FOR LANDSCAPE USE IN THE DESERT SOUTHWEST** is available at the bookshop of the Desert Botanical Garden.

—LD

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The spectacular Sturt Desert Pea (*Clanthus formosus*) is now available at the Garden. Plants are in one-gallon cans and cost \$3.00 each. You may recall a recent photograph in *Sunset Magazine*, and the feature article in the October 1974 Bulletin. This semi-erect, sprawling plant has vibrant scarlet flowers three to four inches long, arranged in cylindrical clusters of four or five at the ends of sturdy stalks. Each blossom bears a purple-black boss that shines like patent leather.

## FIELD TRIP TO PERALTA CANYON

On April 3rd, 45 Garden Members and visitors with Rodney Engard and Sherry Couch as guides went to Peralta Canyon in the Superstition Mountains.

Along the roadsides enroute to the canyon we saw *Baileya multiradiata* (Desert Marigold), *Lupinus sparsiflorus* (lupine), *Sphaeralcea ambigua* (Globe Mallow), *Encelia farinosa* (Brittlebush), *Psilostrophe cooperi* (Paperflower), and *Argemone platyceras* (Prickly Poppy) in abundance.

Flowering was not profuse in the canyon due to the dry weather but many species were noted in bloom, including:

*Eriastrum diffusum* — tiny annuals, none over 2 in. high but with bright blue flowers; several areas were carpeted with these. Phlox family.

*Phacelia distans* (Phacelia) — small, straggly plants with light blue flowers; abundant. Waterleaf family.

*Dichelostemma pulchellum* (Blue-dicks) — a few plants scattered over area; blue flowers from an edible bulb. Lily family.

*Abutilon pringlei* (Indian Mallow) — shrubby plants with small orange and yellow flowers. Mallow family.

*Eriogonum fasciculatum* (Wild Buckwheat) — small shrub with dense clusters of pinkish flowers. Buckwheat family.

*Simmondsia chinensis* (Jojoba) — dioecious shrub; staminate (male) plants had small, yellow flower custers and pistillate (female) plants had small, unripe nuts. Box family.

*Rhus ovata* (Sugar Sumac) — very large shrubs; provided shade we all appreciated; fragrant, white flower clusters. Cashew family.

*Lycium andersonii* (Squawberry, Tomatillo) — abundant shrub covered with small, red, edible berries. Some of our group found them more tasty than others. Potato family.

*Amsinckia intermedia* (Fiddle-neck) —

tiny yellow flowers in a scorpioid inflorescence. Borage family.

*Cirsium neomexicanum* (Thistle) — spiny plants with large, lavender flowers. Composite family.

*Dodonea viscosa* (Hopbush) — Abundant shrub with many 4-winged hop-like fruits, some with a reddish color. Soapberry family.

*Erigeron* sp. (Fleabane Daisy) — small pink, white, and purple heads; very common. Composite family.

*Aster* sp. (Aster) — large purple flowers. Composite family.

*Rafinesquia neomexicana* (Desert Chicory) — a scattered plant; white flowers. Composite family.

*Calliandra eriophylla* (Fairy Duster) — several small plants with airy pink flowers and erect bean-like pods. Legume family.

*Lotus rigida* (Desert Rock Pea) — a few plants still had the yellow flowers, but most were bearing the fat pods. Legume family.

*Phlox tenuifolia* (Phlox) — large, delicate, white flowers. Found only one plant. Phlox family.

*Scutellaria potosina* (Skull-cap) — one plant in a low, shaded area; light blue, zygomorphic flowers in a head. At first we mistook this for a salvia. Mint family.

*Perezia wrightii* — beautiful, pink, honey-scented flowers; several plants. Composite family.

*Maurandya acerifolia* — a rare plant found only in south central Arizona. We found several plants growing on a large, vertical rock outcropping; whitish flowers. Figwort family.

*Marah gilensis* (Wild Cucumber) — many of these vines were seen with spiny fruit. Gourd family.

*Solanum douglasii* (White Nightshade) — the five white petals with the yellow

(continued on page 60)

## ASPECTS OF ARIZONA



Paintbrushes, with their inconspicuous flowers but colorful bracts, are found from the Arctic to South America, but the greatest variety of them are natives of the western United States. Arizona has nineteen species of this genus, *Castilleja*, at elevations ranging from near sea level to ten thousand feet.

# AGAVE HUNTING IN GUATEMALA

by Howard Scott Gentry

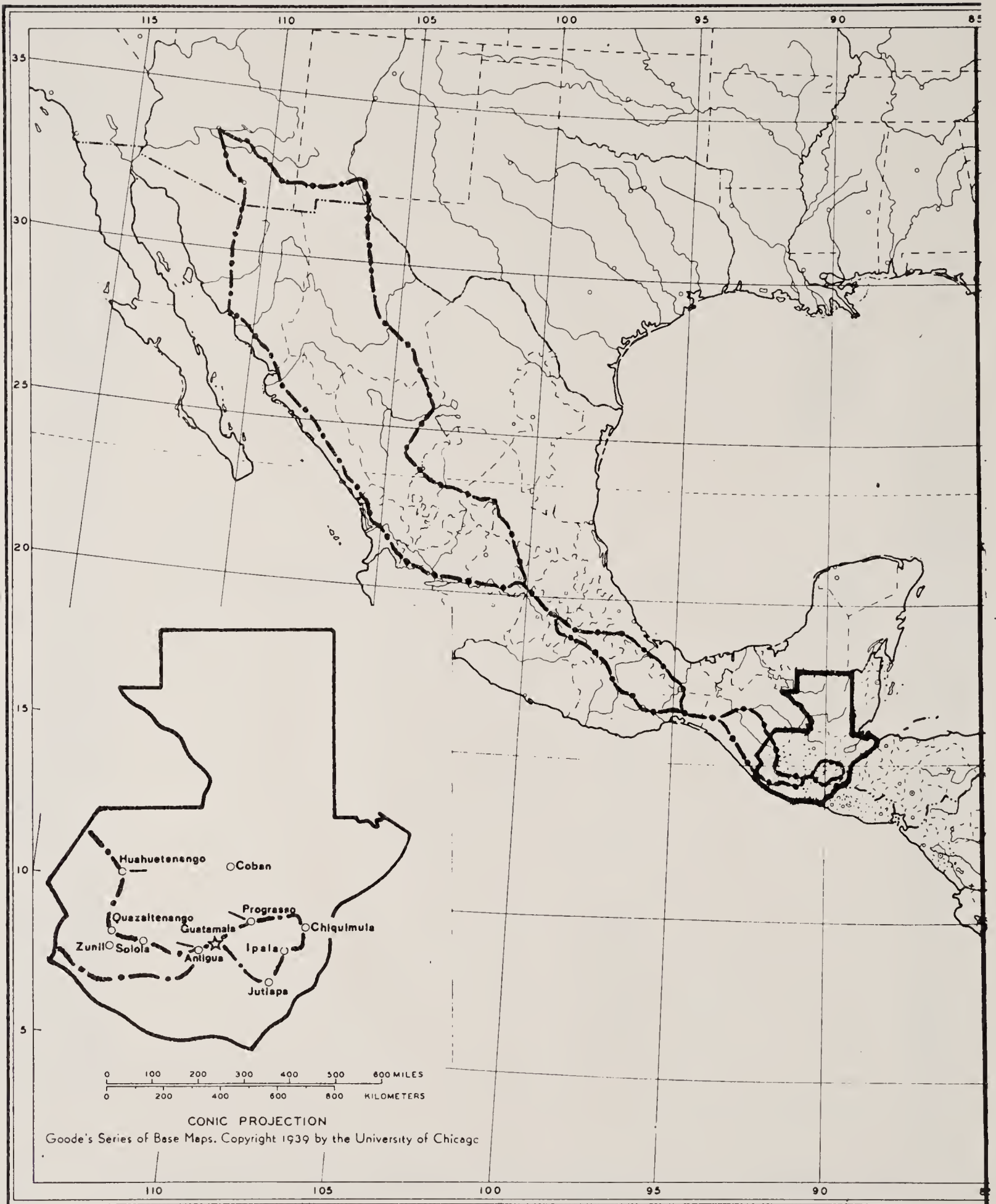


Figure 1. Orientation map showing routes followed to and from and in Guatemala.



Two thousand four hundred miles after we left the Desert Botanical Garden we arrived in Antigua, Guatemala, on December 8, 1975. One or two of the towering volcanic peaks near the ancient city were sending up smoke, but they did not take the chill out of the cloudy highland air. The luxuriant vegetation told me we were deep in the tropics, but the temperature made me long for some Arizona sun. We had driven in over the old, broken up, southern route, past farms, rubber and quinine tree groves, and coffee "fincas", over 200 kilometers of Guatemala, but had not seen one wild agave. After eight days on the road, we were glad to rest in comfortable rooms and plan the Guatemalan expedition in detail. While Marie Gentry studied the ancient city of Antigua, I reviewed maps, notes, and Trelease's account of the Guatemalan Agave (1915).

The country of Guatemala is about the size of Tennessee. The northeast part is lowland, including the big monotonous plain of the Peten District, while the west and south is mountainous and dissected by deep canyons. Volcanos are rather numerous, given vent by the faulted crustal formations, still actively orogenic, as the recent violent earthquake dramatically demonstrated. Agaves grow on the open rock faces and sunny slopes. Trees will shade them out, but the weathering lava beds, the rubble of land slides, and cliffs are the special habitats where Agaves will thrive, if nature's fortunes put their seed there. Agaves can be thought of as earthquake plants. We combed the mountains and volcanos for them. Our route and some principle agave localities are shown on the map, fig. 1.

Trelease spent a month or more in the spring of 1915 in a survey of the agaves of Guatemala. He published an account of them in the same year, recognizing 16 species as native to Guatemala. Considering the conditions under which he traveled in those times, this was a remarkable achievement. His list and brief notes were helpful in locating the agaves and we were able to re-collect many of his species by revisiting the localities he cited.

Since his time, many roads have been improved and built, so we were able to go into areas he never reached. Trelease was in Guatemala in the spring dry season and found very few flowering specimens, so most of his species are based on leaf characters alone. In winter we found many with flowers, which are so essential for dependable classification. Altogether we obtained 35 collections, mostly with flowers, and collected small plants or seed for the Garden as well. Several collections were made in the adjoining Mexican state of Chiapas on our way back. These appear to be close relatives of the Guatemalan species, as one would expect.

Now with our new specimens all mounted with their annotated labels and photos, and with our older specimens and those loaned from older institutions, I will try to unravel the taxonomic puzzle the Guatemalan agaves have always represented to me. The main keys to the puzzle, I hope, will be the types of Trelease's species, which are here on loan from the Herbarium of the University of Illinois. Will the Treleasean species become at last recognizable, so that they can be identified with their convenient specific names? Almost every other population is full of variables; generally, a



Figure 2. A fine colony of *Agave hurteri* on mountain slope above San Cristobal. The inflorescences were just in the asparagus shoot stage, December 30, 1975.

given population should be one species, but I could see three or four Treleasean species on one hillside.

Some of the Guatemalan agave populations form beautiful displays of sexy succulence (fig. 2). As with agaves elsewhere, they are found here or there or not at all, without much rhyme or reason. We found them particularly abundant on the high south slopes, amid pines and oaks, of the Sierra Cuchumatanes northeast of Huehuetenango (fine distinctive Indian names these places have!). There was a riot of forms there in leaf detail and size, but all with the tightly-flowered, round or balled umbels of flowers in deep and narrow panicles that prevail on the highlands of Guatemala. This group does not sucker, grows as single plants, and seeds freely. One species alone was readily recognizable, *Agave huehueteca* Standley & Steyermark, the only member of the spicate subgenus *Littaea* recorded from Guatemala. It suckers freely and is a close relative of the Oaxacan species *A. ghiesbreghtii*, *A. kerchovei*, *A. roezliana* et al.

In Guatemala agaves are much used as fences or hedge plants and fiber, as Standley and Steyermark reported (1952). I have found little record that agaves were or are used as food there. The several people questioned about this said they were not eaten. Apparently, the Indians of Guatemala were not "mescal" eaters. Many of the Guatemalan villagers are of Mayan extraction, forest people from the north where agaves are generally lacking. Hence, agaves formed no part of their diet. The Guatemalan highlands are densely populated today. No doubt, many wild agaves were eliminated when land was cleared for their planting fields, a process that has been going on for centuries. Some of the agaves we see today about the Indian houses and in hedgerows are survivors of those bygone populations.

There is at least one Guatemalan Agave species we did not collect. We saw it growing on the nearly inaccessible cliffs in

the deep canyon along the Central American highway as it nears the Mexican border. It is a spicate species, perhaps, *A. sartorii*, but was not in flower when we passed by. We left it there for the next Agave hunter who goes to Guatemala.

#### References Cited:

1915. Trelease, William. The Agaveae of Guatemala. St. Louis Acad. Sci. Trans. 23: 129-152, 35 illus.
1952. Standley, P. C. & Julian A. Steyermark. Flora of Guatemala. Fieldiana: Botany v. 24, pt. 3: 104-121. Publ. by Chicago Natural History Museum, Chicago, Ill.

## Editor's Notes

(continued from page 51)

The financial results? Great! Sales totaled over \$4,600.00. So it looks as if our Plant Sale will be an annual event. See you next year!

And what plants would YOU like to find at next year's Plant Sale? We kept a list of requests during this year's sale, and preparations for growing the plants or having them grown for us will be made in the next few weeks. If you're interested in a desert plant that isn't on the following list, phone the Garden as soon as possible, so we can try to have it available.

The most requested plants include: *Rhus ovata* (Sugar Sumac), *Beloperone californica* (Hummingbird Bush), *Acacia cultriformis*, *Calliandra eriophylla* (Fairy Duster), *Olneya tesota* (Ironwood), *Larrea divaricata* (Creosote Bush), *Hyptis emoryi* (Desert Lavender), *Baccharis sarothroides* (Desert Broom), *Nolina* sp. (Beargrass), *Dasyilirion wheeleri* (Sotol), *Acacia salicina* (Coobah), *Acacia craspedocarpa*, *Acacia aneura* (Mulga), *Cercidium microphyllum* (Yellow Palo Verde), *Prosopis alba*, *Prosopis pubescens* (Screw-bean Mesquite), *Ephedra* sp., various species of *Eucalyptus*, *Cassia nemophila* (Green-feather Cassia), plus some Arizona wildflowers.

## CROWN GALL ON SAGUAROS



A major disease of deciduous fruit trees, grapes and many ornamentals in the Southwest, Crown Gall occasionally attacks Saguaros, Organ Pipes and Chollas, cacti with woody stem tissue. The disease is caused by the bacteria *Agrobacterium tumefaciens*, which enters a wound on the surface of a plant, inducing uncontrolled growth of the plant's woody tissue. The resultant gall (burl) first shows as a swelling beneath the bark or cuticle. Later the

surface blisters and the area is callused over. The infected living saguaro pictured here was blown over in a windstorm a few years ago. The crown gall may have contributed to its weakness. The other photograph is of a larger burl taken from a saguaro skeleton. The inner side of the burl was attached to the saguaro's ribs. This burl, measuring sixteen by eighteen inches, is on display in the Garden's Auditorium.



## GARDEN VISITORS

Two of Mexico's outstanding botanists visited the Desert Botanical Garden last month. They were Dr. Ignacio Pina Lujan of the Laboratorios Nacionales de Fomento Industrial, and Prof. Dr. Eizi Matuda, of the Instituto de Biologia, Universidad Nacional Autonoma de Mexico. Dr. Matuda is well known for his work on cactus, and has described several newly-discovered species. Dr. Pina is currently working on cochineal, and will publish a book on the subject within the next year. Recent evidence that Red No. 2 and other aniline dyes are carcinogenic has turned attention back to cochineal for coloring foods, cosmetics, etc. Dr. Pina is in charge of an experimental planting of 30 hectares near Oaxaca, where cochineal is being grown on *Opuntia ficus-indica* and *O. tomentosa*.

The visit of Drs. Matuda and Pina concerned the Genus *Yucca*, on which they

are completing a monograph. Accompanied by our Superintendent, Rodney Engard, they toured the Garden, photographing several of the less common plants, and noting our available data. A visit to the Heard Museum followed, since the two botanists are particularly interested in uses of yuccas, both historical and potential, and the Heard has on display various items made of yucca fibres by Southwest Indians — sandals, cordage, nets, paintbrushes, etc.

Another recent visitor, from the state of Washington, was a food chemist interested in obtaining the reddest-fruited *Opuntias* as a source of red food coloring. He has been asked by a Japanese manufacturer to try to locate a reliable source of a dark red food coloring of an organic nature. It is curious that a single genus of cactus, *Opuntia*, is currently under study as a source of two completely different red dyes.

## FIELD TRIP

(continued from page 54)

stamens grouped in the center gave this flower a shooting-star look. Potato family.

*Lesquerella gordonii* (Bead Pod) — yellow, mustard flowers with small bead-like fruit below. Mustard family.

(I had visited Peralta Canyon two weeks earlier, on March 20th, just before we had a ten-day period of strong, drying winds and above-normal temperatures that dried

out much of the spring growth. It was a great deal greener on that date, and there were a lot more things in bloom. Two were especially interesting: *Penstemon microphylla* (Bush Penstemon) with yellow flowers, a group of five good-sized bushes on a hillside, in full bloom. Also *Erigeron lobatus*, a white fleabane that looks more like garden daisies than most fleabanes. The heads were 1½ in. across, larger than normal.)

—SLC

## GARDEN ACTIVITIES

### MAY

Sat.	1st	FIELD TRIP—Box Canyon	8:30 A.M.-4:45 P.M.
Tues.	4th	CACTOMANIACS—Pot Luck Supper	6:30 P.M.
Sun.	30th	CENTRAL ARIZ C & SS—Meeting	2:00 P.M.

June 27th, July 25th, August 29th, 1976

### CENTRAL ARIZONA CACTUS & SUCCULENT SOCIETY MEETINGS

No CLASSES or LECTURES are given from May through October, but the GARDEN is open daily. For any additional information, phone 947-2800.

# SAGUAROUND

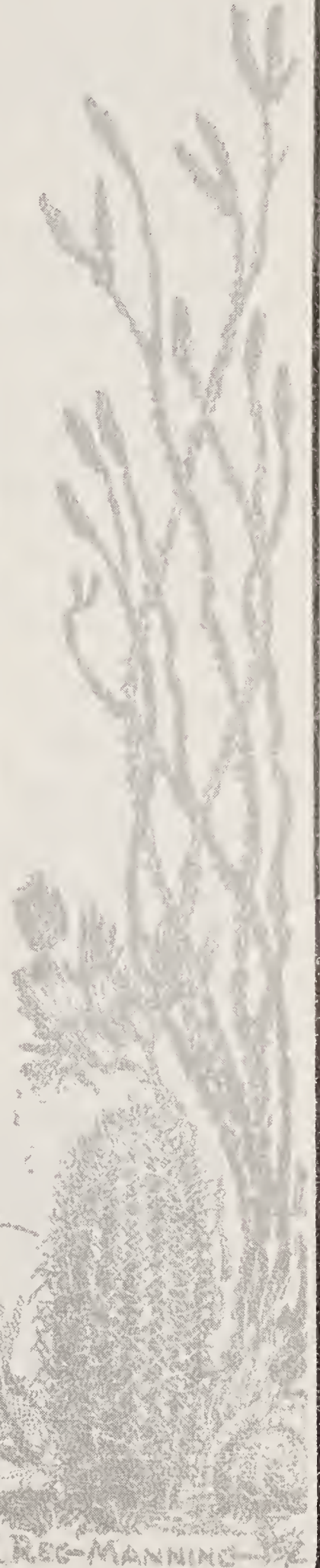
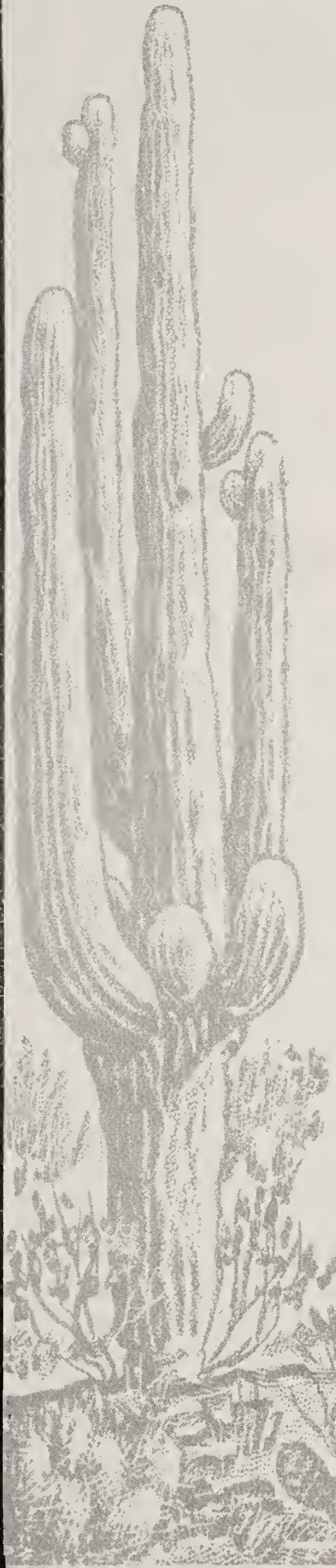
## BULLETIN

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No. 6



REG-MANNING '76

# SAGUAROLAND BULLETIN

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Editor, W. Hubert Earle

Associate Editor, Lillian Diven

Vol. XXX

JUNE, 1976

No. 6

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Cover: *Cochiseia robbinsorum*



**DESERT  
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# Editor's Notes

Your Editor was landing in Ibiza, Spain, when the Annual Meetings were being held. It was the start of an exciting and very busy four weeks trip — which will be reported on in the near future.

Members of the staff reported on the Garden's activities during 1975-76 to the Annual Members' Meeting. Among our achievements — the addition of approximately 250 plants to our permanent collection, some purchased and some given to the Garden. In our International Seed Exchange program we had dealings with 144 other institutions. Classes at the Garden helped boost our membership fifteen per cent in the past year. Sherry Couch, in addition to her work on plant accessions, has guided groups of visitors, lectured and undertaken speaking engagements away from the Garden. Large new beds have been made for groups of aloes and other plants. The Garden's Australian section is expanding, with the help of grower Ron Gass, and also with the help of a new drip irrigation system.

The 29th Annual Cactus Show was a great success, as was the First Annual Plant Sale. This was an experiment. We couldn't know until the sale itself whether it would be a one-time-only thing or an annual event. It was a tremendous success, and automatically became the "First Annual", since it realized a net gain to the

garden of over \$2500.00, as well as generating a lot of enthusiasm among desert gardeners.

We are extremely proud that our Herbarium has recently been named a "National Resource" by the Association of Systematics Collections. Of the 1,100 herbaria in the country, only 115 received this designation. J. Harry Lehr, Curator of the Herbarium, who is responsible in great part for our receiving recognition, is writing a report on the award for a forthcoming issue of the Bulletin.

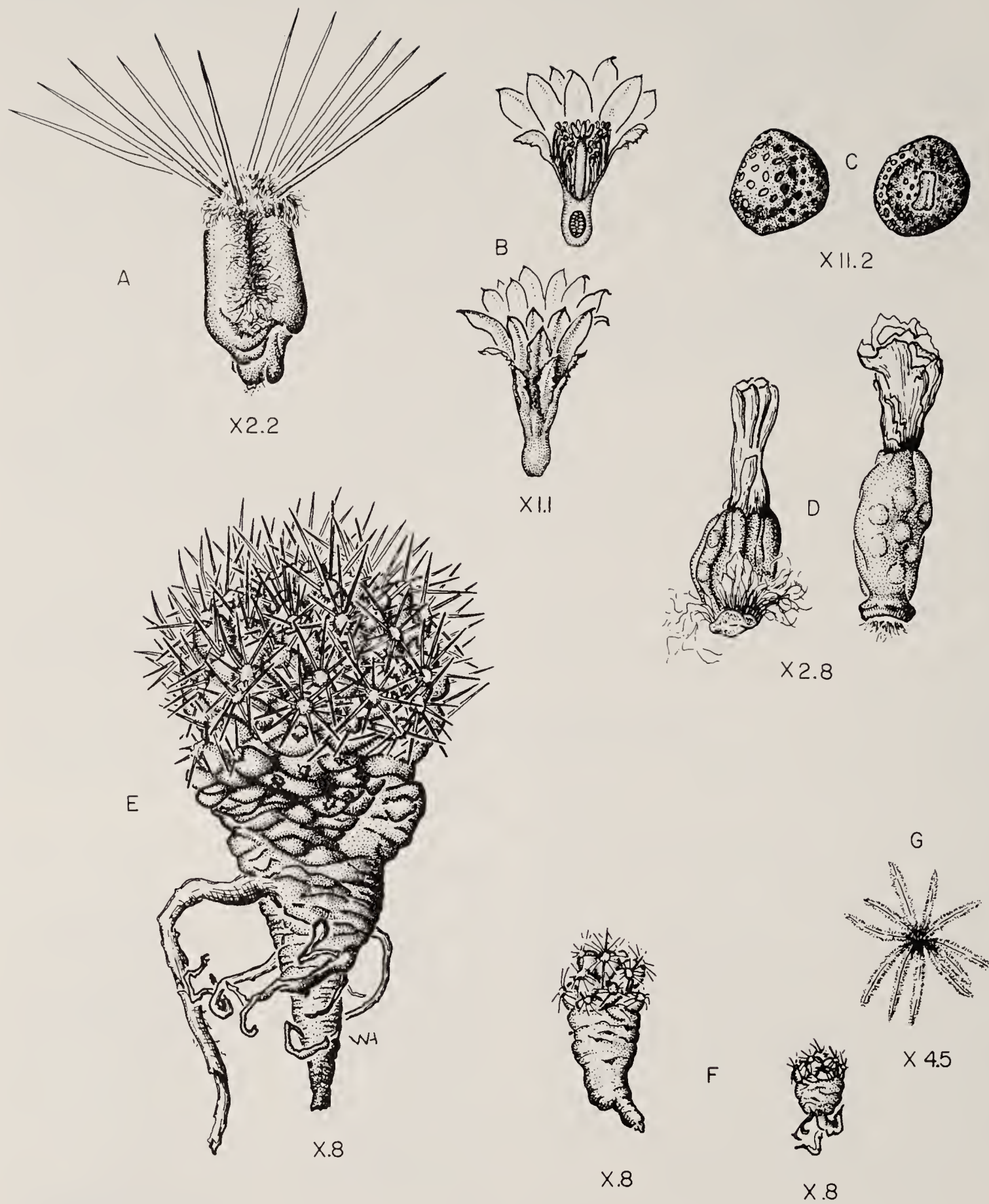
Our financial report was delayed because of current changes in our accounting procedures that will, when they are completed in the near future, make financial information more easily accessible and enable the Bookkeeper to prepare monthly projections and performance reports for the Board of Directors. Working with us on this project is Board Member Eric Maxwell, member of the accounting firm of Dennis Schmich & Co., Ltd.

Certain items on the financial report, published in this issue, are worth commenting on.

It's good to see that our total income was over \$233,000 — you could easily say "close to a quarter of a million" — the highest we've ever had. Congratulations to all who helped. Retail sales rose about 15 per cent, a welcome figure to a non-tax-supported institution like ours. Contributions more than doubled, to our delight, since the figure shows an increased interest in the Garden, and the funds can be used to make some of our plans a reality.

Voluntary admissions were up. Last October we increased our "suggested voluntary admission" to \$1.00 per person, and the public has responded by adding \$21,000 to our year's income.

(Continued on page 70)



*Cochiseia robbinsorum*. A, nipple. B, flower. C, seed. D, matured fruit. E, entire plant. F, seedling. G, seedling showing pubescent spines. Drawing by Wendy Hodgson.



# COCHISEIA Earle, genus novum

## *Cochiseia robbinsorum* Earle, species nova

*Cochiseia* Earle, gen. nov.

Cactus demissus globosus aut cylindraceus simplex caulorhiza brevi ad longe protracta; tubercula cylindrica, in spiram disposita, adaxiale canaliculata; areola lanam copiosam ferens; spina centralis si praesens brevis aut longa; spinae semicentrales 3, in dimidio superiore areolae ascendentes; spinae radiales breves, patentes; omnes spinae aciculares, albae apicibus brunneis; flores parvi, semirotati, rosei ad olivacei; fructus clavatus, carnosus, ruber; semina atra, foveata, parva; hilum basale, parva.\*

Globose, low cylindrical cactus, simple, having a short to long tapering rootstock; tubercles round, arranged in spirals, grooved above; areole bearing copious wool, central spine, if any, short or long; three semicentral spines ascending in upper half of areole; radials short, spreading; all spines acicular, white with a brown tip; flowers small, semirotate, pink to olive; fruit clavate, fleshy, red; seeds black, pitted, small; hilum basal, small.

*Cochiseia robbinsorum* Earle sp. nov.

Planta adulta simplex, usque ad 50 mm diametro et alta, radice palari firma dauciformi usque ad 100 mm longa; tubercula 10 in quaque spira, 8 mm longa cylindrica adaxiale canaliculata; axillae aliquot trichomatibus albidis; areola circularis aut ovalis lana copiosa; spinae aciculares; spina centralis si praesens 10-15 mm longa, prorecta; spinae semicentrales 3-4, ascendentes, 10 mm longae; spinae radiales 12, patentes, 6 mm longae; flores rosei ad olivacei; petala lanceolata, ciliata, 8 mm longa, extima abaxiale brunneola, pagina adaxiali striam medialem ferrugineam ferenti; filamenta lutea; stylus et lobi pallide virides; fructus ruber, tenuis, carnosus, edulis, 10 mm longa periantho affixo; semina atra, 1 mm diametro, foveata, hilo parvo. Floret Aprile et maturescit Julii.\*

Adult plant up to 50 mm in diameter and height, having a firm carrotlike taproot up to 100 mm long; simple body; tubercles in spirals of 10, 8 mm long, rounded, grooved above; few white hairs in axils; areole round to oval, having copious wool; spines acicular; central spine, if any, 10-15 mm long, upright; 3-4 semicentrals 10 mm long, ascending; 12 radials, spreading, 6 mm long; flowers pink to olive; petal lanceolate, ciliate, 8 mm long, outer petals having brown backing, face of petals having a light brown midstripe; pistil yellow; anthers and lobes light green; fruit red, slender, fleshy, edible, 10 mm long with attached perianth; seeds black, 1 mm in diameter, pitted, small hilum. Plant flowers in April and fruit matures the following July.

This small cactus shares some characteristics with the genera *Mammillaria*, *Escobaria*, *Neobesseya* and *Escobesseya*, yet has characteristics that separate it from any of the above.

It was found in southeast Cochise County, Arizona, and the genus is named for the Apache chief Cochise, whose tribe roamed the hills where the plant grows.

During a family hike, the plant was first noticed by Jimmy Robbins, who called his brother John to see it, and he in turn called their father, James Robbins, to identify it. For this reason, the specific name *robbinsorum* was chosen to honor all three members of the Robbins family.

The green-bodied plant, covered with brown-tipped white spines, is up to 40 mm in

\*Description put into Latin by David Keil.

diameter and 40 mm in height. The carrot-shaped root is sometimes as long as 100 mm. Tubercles are in spirals of nine, 4 mm to 5 mm in diameter at the base and 5 mm to 8 mm long, grooved on the top of the tubercle, bearing a few short, persistent white hairs in the axil.

Areoles are 4 mm wide, circular to oval, bearing copious wool. The 4 upright radial spines are up to 10 mm long. They are surrounded by 12 spreading radials 6 mm long. On rare occasions a plant may be found that has central spines 12 mm long.

Flowers appear in April. They are olive green, turning pinkish after being open for two or three days. Flowers follow each other consecutively, and usually there are never more than two open on the same plant at the same time.

The flower is rotate, with petals slightly spreading, 12 mm wide and 14 mm deep. Petals are obtuse-lanceolate, bearing a light to dark brown midstripe. Fruit ripens in July. It is red, fleshy, club-shaped, 15 mm long. Seeds are black, pitted, 1 mm in diameter, with a small hilum.

This is a single-stemmed plant, although damage to the apex may cause it to form auxiliary stems. The fruit will fall to the ground at the base of the plant, where its seeds will germinate, giving the plant the appearance of having many offsets, although in reality each is an individual plant.

The white-spined plants are difficult to locate in the gray limestone with white calcite inclusions which makes up the type locality. The plants are also difficult to dislodge, since the roots grow very deep into the limestone cracks.

Elevation of the type locality is 4250 ft., where *Cochiseia robbinsorum* is found growing in association with *Mammillaria olivae*, *M. grahami*, *M. heyderi* var *applanata*, *Coryphantha vivipara* var *bisbeeana*, *Echinocereus fendleri* var *rectispinus*, *Opuntia engelmannii*, *O. leptocaulis*, *O. arbuscula*, *Fouquieria splendens*, *Vauquelinia californica*, *Dalea formosa*, *Lysiloma thornberi*, *Tecoma stans*, *Selaginella rupincola*, *Dasyilirion wheeleri*, *Acacia greggii* and *Prosopis velutina*.

Topotype herbarium sheet has been deposited at the Desert Botanical Garden Herbarium, and holotype herbarium sheet at the Arizona State University Herbarium. Seeds and several plants have been deposited with the ISI (International Succulent Institute) in San Francisco, who will have plants of *C. robbinsorum* ready for sale in a few years. We sincerely hope that this promise of future availability will discourage people from hunting out the location of the plant in Arizona and "clearing out" the type locality. *Cochiseia robbinsorum* is being placed on Arizona's Protected Plant List, in the "Collection Prohibited" section.

—W. H. EARLE

#### Additional Notes by James A. Robbins

Central spines were observed on only two plants out of fifty. In the native habitat, spines more or less hide the body of the plant, the overall appearance is white; in cultivation the plant becomes more open, exposing the scurfy green tubercles. A hairlike radial (3 mm) observed behind uppermost radial spine. Out of 30 plants examined, usually 11 to 17 spines per tubercle. Spines mostly at top third of plant body. Old dried, compressed tubercles evident quite a way down the base (root) of the plant. Few adventitious roots from upper part of body. Juvenile plants have pubescent spines. Fruit is always visible, at first green, turning orange-red when ripe.

## ASPECTS OF ARIZONA



Fifteen years ago there was widespread belief that all saguaros of southern Arizona were dying. This recent photo shows that the "dying" plants have grown as much as four and a half feet since then, as indicated by the irregular rings in the upper stems that mark apical growth.

## ANNUAL MEMBERS' MEETING

One of the largest meetings of Garden Members was held on Sunday, May 16, 1976. The mailed-in ballots were counted by Margaret Caldwell, Lucille Earle and W. H. Chester. John Rhuart and Edward Burrall were re-elected to three-year terms on the Board of Directors.

Henry Triesler presented the Board's recommendations for increased membership fees and other fees.

Board President Mildred F. May reported on the new operational structure which, by organizing duties and responsibilities of staff members, now frees the Director for the important work he alone can do. She also reported that a committee of Board Members is working on revision of a budget for the Garden, and that the Board recognizes the importance of Garden Volunteers and is considering a way to express its gratitude to the Volunteers.

Alice Feffer reported on the reorganization of the Garden's Bookstore. Some physical revamping will be necessary for security reasons and because of possible fire hazards. Mrs. Feffer has consulted with Dean Overman of the A.S.U. College of Business Administration about ways to operate the Bookstore most effectively. Dean Overman suggests assigning two graduate students to study and advise in this area.

The Garden's new logo, or emblem, a flowering Agave, will soon be used on Garden stationery, brochures and displays. Shoulder patches, decals and bumper stickers bearing the new logo are planned, and Members attending the meeting suggested several other attractive ways to use our new symbol.

Director W. H. Earle has left on a month-long trip to Europe as the guest of Jurg Rau of St. Gallen, Switzerland. He will visit the major botanical gardens of Europe and Great Britain, lecturing, consulting and photographing. In his absence, members of the staff reported on the Garden's activities during the past year. (Details will be found in the Editor's Notes.)

## ANNUAL BOARD MEETING

In lieu of the customary annual dinner meeting, the Board held their Annual Meeting immediately following the Annual Members' Meeting on May 16, 1976.

Tom Goodnight presented the nominating committee's slate of officers for the coming year. The Board approved the recommendations. The officers for 1976-77 will be: Chairman, John Rhuart; President, Mildred F. May; First Vice President, Edward Burrall; Second Vice President, Henry Triesler; Treasurer, Tom Goodnight; Secretary, Lillian Mieg; Chief Counsel, Richard B. Snell. The Board also appointed Geraldine Eliot to work with Mr. Snell in legal matters pertaining to the Garden.

Dr. Charles Merbs, chairman of the anthropology department at Arizona State University, and a widely respected amateur of succulent plants, was appointed to the Garden's Advisory Board.

Henry Triesler presented the final recommendations for changes in membership fees. The Board approved instituting the changes on July 1st.

The year's financial report had not been completed, due to recent changes in accounting procedures, but will be completed and mailed to Board Members before the July meeting.

The Roberts Group, designers of the Garden's new logo, are in the process of designing a new brochure, as well as the cover of a new self-guided tour booklet and other items which will be printed and ready to distribute before the end of the summer.

Monthly Board Meetings will continue through the summer.

**ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.  
SPONSORING THE  
DESERT BOTANICAL GARDEN**

**FINANCIAL REPORT**

5-1-75 — 4-30-76

	Comparison	
ASSETS:	1975-1976	1974-1975
Accounts Receivable .....	\$ 292.00	\$ 676.30
Inventory: Sale Items .....	29,061.00	26,325.52
Deposit State Comp. Fund .....	534.00	534.00
A—CASH:		
VNB — Checking Account .....	23,065.00	220.00
Petty Cash — Pop Machines, Cash Register .....	605.00	345.00
B—SAVINGS:		
Retirement Fund .....	6,339.00	16,007.96
VNB — Savings Account .....	41,197.00	25,159.59
First Fed. Savings (C of D) .....	6,600.00	7,099.60
First Fed. Savings (Savings) .....	2,028.00	488.40
Southwest Savings .....	5,770.00	5,406.12
Flower Preservers .....	773.00	683.85
C. M. Schroeder Fund .....	235.00	403.34
	\$116,499.00	\$ 83,349.68
<b>LIABILITIES:</b>		
Accounts Payable .....	\$ 0	\$ 0
Arizona State Comp. Fund .....	140.00	133.00
Arizona Withholding Tax .....	86.00	81.95
Arizona Unemployment Tax .....	158.00	150.00
Federal .....	0	0
	\$ 384.00	\$ 364.95
<b>CASH IN:</b>		
Retail Sales .....	\$137,403.00	\$119,636.36
Retail Sales Tax .....	5,273.00	4,445.83
Wholesale of Garden Books .....	6,981.00	6,624.90
Wholesale of Cactus Seeds .....	0	3,312.56
Contributions .....	9,835.00	4,696.92
Voluntary Admissions .....	42,312.00	21,206.65
Memberships .....	11,029.00	7,695.80
Endowment .....	16,000.00	16,000.00
Library Fund .....	0	333.17
Interest & Dividend .....	2,000.00	2,466.24
Herbarium Fund .....	0	0
Miscellaneous: Flower Preservers .....	0	387.66
Indirect Costs — NSF Grant .....	2,834.00	3,120.00
Transferred from Savings .....	0	34,212.69
	\$233,667.00	\$224,138.78

**EXPENDITURES:**

Purchases for Bookstore Resale .....	\$ 73,985.80	\$ 61,593.32
Arizona Retail Sales Tax .....	5,182.64	4,445.82
Gross Wages .....	73,171.51	65,780.10
Payroll Taxes, Fed. Employment .....	5,733.13	7,279.41
Office Supplies and Stamps .....	1,764.35	1,294.62
Library Books, Subscriptions & Supplies .....	723.37	394.10
Herbarium Supplies .....	621.06	385.81
Monthly Saguaroland Bulletin .....	2,470.60	2,642.79
Utilities .....	7,129.32	5,069.09
Fleet Expenses .....	2,751.07	2,033.80
Insurance — Life, Accident & Hospital .....	4,502.80	3,042.50
Retirement Fund .....	10,262.89	9,661.75
Insurance — State Comp. Fund .....	688.94	1,344.97
Insurance — Fire, Theft, Liability And Property Damage .....	2,085.50	2,149.00
Cactus Show .....	327.18	635.31
Travel, Entertainment, Public Relations and Miscellaneous .....	2,082.70	1,502.45
Advertising .....	12.43	210.48
Garden and Building Maintenance .....	4,477.64	2,834.02
Lease .....	25.00	25.00
Miscellaneous .....	1,277.69	920.65
Capital Improvements .....	4,036.97	28,002.62
	\$203,312.59	\$201,247.61

**Editor's Notes —**

(Continued from page 63)

You may remember that last year's expenditures for advertising amounted to half of the previous year's. This year we spent only \$12, compared with last year's \$210. This drastic cut in paid advertising seems to have made no difference in our attendance and income. The reason isn't completely clear, but it seems to us that the standard "attractions" advertising in magazines, etc. isn't necessary for an institution like the Garden.

You will notice that our wholesale of

cactus seeds was nil this year, although we took in \$3,300 last year. Wholesalers are now dealing with seed-collectors who are paid at a very low rate. At the rates we paid our collectors in Mexico and our staff members, we could not compete. The market is also unstable at present, so we are withdrawing temporarily from it, but may resume wholesaling seed at a future date.

All in all, we are happy that we again "came out in the black" — a statement that still has the power to please us, even though we have been able to say it every year since 1946.

# Membership Fees — Changes and Additions

During recent months the Board of Directors has been reviewing the membership categories of institutions similar to the Garden. Questions of institutional needs, benefits to members, available resources, public services and admission fees for non-members were studied in order to arrive at a membership fee structure that was both realistic and fair to the Garden's devoted members who have seen us through the long and sometimes difficult years.

The following changes will go into effect immediately for new memberships, and at renewal time for continuing memberships.

LIFE MEMBERSHIP .....	\$ 500.00
PATRON MEMBERSHIP .....	\$1,000.00 or more

(Arrangements can be made for payment of either Life or Patron memberships in installments.)

## ANNUAL MEMBERSHIPS

Grade or High School .....	\$ 3.00
Individual .....	15.00
Family .....	20.00
Sustaining .....	50.00
Benefactor .....	100.00

CORPORATE MEMBERSHIPS are available in Benefactor, Life and Patron categories.

## Other Fee Changes

Classes, \$15.00 for non-members, \$7.50 for members.

Correction: It was stated in a recent Bulletin that *Salvia greggii*, *Salvia mojavensis* and *Melampodium leucanthum* were introduced into the nursery trade by the Garden. This is incorrect. Of the three only *S. mojavensis* is a Garden introduction.

Field Trips, \$2.00 for non-members, \$1.00 for members.

Subscription to the Saguaroland Bulletin, without membership privileges, will be offered to institutions for \$10.00 a year.

## Benefits to Members

Free admission to the Garden.

Annual schedule of events.

Saguaroland Bulletin, published ten times a year.

Half-price admission to all chargeable events.

Use of the Richter Memorial Library.

Membership in Cactomaniacs.

"Preview sale" before annual plant sale.

Ten per cent discount in the Garden's Bookstore.

Annually, a choice of free seed packets.

Preference in field trip reservations.

## Student Memberships

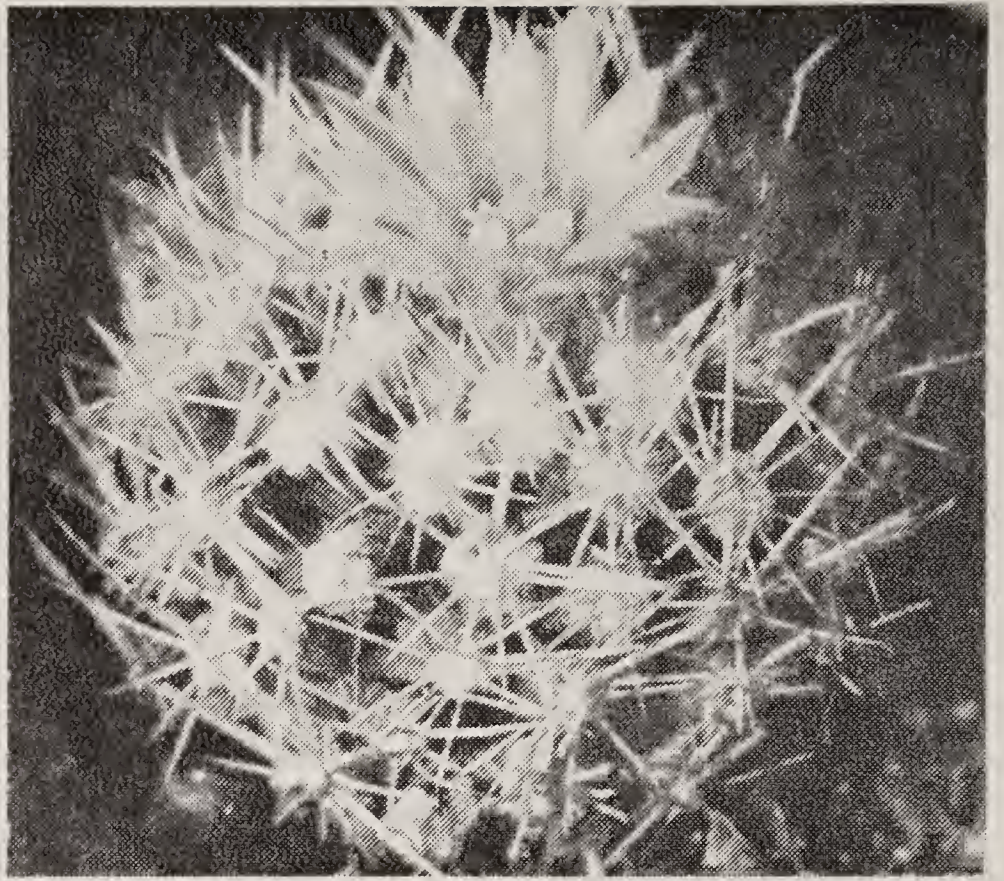
In order to keep Student Memberships as inexpensive as possible, we must exclude the Saguaroland Bulletin and the discount privilege from this category. Students will receive all other benefits, plus a free Garden Emblem, probably a shoulder patch replica of the Garden's newly designed Agave symbol this year.

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## A. F. H. BUINING

The Garden has learned of the death of Mr. Buining on May 9, 1976. Chairman of the Netherlands-Belgium Cactus and Succulent Society (Vereniging van Liefhebbers van Cactussen en Andere Vetplanten) from 1941 to 1966, Mr. Buining was the author of many valuable papers on a number of species of cactus, as well as the leader of repeated botanical expeditions. He spent his latter years, until his final illness, preparing his voluminous records for publication.

At right, *Cochiseia robbinsorum* in a close-up, showing flower, white spines and woolly tubercles. Below left, a five-inch mature plant extracted from a crevice in the limestone. Below right, two seedlings, one-quarter inch and one inch long.



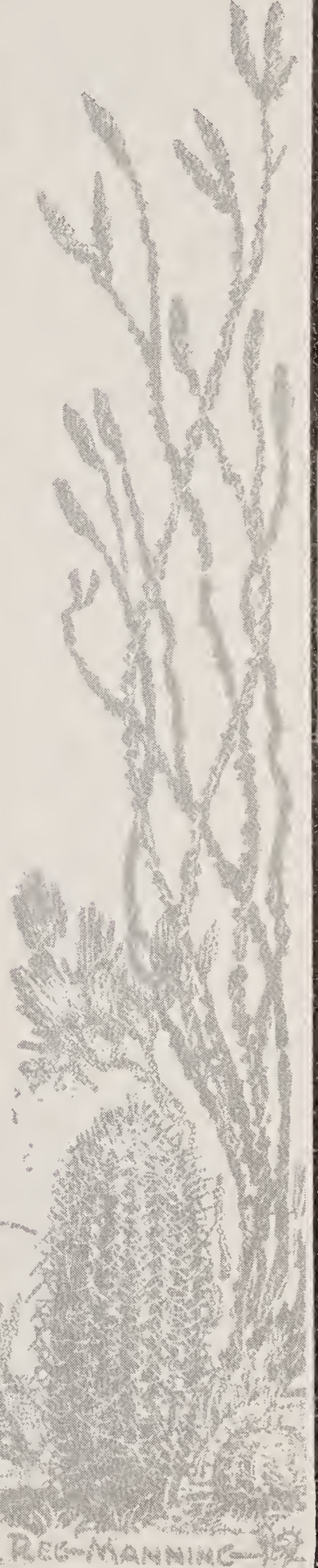
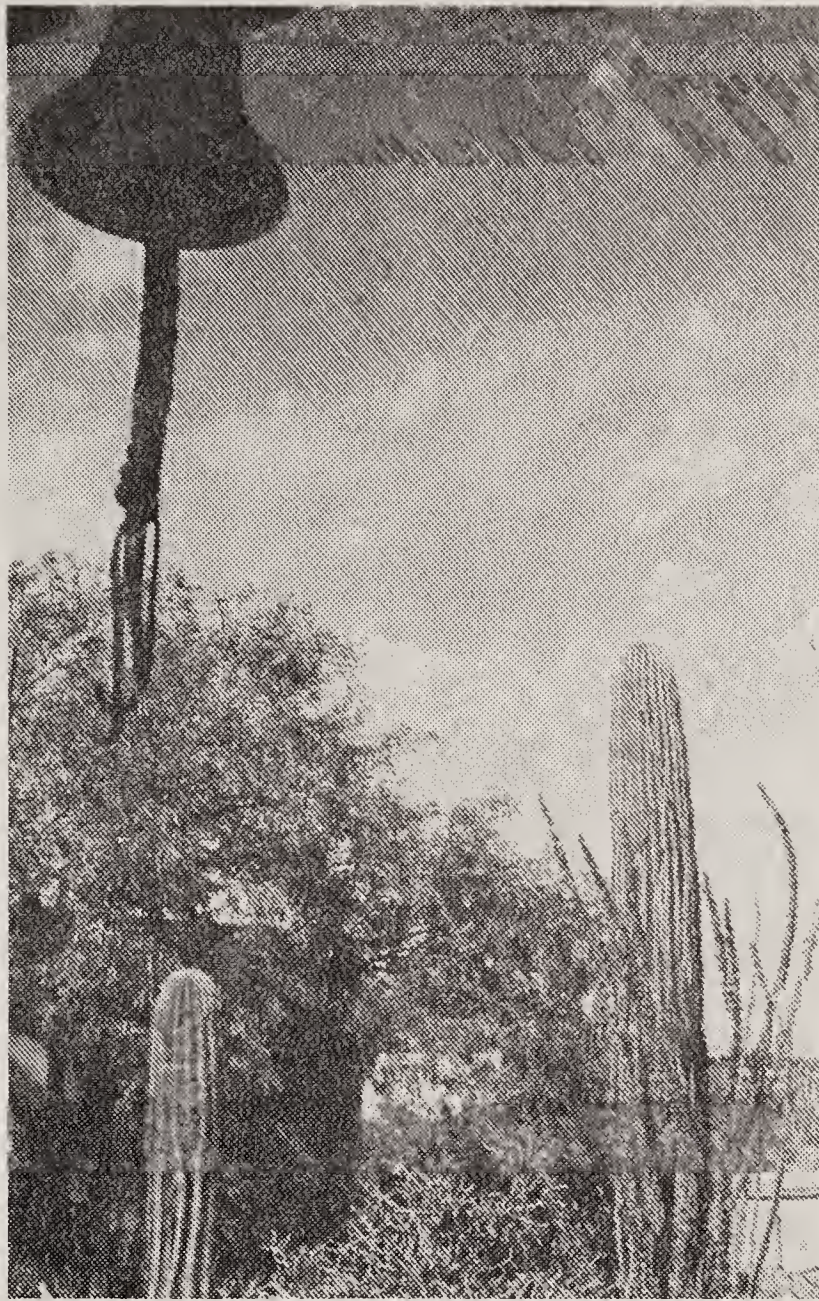


# SAGUAROUND

## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX August-September, 1976 No. 7



REG-MANNING '76

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden, P.O. Box 5415, Phoenix, AZ 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year.

Editor, W. Hubert Earle

Associate Editor, Lillian Diven

Vol. XXX

AUGUST-SEPTEMBER, 1976

No. 7

## ARIZONA CACTUS AND NATIVE FLORA SOCIETY

EXECUTIVE BOARD: Chairman of the Board, John Rhuart. President, Mildred F. May. First Vice President, Edward Burrall. Second Vice President, Henry Triesler. Treasurer, Tom Goodnight. Secretary, Lillian Mieg. Chief Counsel, Richard B. Snell. Margaret Caldwell, W. H. Chester, Alice Fefter, Naomi Kitchel, Reg Manning, Eric Maxwell. Emeritus, Angela Bool.

ADVISORY BOARD: Chairman, Les Mahoney. James Cahill, Lillian Diven, Geraldine Eliot, Mrs. Charles Gilliland, Donald W. Hutton, Charles F. Merbs, Mrs. Otto Myrland, Eleanor B. Sloan.

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**DESERT  
BOTANICAL  
GARDEN**

Director . . . . .	W. H. Earle
Research Botanist . . . . .	Dr. Howard S. Gentry
Superintendent . . . . .	Rodney G. Engard
Curator of Herbarium . . . . .	J. Harry Lehr
Office Manager . . . . .	Anne Amacker
Educational Program . . . . .	Sherry Couch
Horticulturist . . . . .	Russell Haughey
Horticultural Staff . . . . .	Tom Caldwell, Barry Feldman, Bill Kepner
Bookkeeper . . . . .	Janice Moats
Bookstore . . . . .	Ann Shelstad, Lela Turner
Maintenance and Bookstore . . . . .	Lynn Trainum, Donald C. Shelstad
Office Clerk . . . . .	Cherri Moats

Garden Open Daily 9 a.m. to 5 p.m. Including Holidays

ANNUAL MEMBERSHIP: Individual \$15.00, Family \$20.00, Sustaining \$50.00, Benefactor, \$100.00, Elementary or High School \$3.00.

LIFE MEMBERSHIP \$500.00, PATRON MEMBERSHIP \$1,000.00.

Corporate Memberships available in Benefactor, Life and Patron categories.



# Editor's Notes

In July your Editor spoke at the western regional meeting of the American Association of Botanical Gardens and Arboreta on the subject of Landscaping with Desert Plants. The AABGA holds five regional meetings annually so that garden directors can discuss mutual problems and exchange ideas. The national meeting of the association will be held in St. Louis next year. Our Garden has invited the western section to hold its regional meeting in Phoenix in 1979 — such plans have to be made well in advance, and confirmation won't come until 1978.

Your editor also recently attended the annual meeting of the national Cactus and Succulent Society, since he is a member of the National Board.

Construction in the Garden this summer has added some interesting new features. Elsewhere in this issue you will see a sketch of our new Students' Entrance. Our staff graded the entrance courtyard and paths and lined the paths with malpais rock, and a contractor erected the walls. The ornamental iron gate was also installed. We'll have photos of the completed project in the October issue.

Also completed was the last of the five beds adjoining the Leaf Succulent House. It will hold Ocotillos and the Boojum tree,

specimens of all eleven species in the genus *Fouquieria* in one bed.

Also in this issue of the Bulletin you will see a photo of our elegant new free-standing travelling display. The four "wings" display our Garden logo, or symbol, and carry many color photos of cacti and succulents. The display also has a box rack to hold our brochures. It has already been displayed in two large shopping malls, and will be taken to others monthly, as well as to conference and convention centers. This handsome display was designed by the Roberts Group who designed our new Agave logo, and was built by Rodney Engard.

When Janet Alsever originated the popular classes in sand-preserving flowers, she and her associates set up the Flower Preservers Fund, and profits from the sale of arrangements they made went into the fund for the Garden. The press of other activities forced Mrs. Alsever to drop her schedule of classes a few years ago. Now, in a very gracious gesture, she has turned over the entire fund of \$726.00 to the Garden's Library. This generous gift will be used for the continuing purchase of books.

Since your editor was most fortunate to have travelled through Europe in May and June, he would like to share with you some of the trip's highlights. In this issue you'll find the start of his account.

Enclosed with this issue is the Garden's 1976-77 Program of Activities. Keep it handy so you won't miss any event.

WE HAVE HAD A SECOND PHONE LINE INSTALLED. THE NUMBER IS 946-9942. IF YOU USE IT WHEN YOU CALL THE GARDEN YOU'RE LESS LIKELY TO GET A BUSY SIGNAL. FEES FOR CLASSES

## JURG RAU'S IBIZA GARDEN

The Balearic Islands, which include Majorca, Minorca, Formentera, Cabrera and Ibiza, are off the east coast of Spain, southeast of Barcelona, in the Mediterranean. These Spanish islands have been overrun by Phoenicians, Greeks, Romans and Moors since prehistory, and the present customs, agriculture and architecture show traces of the different cultures.

Here I arrived on June 11 to be the guest of Ina and Jurg Rau, Garden members and good friends who accompanied us on our 1970 collecting trip in Mexico. I was privileged to be their guest for two weeks as we wheeled through many private botanical gardens along the Mediterranean, then into northern Italy, and then to their home at St. Gallen, Switzerland. Later Jurg and I visited gardens in Zurich and Heidelberg.

Ina and Jurg have a lovely home overlooking the sea. Rainfall in Ibiza is twenty inches a year, almost three times our own Arizona rainfall, but much of the water runs off to the sea and the island appears dry.

Until the advent of large jet planes, the Balearics were quiet "sunning" islands, off the beaten path. Today they are inundated with tourists from northern Europe. The last ten years have seen the biggest invasion since the Moors were expelled in 1492 — this time by vacationers.

The Raus' walled-in and terraced garden of cacti and succulents was a beautiful sight adjacent to their spacious home by the sea. I was fortunate to arrive when the cacti were in flower. Masses of white *Trichocereus schickentanzii* remained open during the day, dazzling clusters of a red *Trichocereus famatina*, ten-inch-long lavender flowers of *Echinopsis multiplex*, large plantings of *Dolichothele longimamma* all in yellow flower, upright scarlet *Borzicactus aurivillus* along the walls, beds of yellow-flowering *Notocactus ottonis*, large clumps of fig-marigolds in iridescent colors, *Cephalocleistocactus ritteri* with its green flowers, many other tall cerei and many opuntias. A magnificent show.





Gardening on Ibiza poses problems. The topsoil is clayey and forms a hard crust that won't absorb rain until it is very wet. The underlying rock is limestone, and water that does reach it percolates rapidly through it. Ordinary soil-amendment methods aren't enough for growing cacti and succulents here, so Jurg has had to bring soil in from the mainland. To it he has added quantities of mulch from the oak groves he owns up in the hills. To us desert people the acidity of oak leaves might seem a disadvantage, but it should be remembered that cactus thrives near and under oak trees in a good part of Mexico. Certainly the cacti in the Rau garden are in excellent condition.

Jurg has been introducing plants and also propagating plants from seed, with great success. There is a twelve-month growing season on Ibiza, and care must be taken not to overgrow plants. Frost is unknown, but protection is necessary at times from hot sea air. The palo verdes and mesquites that Jurg grows for shading reminded me of home, but didn't make me homesick, not at the start of my trip. The pictures here were taken in the Rau garden. The Raus plan to be in America in a couple of years, and I trust they will bring a lot of slides of their plants for us to see, as their garden is one of the finest I've seen.

—W.H.E.



# INTRODUCING OUR NEW EMBLEM

The Garden's new emblem is this flowering Agave, and we're immensely proud of it. Like other institutions, the Garden realized the advantages of a readily identifiable symbol. We needed something appropriate that would be attractive to our members, our friends in the botanical world, our visitors and the public at large. We think our Agave fills the bill. It is a succulent, it is graphic, and no other organization uses the Agave as a symbol.

The Garden has more than a casual connection with Agaves. Besides being the center of Dr. Gentry's definitive research on the genus Agave, the Garden has by far the largest collection of growing Agaves — 175 different species of the genus.

Last spring we talked with the Roberts Group, a design firm that handles major design programs for corporations here and abroad. The Roberts Group had wanted to involve itself in a community activity, and found the idea of developing a "corporate image" for the Garden very attractive.

We couldn't have been more fortunate. Working with us, they have not only created our symbol (its name ought to be *Agave robertsi*, because it isn't a copy of a known species), but also have designed our handsome new brochures, our stationary, our t-shirts, our bumper stickers, and the cover of our new self-guided tour booklet.

When the San Diego Zoo adopted a new emblem recently, they said, "An insignia, if well conceived and purposefully used, reinforces the 'image' of an organization and serves to convey its function in a concise, pleasing way." We think the Garden's Agave will do just that and we plan to use it in a number of attractive ways, ranging from note paper to entrance signs.

---

The striking new travelling display, mentioned in the Editor's Notes, was our first public use of our Agave symbol (or logo, as it's often called). The picture on page 81 shows it erected in the Los Arcos shopping mall, Scottsdale.

Visitors to Arizona will see our new brochures in hotels, motels and travel agencies. We're enclosing a copy with this issue of the Bulletin. We think it will attract visitors to the Garden. It may even tempt members to drop by to see what's new.

When you do come, you'll find we've just published a new self-guided tour booklet with many new pictures and new information on our exhibits.

---

About our t-shirts: They're tan, with the Garden's Agave printed in color — red flowers, dark green stem, and leaves in four shades of green. Our first batch ordered was snatched up by the staff, but we have more on hand now.

At the moment, the Director's t-shirt (his second one, Mrs. Earle appropriated his first one) is being worn in Tahiti by his vacationing son, John Earle. And Dr. Gentry, who is "Mr. Agave" himself, has half a dozen.

The t-shirts are now on sale in our shop or by mail. So you could see what they look like, we pulled Sherry Couch out of her office and Russ Haughey away from more serious horticultural tasks to model the shirts for these pictures.

Besides the t-shirts, we now have bumper stickers, and will soon have decals and shoulder patches.

In the Garden's shop, t-shirts are \$4.95 for adults' sizes small, medium, large and



**DESERT  
BOTANICAL  
GARDEN  
PHOENIX, ARIZONA**

extra-large. Children's sizes small, medium and large are \$3.95 each. Both items plus tax. Bumper stickers are \$0.50 each, plus tax.

For mail orders, add a postage and handling charge of \$0.75 for t-shirt orders. \$0.25 for bumper stickers. Arizona residents only, add 4 per cent sales tax.

Remember, Garden Members get a ten per cent discount.







The Garden's new travelling display.

## FEEES FOR CLASSES

At the August Board Meeting, the Board asked the Bulletin to explain to our Members in fuller detail the changes in fees for all six-week series of classes. Starting this fall, class fees are \$15.00 for non-members, \$7.50 for members.

In the past, the charges for non-members included a year's membership in the Garden. Now that we are forced to institute new charges, the fee for non-members will not include membership. In fairness to the Garden's members, we cannot offer non-members an advantage that members will not have.

The Board decided, however, that we will offer non-members who enroll in classes a one-year membership for half price. They need not join, although we hope that they will.

This has been just one of the situations the Garden's Board and staff have had to work out this year. It may seem a small thing to worry about, at least to some people, but we'd like our Members to know that their interests are being considered whenever changes are made.

## THIS YEAR'S FIELD TRIPS

The Program of Activities accompanying your Bulletin this month gives the dates and destinations of the eight Saturday field trips. Here are some details.

**SEVEN SPRINGS** on October 9th. This favorite picnic area along Camp Creek north of Carefree is 55 miles from the Garden. Along the stream we will likely see some late summer wildflowers, perhaps columbine and monkey flower. Birders should bring their binoculars to look for late fall migrants. The vegetation in the area is chaparral-juniper and woodland-riparian. A two-mile hike along the boulder-strewn stream is planned.

**PINTO CREEK** on November 13th. Our first field trip here. Seventy miles from the Garden, northeast of Superior, in the Castle Dome mine area. This is a chance to see fall color. Plant communities are higher-elevation chaparral and riparian. Long hike along another boulder-strewn stream bed. And another good place for birds.

ESTRELLA MOUNTAIN REGIONAL PARK on December 11th. The Park is only 35 miles southwest of Phoenix. The type of vegetation here is desert mountain alluvial fan and wash. Short hikes planned, over occasionally rough ground.

PICACHO PEAK STATE PARK on January 8th. Our first field trip here, though everyone drives past it on Interstate 10 between Phoenix and Tucson. About eighty miles from the Garden. Vegetation is desert mountain bajada — the long outwash detrital slope at the base of a mountain.

MCDOWELL MOUNTAIN REGIONAL PARK on February 5th. Our first field trip here. Forty miles from the Garden, north-east of Scottsdale. Recently a flora of this area was compiled, and during field work a number of unexpected plants were found, "isolates", single plants that belong at much higher elevations. Among them a juniper and a mountain mahogany normally growing at least thirty miles away and over a thousand feet higher. A few short hikes. Should get to see some early wildflowers.

AJO on March 12th. The longest trip of the year, 125 miles one way, so plan to return some time around 7:30 p.m. When we had our last Ajo trip two years ago, everyone felt it was the high spot of the year. Expect to see a good number of wildflowers, hibiscus, early-blooming cactus, plus large stands of organ pipe cactus and some good scenery.

HIDDEN CANYON on April 9th. North-east of Florence, in the Mineral Hills, 75 miles from the Garden. This is a **rincon**, a narrow canyon that is a special type of habitat. Cliffsite vegetation that can survive the scouring action of confined flash floods. The hiking will be long and somewhat rough, though no climbing planned.

MOUNT ORD on May 7th. Near Sunflower, 70 miles from the Garden, including five miles on a narrow, unpaved mountain road to 7155 ft. elevation, the summit of Mt. Ord. Last May a forest fire swept to the top of the mountain. Our trip will be to see an example of fire's effect on dense chaparral, find out what's back and what's new one year after the fire.

Plan well ahead to go on the field trips that interest you the most. Participation on any field trip is limited to 25 persons, and prepaid reservations are required. The charge is \$1.00 for each Garden Member and \$2.00 for each non-member.

Transportation is the responsibility of the participants, although car-pooling is encouraged. Signing of a responsibility waiver is pre-requisite to participation.

Your clothing should be appropriate to the time of year and the altitude of the area visited. Sturdy shoes are recommended, though heavy hiking boots are not essential. Obviously, on a day-long trip you should bring your lunch and enough water for the day.

No collecting is permitted.

Field Trip groups assemble in the service parking area behind the Webster Auditorium and will leave at 8:30 a.m. Except for the Ajo trip, you can plan on being back at the Garden by 5:00 p.m.

### Consider This:

We mail your Bulletin to your old address .....	14c
It's returned to us .....	25c
We mail it to your new address...	14c

And the total is.....53c

So, will you please let us know of any change of address as soon as you know it yourself?

# Arizona Cactus

## BOXING-GLOVE CHOLLA *Cylindroptia fulgida* var. *mammillata* forma *monstrosa*

Cactaceae

The curls and bends of the Boxing Glove Cholla are an astonishing sight. The plant has so many different forms, due to its crested or fasciations, that a beholder might think it is a cactus gone mad. Some of the forms resemble boxing gloves, hence the common name, others are too fantastic to name. The accompanying photos give an idea of the many forms the normally cylindrical stems of a cholla can take.

Although the Chain-Fruit Cholla, *Cylindropuntia fulgida*, reaches a height of 2 or 2½ meters, Boxing Glove, forma *monstrosa*, grows to a height of only one meter. Plants in cultivation are usually much smaller, since they are usually started from cuttings to be planted "as is" or grafted onto *Cereus* stock for rapid growth. The plant is reasonably fast growing, although a grafted plant will put on as much growth in six months as a self-rooted plant will in three years.

We have never seen a Boxing Glove Cholla produce flowers and fruit, although

it has been reported that they occasionally are produced, but if fruits do ever form the seeds are likely to be infertile. Comparing this cactus with other crested cacti, it is logical to assume that if fertile seeds ever are produced, the resulting plants will not be crested.

The Smooth Chain-Fruit Cholla, *Cylindropuntia fulgida* var *mammillata*, growing east of Florence, Arizona, is the parent plant of Boxing Glove Cholla. The Boxing Glove reproduces only vegetatively. Joints of the Chain-Fruit Cholla drop to the ground and take root. If the parent plant shows any signs of fasciation at all, the newly-rooted plant will probably be a crested one, though it will also develop some normal stems.

A crested joint can be cut from a Boxing Glove Cholla with a sharp knife, the cut surface dusted with sulphur, and the plant set aside to dry for a week or two before potting. Do not water until new roots appear at or near the cut. The normal stems that often appear should be cut off to induce continued crested.

Type Locality: East of Florence, Arizona.

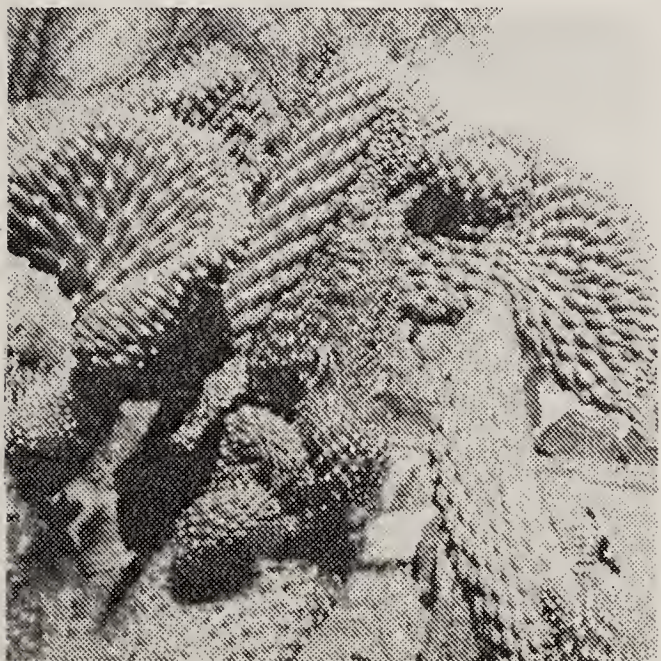
Distribution: Florence to Tucson

### REFERENCES

Benson, Cacti of Arizona

Earle, Cacti of the Southwest

—WHE



## THE NEW STUDENT ENTRANCE



One hundred thirty-five times last year the Garden was visited by elementary school, high school and university student field trips. Group size averaged forty-five, but at least twice a month we had groups totalling over one hundred each.

How to handle large groups smoothly, without disturbing the Garden's other visitors, would be a greater problem if we hadn't formulated over the years a set of regulations for teachers and their students to observe. Nevertheless, the necessity of funnelling large groups through the bookshop and into the Garden caused some discomfort and confusion.

Now being constructed, and scheduled for completion in time for the fall influx of student groups, is a new and separate Students' Entrance, a hundred feet east of the Visitors' Building. Wrought-iron gates

open on a low-walled area thirty-five by thirty-five feet, where students will assemble as they get off their buses. Here they can be briefed and divided into manageable groups with individual leaders, and proceed into the Garden via a new wide path that joins the paths through the nature-walk section of the Garden.

The sketch below, drawn by Board Member Donald W. Hutton, shows what the Students' Entrance will look like. The cement block walls, to be painted the same light tan as the Visitors' Building, slope down from the gate height to a sit-on-able height at the sides and back, so that the kids can perch on them as well as the benches while they're getting their orientation talk.

For the present, the area will have a gravel surface. Later we'll black-top it.

## GARDEN ACTIVITIES

### SEPTEMBER

**Sun. 28th** CACTUS & SUCCULENT SOCIETY **2:00 p.m.**

### OCTOBER

**Tues. 5th** CACTOMANIACS — Potluck Supper **6:30 p.m.**  
**Sat. 9th** FIELD TRIP — Seven Springs **8:30 a.m.-4:45 p.m.**  
**Sun 31st** CAC & SS — Meeting **2:00 p.m.**

# 1976-77 PROGRAM OF ACTIVITIES DESERT BOTANICAL GARDEN

In Papago Park, Phoenix, Arizona

(Enter Garden from 5800 E. Van Buren or 6400 E. McDowell)



**DESERT  
BOTANICAL  
GARDEN**  
PHOENIX, ARIZONA

The DESERT BOTANICAL GARDEN is open every day from 9:00 a.m. to 5:00 p.m., including weekends and all holidays. Voluntary admissions help to support this non-profit garden.

CLASSES in Identification, Propagation, and Use of Desert Plants in Landscaping are given Wednesdays at 2:30 from November through April. Fee for the six-week course is \$7.50 for members of the Garden, \$15.00 for non-members.

ILLUSTRATED LECTURES are given by staff members each Thursday at 3:00 p.m. in the Garden's Webster Auditorium, November through April.

One-day FIELD TRIPS are taken once a month, October through May, to places of botanical interest. Prepaid reservations required. Charge for members \$1.00 each, non-members \$2.00 each. Departure from the Garden parking lot at 8:30 a.m. Phone 947-2800 for details.

CACTOMANIACS is an informal group of persons interested in cacti, other desert plants and related subjects. The group meets at 8:00 p.m. on the first Tuesday of each month, October through May, in the Webster Auditorium. Visitors are welcome.

The CENTRAL ARIZONA CACTUS & SUCCULENT SOCIETY meets the last Sunday of each month at 2:00 p.m. in the Webster Auditorium. This young group is affiliated with the CACTUS & SUCCULENT SOCIETY OF AMERICA, INC., and invites you to their meetings.

## SEPTEMBER

<b>Mon.</b>	<b>6th</b>	LABOR DAY, Garden open	<b>9:00-5:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>28th</b>	CACTUS & SUCCULENT SOCIETY	<b>2:00</b>	<b>p.m.</b>

## OCTOBER

<b>Tues.</b>	<b>5th</b>	CACTOMANIACS — Potluck Supper	<b>6:30</b>	<b>p.m.</b>
<b>Sat.</b>	<b>9th</b>	FIELD TRIP — Seven Springs	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Sun</b>	<b>31st</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

## NOVEMBER

<b>Tues.</b>	<b>2nd</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>3rd</b>	CLASS — Introduction to Desert Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>4th</b>	LECTURE — Valley of the Sun Desert Plants	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>10th</b>	CLASS — Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>11th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>13th</b>	FIELD TRIP — Pinto Creek	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Wed.</b>	<b>17th</b>	CLASS — Cultivation of Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>18th</b>	LECTURE — Arizona's Plants — Mountains to Desert	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>24th</b>	CLASS — Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>25th</b>	THANKSGIVING DAY — Garden open	<b>9:00-5:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>28th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

## DECEMBER

<b>Wed.</b>	<b>1st</b>	CLASS — Cultivation of Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>2nd</b>	LECTURE — Arizona Wildflowers	<b>3:00</b>	<b>p.m.</b>
<b>Tues.</b>	<b>7th</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>8th</b>	CLASS FIELD TRIP — Pinnacle Peak	<b>8:30</b>	<b>a.m.</b>
<b>Thurs.</b>	<b>9th</b>	LECTURE — Mexican Cacti	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>11th</b>	FIELD TRIP — Estrella Mtn. Park	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>16th</b>	LECTURE — Arizona Flowering Trees	<b>3:00</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>23rd</b>	LECTURE — Cactus Flowers	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>25th</b>	CHRISTMAS — Garden open	<b>9:00-5:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>26th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

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# 1976-77 PROGRAM OF ACTIVITIES

## JANUARY

<b>Sat.</b>	<b>1st</b>	NEW YEAR'S DAY — Garden open	<b>9:00-5:00</b>	<b>p.m.</b>
<b>Tues.</b>	<b>4th</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>5th</b>	CLASS — Introduction to Desert Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>6th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>8th</b>	FIELD TRIP — Picacho Peak State Park	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Wed.</b>	<b>12th</b>	CLASS — Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>13th</b>	LECTURE — Arizona's Plants — Mountains to Desert	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>19th</b>	CLASS — Cultivation of Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>20th</b>	LECTURE — Arizona Wildflowers	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>26th</b>	CLASS — Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>27th</b>	LECTURE — Mexican Cacti	<b>3:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>30th</b>	CENTRAL ARIZONA CACTUS & SUCCULENT SOCIETY	<b>2:00</b>	<b>p.m.</b>

## FEBRUARY

<b>Tues.</b>	<b>1st</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>2nd</b>	CLASS — Cultivation of Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>3rd</b>	LECTURE — Arizona Flowering Trees	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>5th</b>	FIELD TRIP — McDowell Mtn. Park	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Wed.</b>	<b>9th</b>	CLASS FIELD TRIP — Carefree area	<b>8:30</b>	<b>a.m.</b>
<b>Thurs.</b>	<b>10th</b>	LECTURE — Cactus Flowers	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>16th</b>	Deadline for CACTUS SHOW Art Entries	<b>5:00</b>	<b>p.m.</b>
<b>Fri.</b>	<b>18th</b>	All other CACTUS SHOW Entries received today and until 12:00 noon on the 19th		
<b>Sun.</b>	<b>20th</b>			
	<b>thru</b>	THIRTIETH ANNUAL CACTUS SHOW	<b>Daily 9:00-5:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>27th</b>			

## MARCH

<b>Tues.</b>	<b>1st</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>9th</b>	CLASS — Introduction to Desert Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>10th</b>	LECTURE — Valley of the Sun Desert Plants	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>12th</b>	FIELD TRIP — Ajo	<b>8:30 a.m.-7:30</b>	<b>p.m.</b>
<b>Wed.</b>	<b>16th</b>	CLASS — Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>17th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>23rd</b>	CLASS — Cultivation of Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>24th</b>	LECTURE — Arizona's Plants — Mountains to Desert	<b>3:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>27th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>30th</b>	CLASS — Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>31st</b>	LECTURE — Arizona Wildflowers	<b>3:00</b>	<b>p.m.</b>

## APRIL

<b>Tues.</b>	<b>5th</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>6th</b>	CLASS — Cultivation of Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>7th</b>	LECTURE — Mexican Cacti	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>9th</b>	FIELD TRIP — Hidden Canyon	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Wed.</b>	<b>13th</b>	CLASS FIELD TRIP — Utery Mountain Park	<b>8:30</b>	<b>a.m.</b>
<b>Thurs.</b>	<b>14th</b>	LECTURE — Arizona Flowering Trees	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>16th</b>	SALE OF UNUSUAL PLANTS for Desert Gardens	<b>9:00-5:00</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>21st</b>	LECTURE — Cactus Flowers	<b>3:00</b>	<b>p.m.</b>
<b>Sun.</b>	<b>24th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>28th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00</b>	<b>p.m.</b>

## MAY

<b>Tues.</b>	<b>3rd</b>	CACTOMANIACS — Potluck Supper	<b>6:30</b>	<b>p.m.</b>
<b>Sat.</b>	<b>7th</b>	FIELD TRIP — Mount Ord	<b>8:30 a.m.-4:45</b>	<b>p.m.</b>
<b>Sun.</b>	<b>8th</b>	MEMBERS' ANNUAL MEETING	<b>2:00</b>	<b>p.m.</b>
<b>Mon.</b>	<b>16th</b>			
	<b>thru</b>	CACTUS AND SUCCULENT SOCIETY OF AMERICA National Biennial Convention, Tucson		
<b>Fri.</b>	<b>20th</b>			
<b>Sun.</b>	<b>29th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

June 26th, July 31st and August 28th, 1977

Central Arizona Cactus & Succulent Society meetings

No Classes or Lectures are given from May through October, but the GARDEN  
Is open daily. For any additional information, phone (602) 947-2800.

(over)

Visit the exciting

# DESERT BOTANICAL GARDEN

more than a thousand different cacti  
and other unusual plants  
from the arid lands of the world  
in a natural desert setting

in Papago Park, Phoenix, Arizona  
access via 58th St. and Van Buren St.  
or 64th St. and McDowell Rd.



a non-profit  
institution  
open every day  
of the year  
9 a.m. to 5 p.m.

admission is by  
voluntary donation

859-176



## Its Location

The Desert Botanical Garden is in the northeast corner of Phoenix' Papago Park, on 150 acres of natural desert. In the city of Phoenix and close to Scottsdale, it preserves a section of the desert in a growing metropolitan area.

## Its Features

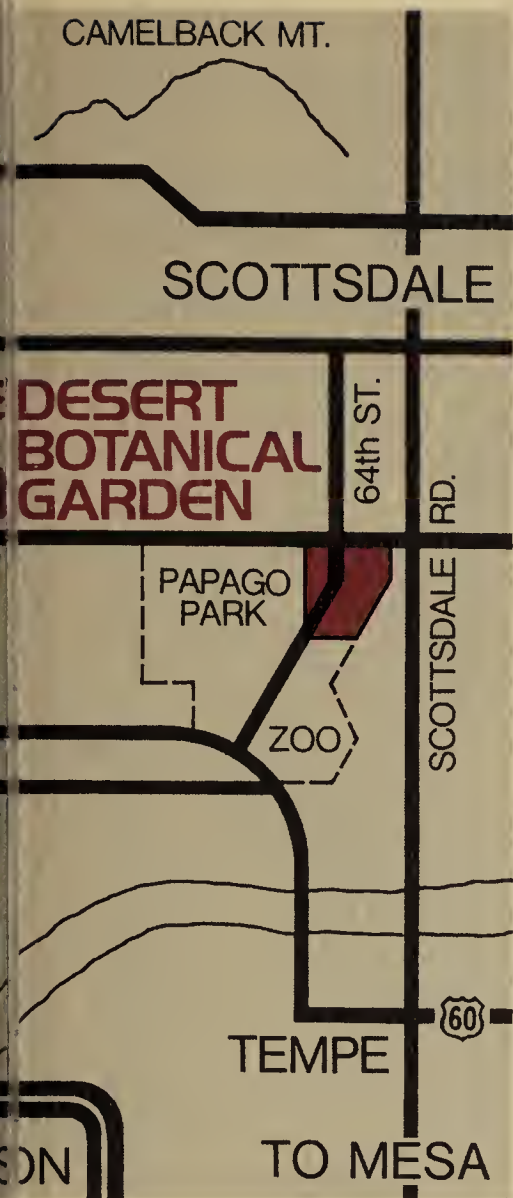
In the forty years of its existence, the Desert Botanical Garden has collected over half the different kinds of cacti in the world—some 1400 species are growing here out of doors or in the two large lath houses.

Along the paths, cacti from our Southwest, Mexico, Central and South America display the startlingly different ways that plants have adapted to life in the hot and nearly waterless deserts.

There are miniature cacti the size of a half-dollar as well as Arizona's giant Saguaro cactus, and the even more massive Mexican Cardon that can weigh as much as ten tons.

Organ Pipe, Octopus, Prickly Pear, Boxing Glove and Cow's Tongue are some of the names in the fascinating cactus family.





For protection from the sun, many cacti make their own shade—the small Golf Ball is almost invisible behind its barrier of white spines, the Old Man cactus has a head of long white hair. For protection from hungry desert animals, the Creeping Devil has strong dagger-sharp spines that penetrate the thickest leather, while the spineless Totem Pole cactus has a bitter alkaloid in its skin that no animal will sample for the second time.

Visitors during Arizona's long springtime get a bonus—the sight of cacti in flower. Large, delicate flowers, often sweet-scented, that are rivals of any orchid or rose or lily.

Other desert natives, spiny or spineless, have their own

special features. You will see the succulent-leaved Century Plants—Agaves—that end their lives in a spectacular tower of blossoms, their first and their last.

The Ocotillo, or Coachwhip, from our own desert, is odd because it will drop and then renew all its leaves five or six times a year.

But the oddest of all is the Boojum Tree from Baja California in Mexico. Called

“Upside-down Tree”

as well, it is shaped

more like an immense up-ended parsnip than any other thing. It deserves its title “the most bizarre plant in North America.”



A walk through the Garden introduces you to many other desert plants—African Aloes in great variety, African succulents that look like cacti, and Lithops, the “living stones” that seem to be gray-green pebbles, but are flowering plants.

Your self-guided tour—a very informative booklet is available—will be a delightful introduction to the strange and beautiful “world of little rain.”

# Membership Information

The Desert Botanical Garden receives no tax support of any kind. Its growth depends on contributions, the voluntary donations of visitors, and its membership in this country and abroad.

Membership categories:

## ANNUAL MEMBERSHIP

Individual, \$15.00; Family, \$20.00; Sustaining, \$50.00; Benefactor, \$100.00; Elementary or High School, \$3.00. LIFE membership, \$500.00. PATRON membership, \$1,000.00. CORPORATE MEMBERSHIPS are available in Benefactor, Life and Patron categories.

Garden Members receive the monthly Saguaroland Bulletin, reduced fees for classes and field trips, discounts, seed packets, and a number of other benefits.

## MEMBERSHIP APPLICATION

Clip and mail with your check.

Desert Botanical Garden, Box 5415, Phoenix, Arizona 85010

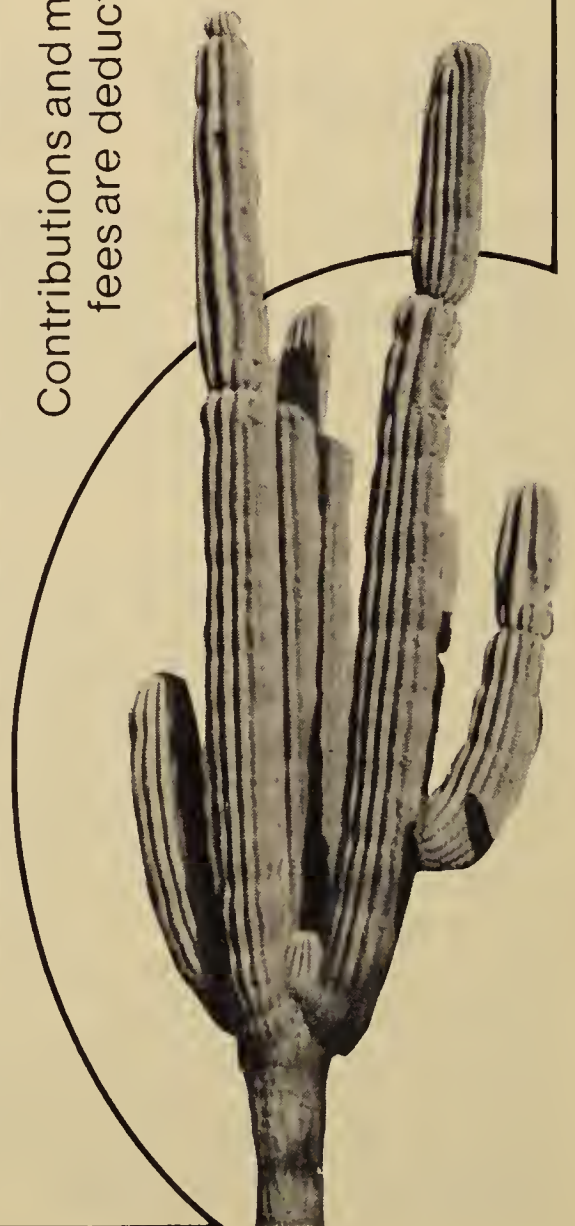
Mr/Mrs/Miss \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Contributions and membership fees are deductible for tax purposes.





# Its Importance

The Desert Botanical Garden is recognized internationally as the only botanical garden dedicated from its beginning to the study of the plant life of deserts and other arid lands. Visitors from every state and many foreign countries total more than 120,000 annually.

The Garden is unique. Other institutions that wish to display desert plants must grow most of them in artificial conditions under glass. Here the majority of plants grow out of doors, naturally, and keep their true characteristics.

Since its founding in 1935, its threefold purpose has been to study, conserve and educate. The Garden is engaged in a worldwide program of assistance and exchange with other botanical institutions, scholars and scientists. It is the center for the definitive study of the Agaves. Rare and threatened species of desert plants are propagated here, as well as plants with horticultural potential.

As a place where members of the public can see the many facets of desert plant life from both hemispheres, it is unequalled.



## Special Events

**“An Introduction to the Desert and its Plants”**—a series of classes held in fall, winter and spring.

**Illustrated Lectures**—on desert plants and animals, held on Thursday afternoons at 3:00 p.m., except during summer. Open to the public without charge.

**Monthly Field Trips**—to the desert, mesas and mountains. Open to the public when space available. Reservations necessary.

**The Annual Cactus Show**—a major event for gardeners and other plant enthusiasts since 1945. Awards for exhibits of cacti, leaf succulents, planters, arrangements, photography and art. Held during the last part of February for eight days.

**Plant Sale**—rare, unusual and just-introduced plants for desert gardens. Held in late March or early April.

The Desert Botanical Garden offers outstanding exhibits of cacti, leaf succulents, and other plants from the deserts of the world.

Open every day of the year from 9 a.m. to 5 p.m. Admission is by voluntary donation.

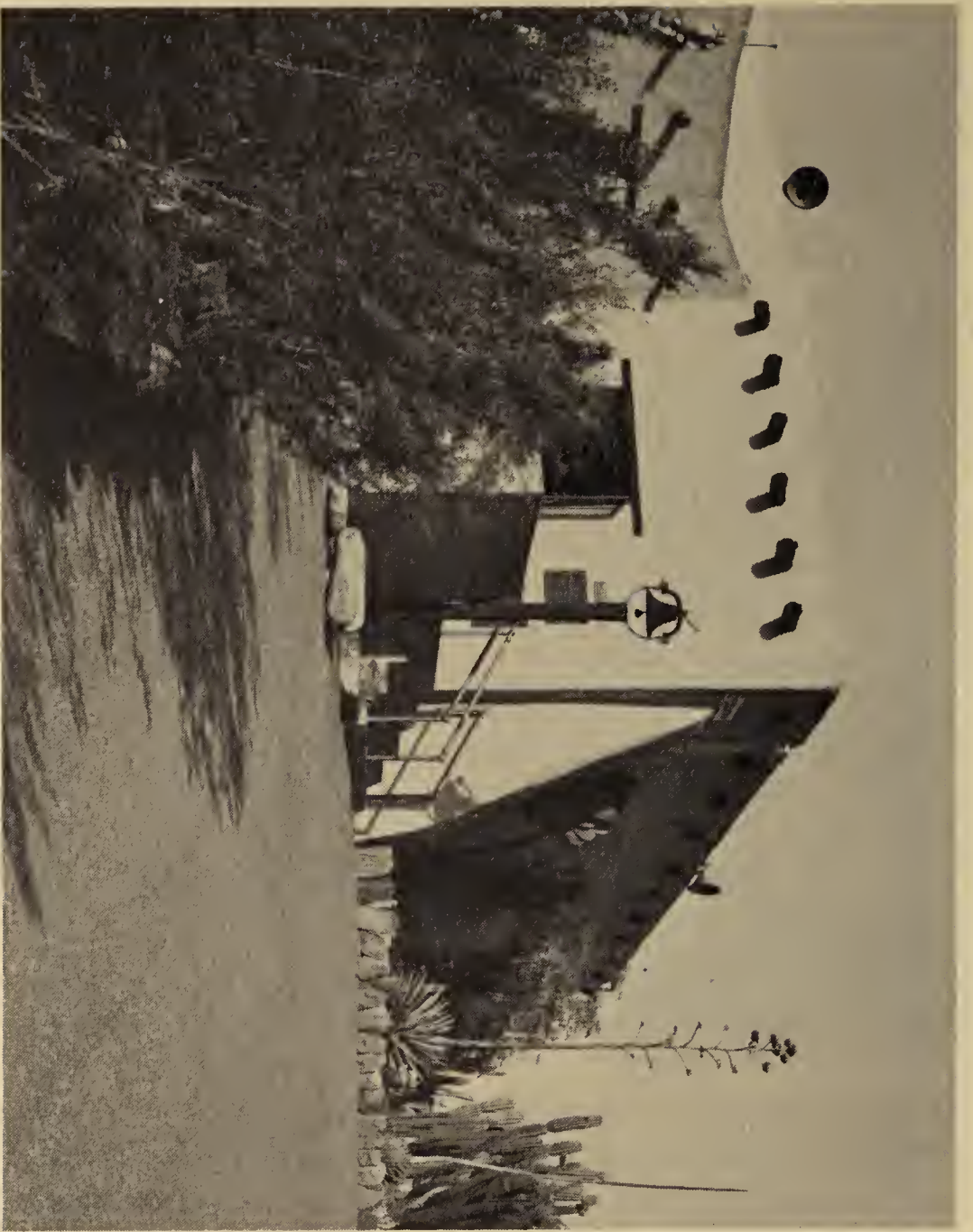
Wheelchairs are available without charge.

Located in Papago Park, Phoenix, Arizona, U.S.A.

Mailing address: Box 5415, Phoenix Arizona, 85010

Telephone: (612) 947-2800





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stamp  
here

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# SAGUAROUNDO

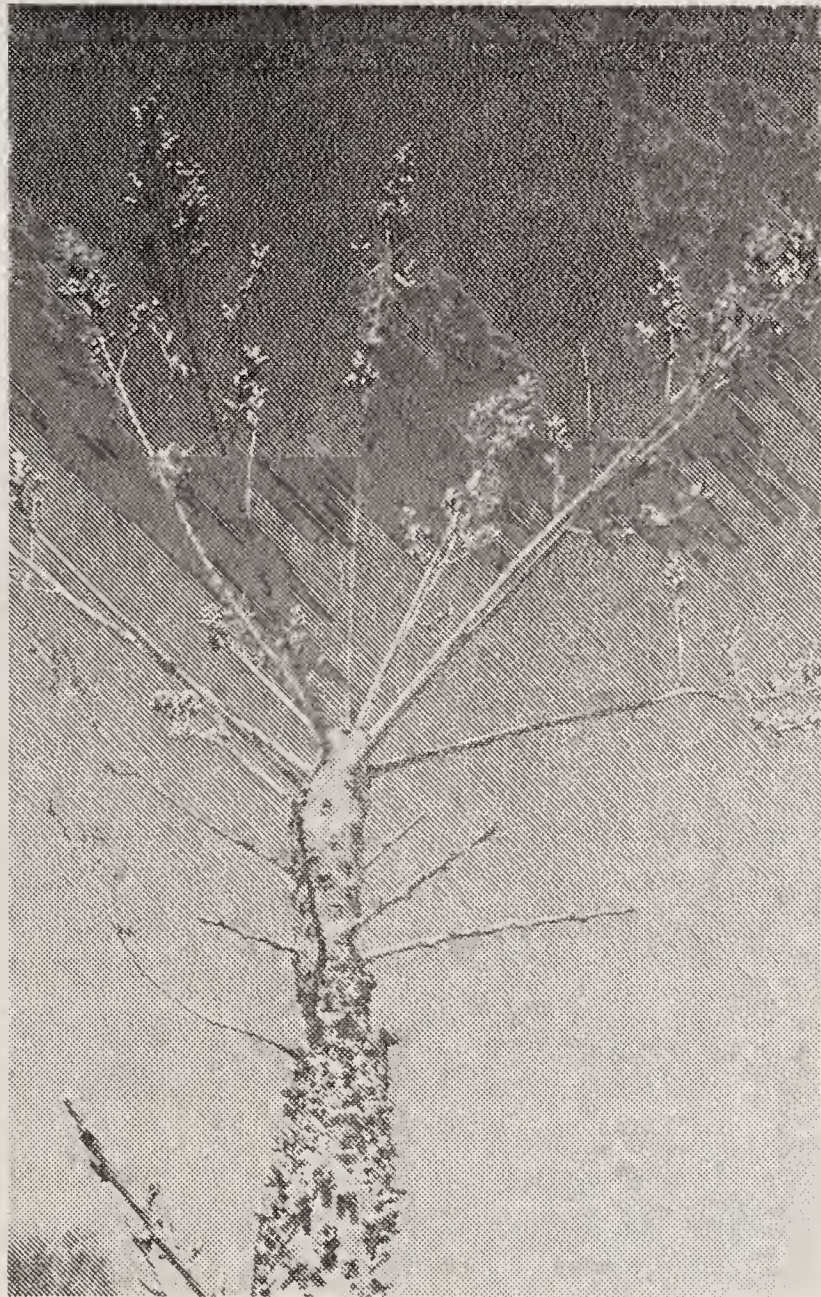
## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

October, 1976

No. 8



REG-MANNING

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden, P.O. Box 5415, Phoenix, AZ 85010. The Saguarioland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year.

Editor, Lillian Diven

Vol. XXX

OCTOBER, 1976

No. 8

## ARIZONA CACTUS AND NATIVE FLORA SOCIETY

EXECUTIVE BOARD: Chairman of the Board, John Rhuart. President, Mildred F. May. First Vice President, Edward Burrall. Second Vice President, Henry Triesler. Treasurer, Tom Goodnight. Secretary, Lillian Mieg. Chief Counsel, Richard B. Snell. Margaret Caldwell, W. H. Chester, Alice Feffer, Naomi Kitchel, Reg Manning, Eric Maxwell. Emeritus, Angela Bool.

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Cover: Boojum Tree flowers.



**DESERT  
BOTANICAL  
GARDEN**

Superintendent . . . . . Rodney G. Engard  
Research Botanist . . . . . Dr. Howard S. Gentry  
Curator of Herbarium . . . . . J. Harry Lehr  
Office Manager . . . . . Anne Amacker  
Educational Director . . . . . Sherry Couch Krummen  
Horticulturist . . . . . Russell Haughey  
Horticultural Staff . . . . . Tom Caldwell, Barry Feldman,  
Bill Kepner  
Bookkeeper . . . . . Janice Moats  
Bookshop Manager . . . . . Lynn Trainum  
Bookshop Staff . . . . . Lela Turner, Ann Shelstad  
Office Clerk . . . . . Cherri Moats

Director Emeritus . . . . . W. H. Earle

ANNUAL MEMBERSHIP: Individual \$15.00,  
Family \$20.00, Sustaining \$50.00, Benefactor,  
\$100.00, Elementary or High School \$3.00.

LIFE MEMBERSHIP \$500.00, PATRON MEM-  
BERSHIP \$1,000.00.

Corporate Memberships available in Benefac-  
tor, Life and Patron categories.



## OUR DIRECTOR RETIRES



W. Hubert Earle, the Director of the Desert Botanical Garden since 1957, and a staff member for ten years previous to 1957, will retire on October 1, 1976.

What he has done for the Garden during his Directorship stands as a towering achievement. He has brought the Garden to its current standing as a respected center for the study, propagation and display of arid-land plants. He has broadened the Garden's involvement in botanical studies, education and public service. He has given the Garden nearly thirty years of unselfish work distinguished by a fine combination of vision and practicality.

When Hubert Earle became Director, the Garden had a small basic library, a herbarium consisting of 2400 sheets, a collection of approximately 5,000 accessioned plants, a few hundred members, an annual attendance of under 50,000, and had just begun to hold classes.

Today's Garden has the outstanding Richter Memorial Library, a herbarium that has been named a National Resource, over 10,000 accessioned plants (plus many

thousand additional desert plants), a worldwide membership, an annual attendance of over 120,000, and programs of classes and lectures that are repeated three times a year. The number of buildings has been increased from two to eleven, not counting the recently completed Students' Entrance Patio built for the use of the many groups of elementary school, high school and university students that visit the Garden each year.

Numbers alone are inadequate when it comes to summarizing Hubert Earle's contributions to the Garden. We could count, perhaps, all the lectures, talks and interviews he has given in North America, the Far East and Europe, but it is impossible to count all the friends he has made for the Garden.

It would be possible to count the books and articles that bear his name, but not the authors, scholars and newsmen with whom he has generously shared his wide and deep knowledge of the desert and its plants. Neither is it possible to count the almost daily questions he has answered from amateur gardeners. Mr. Earle's genuine interest in people and their plants is one of his outstanding qualities. In fact, his warmth in all his dealings with the public has earned him as much esteem as his expertise has done in other areas.

Hubert Earle has always been eager to talk about the Garden, and reluctant to talk about himself, so it is sometimes only by accident that his friends find out the tremendous scope of his achievements.

His plant-collecting expeditions have not only enriched the Garden's renowned collection of cacti and other desert plants, but have also resulted in the introduction of hitherto unrecorded plants. He is the author of scientific descriptions of several new species of cactus, and is also the introducer into horticulture of a number of now-popular desert garden plants. His advice has been sought whenever parks and botanical gardens have planned to display cacti and succulents. His assistance in the foundation of the Manazura Botanical Garden in Japan, to name only one instance, was recognized with an invitation to preside as guest of honor at the opening of that garden.

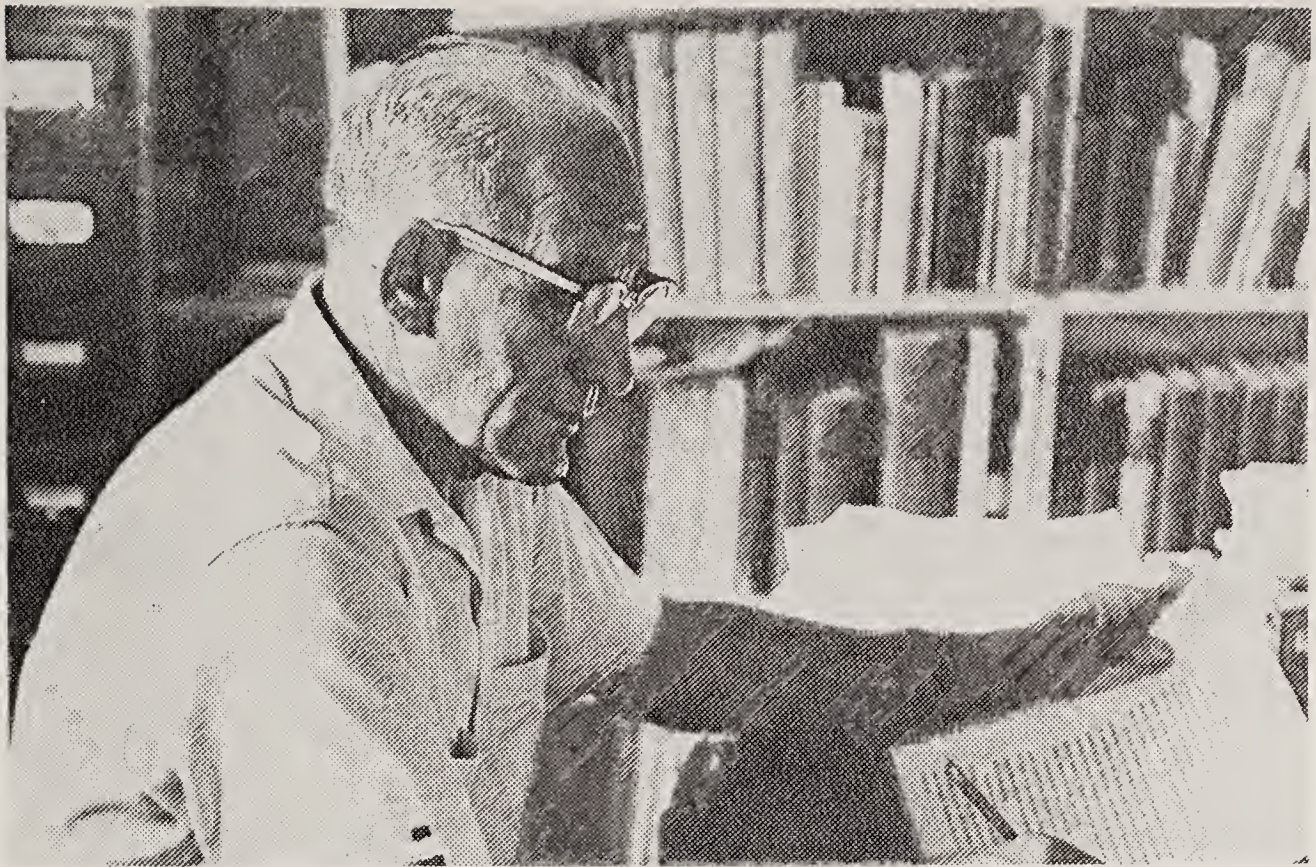
We list below some of the honors he has received during his career.

Hubert Earle's biography should make very good reading. From time to time his associates have begged him to at least jot down notes when he casually mentions one or another fascinating happening. Perhaps he can be persuaded to do just that. In the meanwhile, here is a brief sketch of the man who has become "Mister Cactus" not only to Arizonans but to friends throughout the world.

Born in Winnipeg, Canada, Hubert Earle had his first contact with cacti at the age of four — he discovered them with his bare feet while on a family outing. Perhaps the incident was prophetic. Certainly he has been in close contact with cacti for the past twenty-nine years, although the contact hasn't been quite the same kind!

In 1923 the family moved to Bloomington, Indiana, where he completed high school and attended Indiana University. A later move to Gary, Indiana, re-introduced him to cacti, as prickly pears were plentiful on the Lake Michigan dunes.

A well-begun career in insurance came to an abrupt end in 1944 when he developed such severe asthma that doctors gave him no more than three months to live unless he



Mr. Earle in the old office-cum-library. Photo by Fred Baselt.

found relief in a drier climate. He arrived in Arizona in 1945 and settled in Cactus, the area north of Phoenix which is now a populated part of Paradise Valley, but then was little more than a desert settlement of health-seekers.

After eighteen months of recuperation, he put his already intense knowledge of horticulture to use when he joined the staff of the Desert Botanical Garden.

He became Superintendent of the Garden in 1951, and succeeded W. Taylor Marshall as Director in 1957.

Our retiring Director is not severing his connections with the Garden. As Director Emeritus, he plans more writing, more field expeditions, more photography.

He will remain, as we have always known him to be, the Garden's friend.

Thank you, Hubert Earle, for these many fruitful years.

**AUTHOR:**

Cacti of the Southwest

Cacti, Wildflowers and Desert Plants of Arizona

The Southwestern Desert in Bloom

Numerous articles for Arizona Highways, Cactus (France), Kakteen (Switzerland), Riboten (Japan), Bonsai (New York), etc.

Co-author of many technical articles.

**HONORS:**

Fellow of the American Association for the Advancement of Science

Fellow of the Cactus and Succulent Society of America

Fellow of the Arizona Academy of Science

Member of the Board of Directors of: Southwestern Parks and Monuments Assn., Cactus and Succulent Society of America, Living Desert Reserve in Palm Springs, Calif.

Recipient of the Outstanding Citizen Award, 1972, conferred by the University of Arizona.

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A RECEPTION IN MR. EARLE'S HONOR will be held in the Garden's Auditorium on Sunday, October 17, from two to five p.m. All Garden Members are invited. If you plan to attend, phone the Garden at 946-9942.

**To the Members of the Garden:**

Speaking for the Board of Directors, I should like to take this opportunity to say again how much we value Hubert Earle's twenty nine years of contributions to the Garden. Over the years, he has done a very great deal to build the Garden's stature, a fact of which the entire Board is deeply aware. The standing ovation given Mr. Earle at the September Board Meeting was a spontaneous expression of the high regard in which we all hold him.

Speaking personally, I have known Hubert since 1951 when he was a newly-appointed Superintendent and I was a newly-elected Board Member. Through all these years I have seen his genuine devotion to the Garden, and working with him has made me especially appreciative of his efforts.

Hubert Earle takes with him our warmest regards. It will seem strange, perhaps, to visit the Garden and not find Hubert there, but we know the staff he has trained so well will carry on with the same devotion he has shown.

Most sincerely,  
**JOHN H. RHUART**  
Chairman of the Board

---

I consulted with my friend Hubert Earle three years ago when I considered organizing a local chapter of the Cactus and Succulent Society of America. He encouraged me to proceed and pledged his support. From the Garden files we gleaned the names of a few dedicated cactophiles and with their help launched the Central Arizona Cactus and Succulent Society. Hubert and his vivacious wife, Lucy, became charter members and they attend our activities as their busy schedule permits. When the new organization needed a permanent meeting place Mr. Earle made available the Webster Auditorum where we continue to meet. Our members will always be grateful for Mr. Earle's help.

Mr. Earle has devoted much of his adult life to the task of making the Desert Botanical Garden the outstanding repository of the desert plants which our members find so fascinating. The Garden, internationally renowned, stands as a monument to his energy, perseverance, imagination and hard work. He can retire with the pride of knowing that his efforts have been successful and that future generations will enjoy the results of his labors.

**HENRY C. TRIESLER JR., President**  
Central Arizona Cactus & Succulent Society

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Dear Hubert,

As you announce your Retirement as Director of the DBG, it is time to send heartfelt "Congratulations on a Job Well Done". Your performance and dedication to your work these many years has been most outstanding. The Garden, under your leadership, has taken its place among the finest in the world.

It has been my great pleasure in having your valued friendship for some 15 years and I hope to enjoy many, many more such years. My visits to the Garden for tours, lectures and Shows are always highlights of my annual trips to Phoenix.

All best wishes for the continuance of your writings, your research, your field work and in other avenues in our wonderful world of cacti, succulents and other desert plants. I look forward to continuing to serve with you on the Board of the Cactus & Succulent Society of America, Inc., of which organization you are a beloved and esteemed Fellow.

Very sincerely yours,  
**VIRGINIA F. MARTIN, Secretary,**  
The Cactus & Succulent Society of America

# THE RARE BOOJUM TREES IN FLOWER

by W. H. Earle

During September, the odd-looking Boojum Tree flowered and developed seed at the Garden, at the Boyce Thompson Arboretum near Superior, at the Arizona-Sonora Desert Museum in Tucson, and at the homes of desert gardeners lucky enough to possess this uncommon plant. The tree is not only a conversation piece, but it is becoming rarer in collections as time passes, due to laws that prohibit their removal from Baja California.

Since the recent construction of the paved highway the length of the peninsula, the Mexican government is encouraging development programs, including the formation of "ejidos". These are commercial development of public land by groups of farmers and ranchers, where areas of undeveloped land are assigned for development, although the title to the land remains with the government.

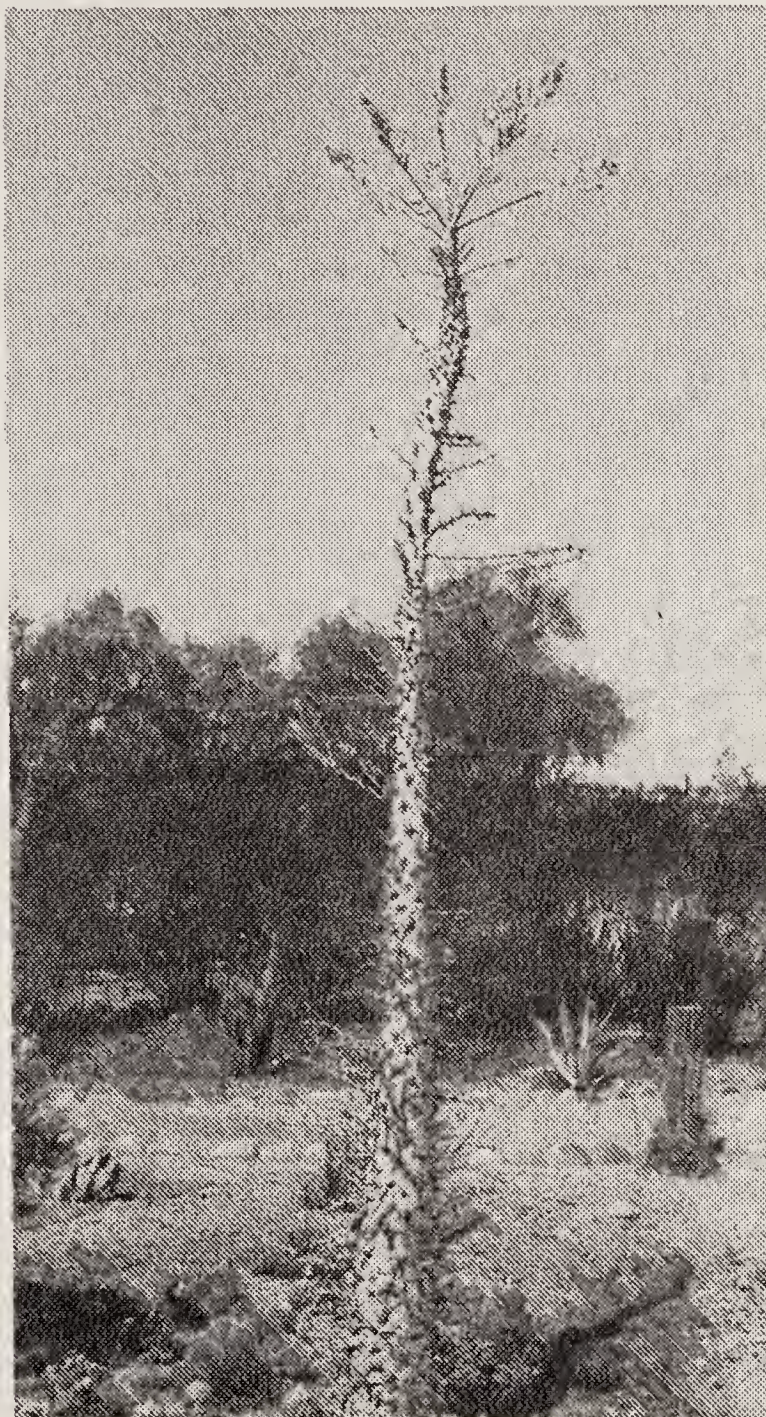
Permission for the removal of rocks, plants, timber, etc. must be granted by the president and members of the ejido district, and preference is given to its citizens.

This has made the collection of plants difficult and sometimes hazardous for non-Mexicans. Many greedy American collectors are attempting to dig up masses of saleable plants, keeping ahead of the settling of the ejidos, and then arranging to smuggle the plants out of Mexico. This is a dangerous business, and could result in arrest and subsequent residence in a Mexican jail for an indefinite period.

You can always admire and photograph the Boojums in their native habitat, but you will find it easier to see those in cultivation north of the border. They may be younger, but are handsome trees due to horticultural care.

The Boojum, *Fouquieria columnaris* (Kellogg) Kellogg ex Curran (*Idria columnaris* Kellogg) is in the same family as the Ocotillo. First seen by young Gilbert

Sykes in 1922, it gets its odd name because of the fact that the youngster's father, Godfrey Sykes, was a reader of Lewis Carroll. In "The Hunting of the Snark", the creator of Alice in Wonderland wrote "The snark was a boojum, you see" and added that "the boojum is a creature said to live on distant unfrequented desert shores." So when the elder Sykes focussed his telescope on this odd tree growing on the desert shore he immediately exclaimed, "Ho, ho, a boojum, definitely a boojum!" The name has stuck, at least in the English language. The Spanish name is "cirio", meaning taper or candle.





Flowers at the top of a sixteen-ft. Boojum Tree here at the Garden.

The Boojum is found in a 275-mile stretch along the Pacific between El Rosario and San Ignacio, slightly inland from the Gulf of California, and in a small coastal strip on the Sonoran coast between Puerto Libertad and Desemboque. This last area now contains only large plants, as the smaller ones were removed several years ago by the early collectors of strange plants.

The Boojum grows in a very arid land, surrounded by cacti, thorn bushes and elephant trees. The rainfall comes only briefly in winter and summer, and totals less than that received in Arizona deserts. After rain, the plant puts out new leaves, but drops them as soon as the ground dries out, so as to diminish transpiration and conserve moisture until the next rains. This is a characteristic of the whole Ocotillo family.

Flowers appear in panicles at the top of the tree in early to late summer. They are ivory white to cream in color, and emit a perfume that aids in attracting various insects and bats for pollinating purposes. Hummingbirds are also attracted to the Boojum flowers. Seeds begin to appear in September and are eaten by birds or are scattered by the wind to lodge in plant debris, rock crevices, or the open desert.

Heavy winter rain is necessary for the seed to germinate, as its hairy surface sheds light amounts of water. Good rain at the right time is never predictable in the Boojum's habitat, but the seeds can survive several years of drought and still germinate when conditions are right.

The growth rate of a seedling Boojum is very slow. A plant we collected in 1950 was four inches tall, one inch thick at the base, and had a branch spread of eight inches. Now, twenty-five years later, it is fourteen inches tall, six inches at the base, and spreads five feet. Plants grown under garden conditions, with plenty of water, will double the above figures, and should flower when four feet tall, whereas the native plants do not flower until they are six to seven feet tall.

The internal structure of the Boojum is similar to that of a number of cacti. It is composed of half-inch-round rods extending from the base to the crown and joined together at close intervals for strength, resembling cholla wood. The core of the plant is made of layered succulent tissue in which moisture is stored to sustain life between rains.

The Boojum Tree may grow to a height of over seventy feet, and frequently deviates from an upright "candle" shape to form weird contortions. Since Boojums have no tree rings, their ages are unknown, but the largest could easily be five to eight hundred years old, and they are grouped with the oldest growing trees on the North American continent.

---

#### Caveat Emptor!

Be aware when buying plants that some plant dealers consider a soil mix containing plaster of Paris a boon in shipping potted cacti. It is a short-term advantage at best, as we doubt the wisdom of trying to grow plants in plaster.

"Plaster" soil is easy to detect, because the soil appears whitish and is hard and crusty whether dry or wet.

Buy cacti planted this way if you must, but re-pot immediately in suitable soil.

# FOUR DISTINCTIVE SHRUBS FOR A DESERT LANDSCAPE

by Russell Haughey, Garden Horticulturist

People are always asking me "What is a beautiful, fast-growing shrub that we can plant and forget about?" What they are asking for really is the "perfect shrub." Unfortunately the plants that have all the characteristics of the perfect shrub tend to be everywhere you look. *Cassia artemesioides* for instance is very beautiful, fast-growing, easy to care for, etc., but is used so often that it tends to make an otherwise interesting yard look bland.

What I have done here is to list four shrubs that are relatively easy to care for, beautiful, fast-growing and uncommon.

## *Tecoma stans* "Yellow Bells", "Yellow Trumpet Bush."

*Tecoma stans* is a weekend gardener's delight. The first one I planted amazed me by growing to a bushy seven feet high in the first growing season. The bright yellow, trumpet-like flowers are contrasted by the dark green foliage. This shrub will bloom from May through November depending on availability of water. The flowers occur in large terminal panicles that are very effective for attracting hummingbirds.

*Tecoma stans* likes to get a deep watering every two weeks in the summer and maybe every three weeks in the spring and fall. Reduce the amount of water you give the shrub in the winter to help prevent frost damage. This plant will freeze back in the winter, so plant it in a protected area. In the spring prune off all the dead branches and stand back, because the plant recovers quickly. Top the branches very couple of weeks in the growing season to promote bushy growth.

## *Rhus trilobata* "Lemonade Sumac" "Skunk Bush"

This dark green, deciduous shrub will grow to a height of eight feet. The flowers are not very showy but the red fruit is decorative and attracts birds. The fruit is also used in making a tasty lemonade-like drink, hence the name "lemonade sumac." *Rhus trilobata* responds very well to pruning, it would make a great hedge or a good space definer. Water deeply every two weeks for rapid growth, but if you go on vacation for a while the plant will survive, it's very drought hardy. Be sure to plant this where the leaf litter won't be a problem.

## *Atriplex hymenelytra* "Holly-leaved Salt Bush"

This is an attractive shrub all year 'round. The dense, silvery-grey foliage make this a very distinctive plant. It naturally grows into a low rounded shrub about three feet high without any pruning. The leaves are shaped very much like a holly's, which makes this as attractive as a dwarf holly. This plant will take long periods of drought but will grow very well if you water deeply once a month or so. To encourage the silvery-grey color hold back on the water in the fall. Unfortunately, rabbits love salt bushes and this is no exception, so if you have a rabbit problem this is not the plant for you. This plant absolutely must have full sun.

## *Jacobinia ghiesbrectiana* "Orange Hummingbird Trumpet"

This is a good plant for some summer color. It grows to four feet high and is a naturally full and bushy shrub. The orange, tubular flowers appear in the spring, summer and the fall — and on top of this, the hummingbirds love them. During our plant sale last year a very determined hummingbird was trying to get nectar from a *Jacobinia* as it

was being carried out to the car by a customer. Water this plant every two or three weeks and tip the branches if they get leggy. Does best in filtered shade.

*With this issue, our Horticulturist begins a monthly page for desert gardeners. He's happy to share with you his practical experience with new and old drought-hardy plants, their cultivation, their problems if any, and their special uses in landscaping. If you have any questions about your own desert garden, or suggestions for this page, he'd like to hear from you.*

## YES, ANOTHER BUR-SAGE!

### **HOLLY-LEAF BUR-SAGE**

**Franseria (Ambrosia)  
ilicifolia Gray**

**Compositae  
Sunflower Family**

Some members of the Garden who have participated in the field trips in the past few years have been struggling to learn the common and scientific names of our local bur-sages. The species discussed here should, however, not add much to the confusion. It is a very distinctive plant.

As the common and specific names imply, the leaves of this plant resemble the leaves of the common Christmas holly. They are cordate-ovate, mostly 1½ to 2 inches wide. The spiny (doubly dentate) margins of the leaves are the feature which easily separates this species from its more common relatives and makes it resemble holly. The leaves are green on both surfaces and are evenly covered with short coarse hairs, these giving the leaves a sandpaper feel. The reticulate veining on the underside is quite prominent. The leaves are very stiff and alternate on the stems, being also close set with the blades nearly perpendicular to the stem. The base of the leaf half-clasps the stem, as there is no petiole. These characters give each branch a very tidy, uniform appearance. A good field mark, and the feature which first arrested my eye, is that the leaves become whitish and nearly translucent on drying, much like some species of *Perezia*.

The evergreen shrubs themselves are attractive caespitose clumps of ascending branches. The largest plants observed on a spring weekend expedition to the Cabeza Prieta area in southern Arizona were up to 0.8 meters high and 1.4 meters broad.

Flowering occurs in March and April in robust terminal spikes. The plants are monoecious. The clusters of staminate (male) flowers appear alternately on the free end of the branch in nodding heads subtended by a coarsely toothed and spine-tipped, nearly flat involucre. These heads are up to 2 cm broad (See Photo, A).

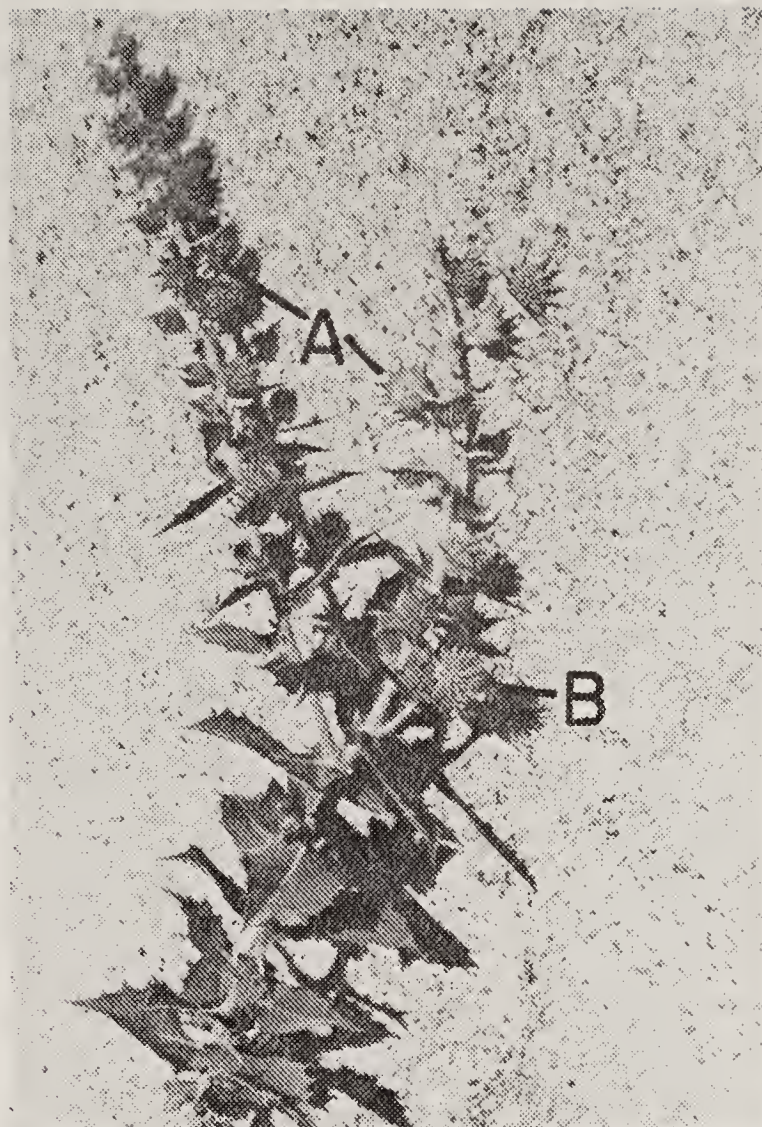




The fruiting heads (developing from pistillate or female flowers) appear on short lateral peduncles from the axis of the leaves below the staminate heads (See Photo, B). These lower, fruiting involucres are globose, thickly covered with hooked prickles, two-celled and two-seeded. The overall appearance is of a cocklebur. They are ellipsoid and about 0.5 cm in diameter and 1.5 cm long. Each of the two styles with its paired stigmas is enclosed in a beak.

Field trippers need not fear confusing this plant with the other bur-sages because the one-day garden trips do not venture far enough afield to reach its area of distribution. We first observed it in the area of the Tinajas Altas Tanks on the Bombing and Gunnery Range east of Yuma, Arizona. It is generally found along gravelly washes and alluvial bajadas at the base of desert mountain ranges in southwestern Arizona, southeastern California, northern Baja California and nearby islands.

The plant was originally described as *Gaertnera ilicifolia* by Kuntze in 1891, the type being from Cantitas Canyon. Subsequently it was removed and placed in the genus *Franseria* by the botanist Asa Gray.



An interesting presumed hybrid between *Franseria ilicifolia* and *Franseria ambrosioides* was collected at Tule Tank in the Tule Mountains near the Sonora-Arizona border. It, however, would not seem to fit in a hybrid continuum because it has pinnatifid leaves and winged petioles which neither of the presumed parents has.

Field Marks: Densely leafy shrub with holly-like foliage, monoecious, with cocklebur-like fruits beneath staminate involucres. Bajadas and washes of desert mountains in extreme southwestern Arizona.

References:

- Benson and Darrow, Trees and Shrubs of the Southwestern Deserts.
- Geological Survey of California, Botany Vol. I, Gamopetalae, A. G.
- Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert.
- Standley, Paul C., Trees and Shrubs of Mexico.

— RGE



*F. ilicifolia* in the Tinajas Altas, southwestern Yuma County, Arizona.



## T-SHIRTS, STICKERS AND BADGES

The Garden t-shirts, with our Agave logo in red and four shades of green, are worn here by Staffers Barry Feldman, Bill Kepner, Sherry Couch Krummen and Tom Caldwell.

The t-shirts are on sale in our Bookshop in adults' sizes S-M-L-XL and children's sizes S-M-L-XL. The price is \$4.95 for adults' sizes, \$3.95 for children's sizes. Both items plus tax. And the green-and-white bumper stickers are \$0.50 each, plus tax.

New this month are the good-looking embroidered cloth badges or shoulder patches, light gold background with our Agave in full color. Jacket shoulders aren't the only place to put these attractive badges. You can wear one on a hat, a shirt pocket, a handbag or a hiking pack. Our "special introductory price" is \$1.95 each, plus tax.

For mail orders, add postage and handling charge of 75 cents for a t-shirt, 25 cents for bumper stickers or badges. Arizona residents must add 4 percent sales tax.

And don't forget — all Garden Members get a ten percent discount.

## GARDEN ACTIVITIES

### OCTOBER

<b>Tues.</b>	<b>5th</b>	CACTOMANIACS — Potluck Supper	<b>6:30</b>	<b>p.m.</b>
<b>Sat.</b>	<b>9th</b>	FIELD TRIP — Seven Springs	<b>8:30 a.m.</b>	<b>4:45 p.m.</b>
<b>Sun</b>	<b>31st</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

### NOVEMBER

<b>Tues.</b>	<b>2nd</b>	CACTOMANIACS — Meeting	<b>8:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>3rd</b>	CLASS — Introduction to Desert Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>4th</b>	LECTURE — Valley of the Sun Desert Plants	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>10th</b>	CLASS — Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>11th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00</b>	<b>p.m.</b>
<b>Sat.</b>	<b>13th</b>	FIELD TRIP — Pinto Creek	<b>8:30 a.m.</b>	<b>4:45 p.m.</b>
<b>Wed.</b>	<b>17th</b>	CLASS — Cultivation of Succulent Plants	<b>2:30</b>	<b>p.m.</b>
<b>Thurs.</b>	<b>18th</b>	LECTURE — Arizona's Plants — Mountains to Desert	<b>3:00</b>	<b>p.m.</b>
<b>Wed.</b>	<b>24th</b>	CLASS — Desert Trees and Shrubs	<b>2:30</b>	<b>p.m.</b>
<b>Sun.</b>	<b>28th</b>	CAC & SS — Meeting	<b>2:00</b>	<b>p.m.</b>

# SAGUARO LAND

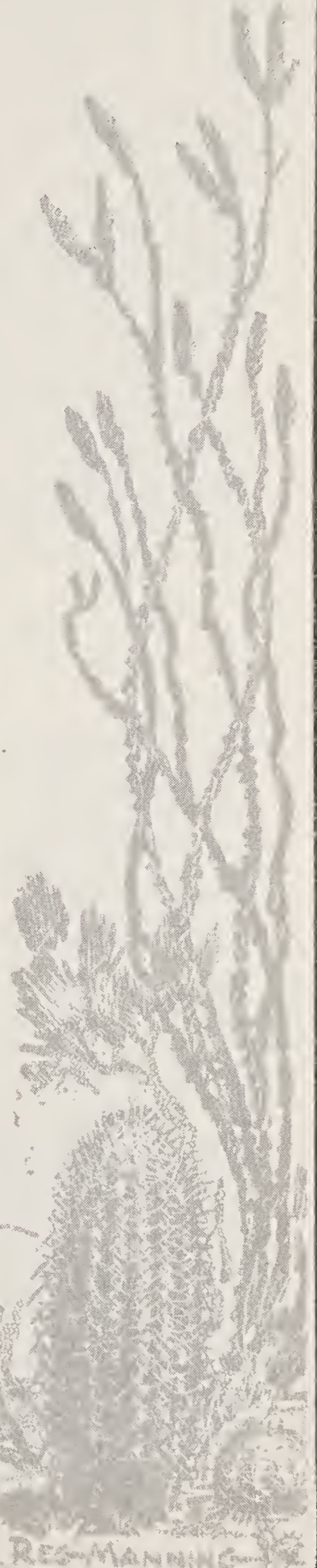
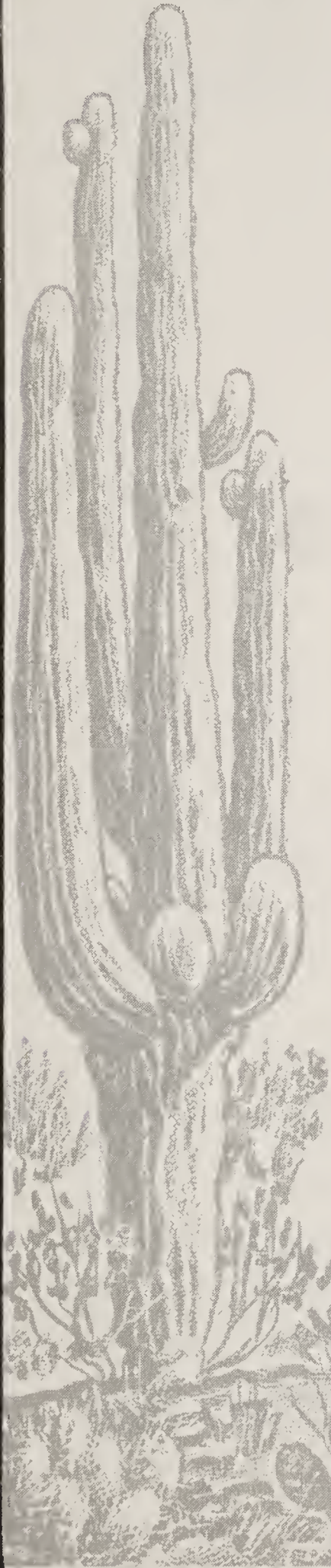
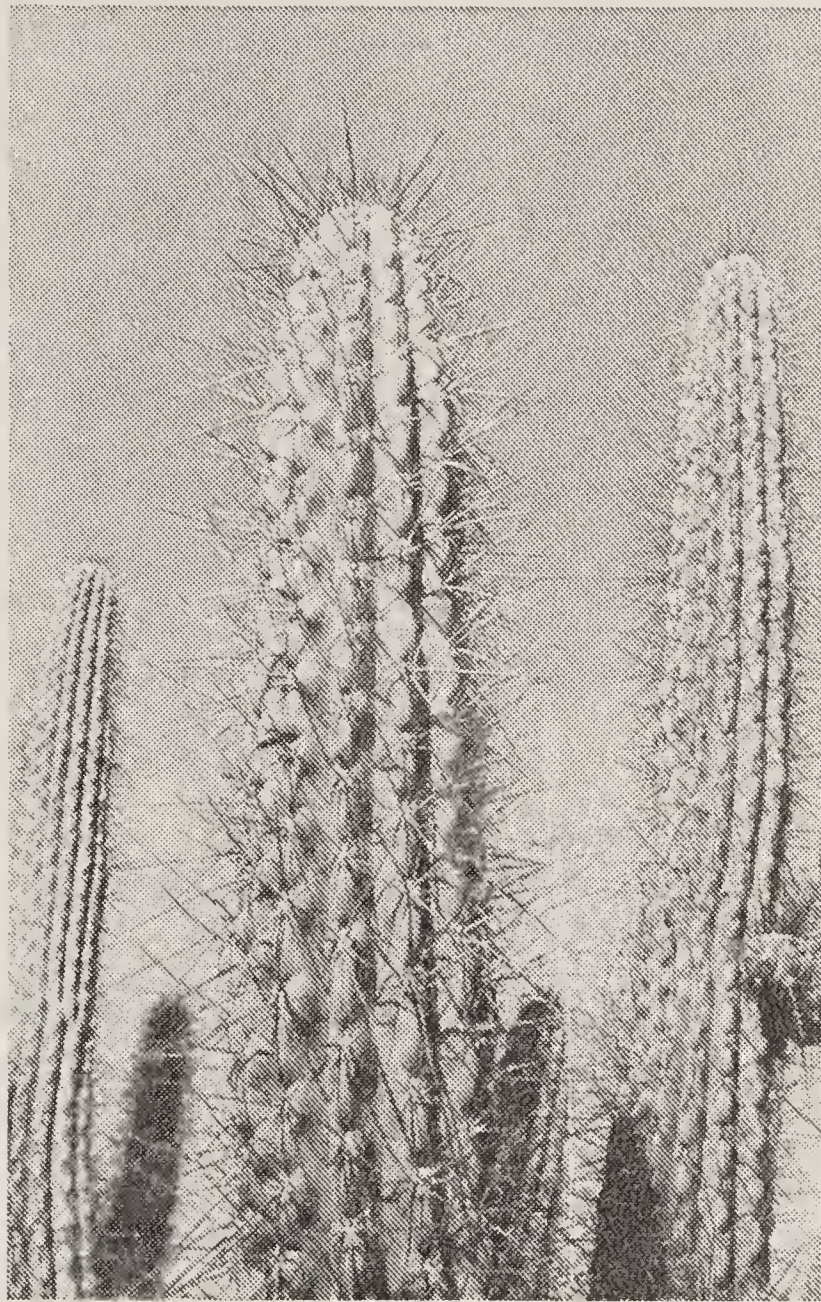
## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

November, 1976

No. 9



REG-MANNING

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden, P.O. Box 5415, Phoenix, AZ 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year.

Editor, Lillian Diven

Vol. XXX

NOVEMBER, 1976

No. 9

## ARIZONA CACTUS AND NATIVE FLORA SOCIETY

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Cover: *Stetsonia coryne*, a treelike Argentine cactus.  
Spines to 3 in. and longer.



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tor, Life and Patron categories.

# News & Notes

Who won first prize at the Arizona State Fair? We did. The Garden's entry in the floriculture section was our handsome new display kiosk surrounded by cacti, succulents and shrubs suitable for landscaping. Since we entered the Fair mainly to bring the Garden to the attention of the public, winning first prize was a pleasant surprise.

+++

The fall series of Garden classes has already started, and participants have received a packet of texts and information pamphlets that is even fatter than usual. The classes cover identification of desert plants, propagation techniques and landscaping with arid-land plants. Our classes have always been popular with newcomers, as many Members know, since their first contact with the garden was participation in the classes.

If you haven't enrolled in the classes for a few years, we honestly feel you'd enjoy attending again. The books alone are worth the Members' fee, and over the years new material has been added to the course. A refresher course, added to what you now know about desert plants, could turn you into an expert.

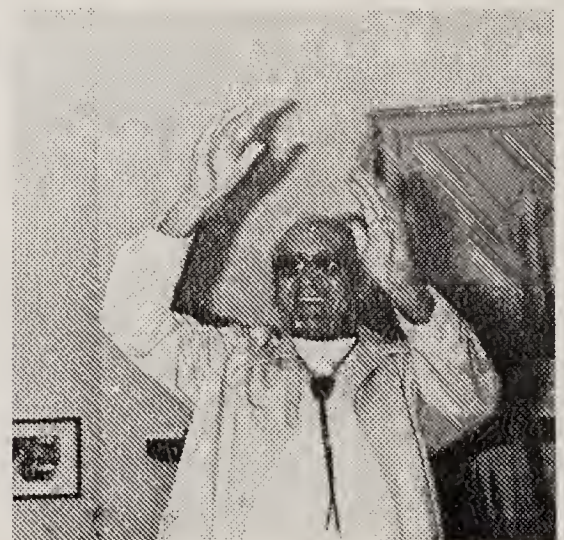
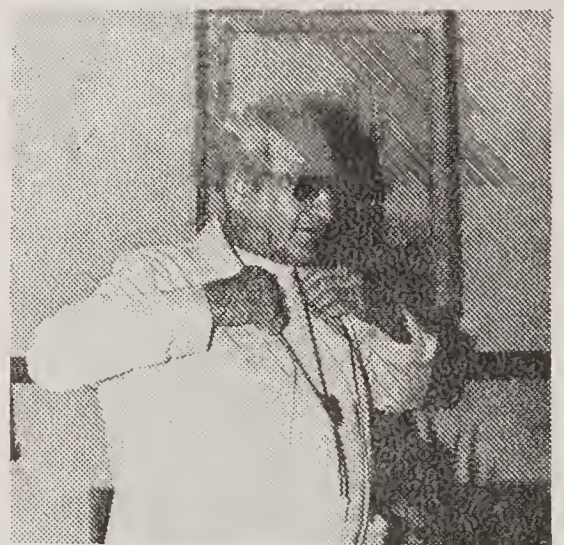
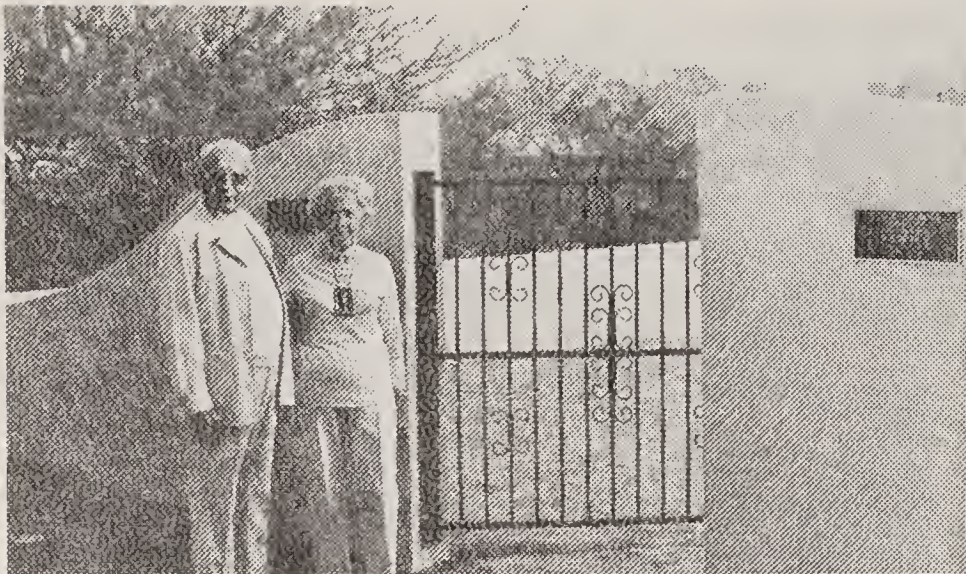
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We have new Volunteers and returning Volunteers to help the Garden now that our busiest season has begun. Vera Starbuck has joined the Volunteers who work at the Bookshop a half-day or more each week. Stanley Rand is our first Volunteer in the propagating area, doing re-potting and having a fine time, as are Mary Hale and Jeanne Rice in the seed room and Alice Lemmon who is working on the Garden's history.

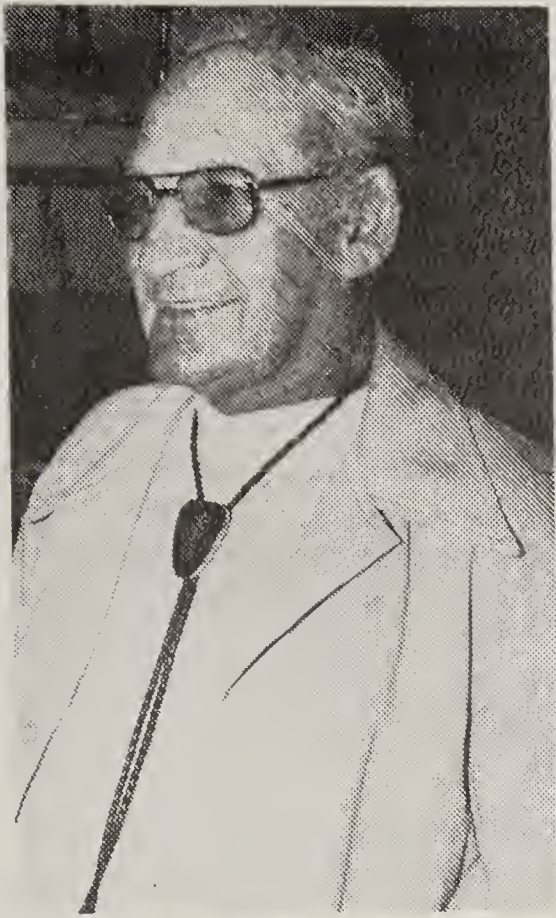
The jobs that these and our other Garden Volunteers handle are things that our busy staff could never get done on their own.

Will you help your Garden by giving some of your time, scheduled for your own convenience? Here are, briefly, some of the places where your help is needed: In the bookshop, the seed room, the propagating area, with memberships, with our scrapbook, with our photo files, with our collection of botanical prints. Other jobs, too, are waiting to be done, and one of them might suit you better. When you phone or drop by to talk about volunteering you can take your pick.

## THE RECEPTION FOR W. H. EARLE



The Garden's reception for Director Emeritus W. H. Earle on Sunday, October 17th brought Garden Members, friends and associates from all over the state to wish Mr. Earle well in his retirement. On arrival, Mr. and Mrs. Earle dedicated the new Student Entrance, then came to the Auditorium to greet and chat with everybody. Pictured above, from top to



bottom on the left, the Earles at the Student Entrance; with son John Earle; Board Chairman John Eversole presenting Mr. Earle with the Garden's gift, an ironwood and silver bola tie bearing the Garden's agave emblem. On the same page, at right, the Earles; Mr. Earle putting his new bola tie on; then responding to the applause.

On this page, from top to bottom on the left, Mr. Earle sporting his gift; a shot of guests including Dr. Vic Miller in the center and Board Vice President Henry Triesler at right; and Mr. Triesler with Thelma MacDougall, one of the hostesses for the reception.

In the photos on the right of the page, Mr. and Mrs. John Earle are shaking hands with Ann Shelstad; and Janet Alsever greets Mr. Earle.

# WATERING DESERT PLANTS

By Russell Haughey, Garden Horticulturist

Many of the problems with plants are caused by improper watering. Some people love their plants to death. They water them every day, and if the poor plants don't get salt burn they rot. Other people think desert plants never need water, so their cactus are usually shrivelled and their shrubs eventually dry up and die. Somewhere between these two watering extremes there is a proper watering method.

To grow healthy plants, a gardener must have a "green thumb". Fortunately this is something you can learn, it isn't a talent a person is born with. Learning when and how to water is an important factor in getting that "green thumb". Experienced gardeners know that limp, drooping leaves are a signal that a plant needs water. It doesn't take any special talent to notice this — you just have to know what your plant is trying to tell you. But if your prickly pear looks shrivelled even if you have been watering it regularly, it may not be calling for water. In this case, the base of the plant is most likely rotted, which is what can easily happen if you overwater cactus and succulents.

## Leaching

Salt is the most common garden problem in the Sonoran Desert. There is salt in the water and salt in the soil. These salts will affect plants in a number of ways. They decrease the availability of water, alter soil aeration, make nutrients less available, and can cause damage or death to your plants. Salt damage is apparent when the tips and edges of a plant's leaves turn brown.

The best way to remove the salts from the soil is to leach them out. This is done by watering considerably deeper than you generally do. When you water, the salts dissolve out of the soil and into the water. As the water moves down through the soil the salt is taken with it. Most of the salts accumulate at the wetting front — the depth to which ordinary watering penetrates. When you leach, you move the wetting front out of the root zone and deeper into the soil.

There are two things you need to know to leach soil properly. The first is how deep the roots go, so you know how deep to soak the soil. The other is how deep the water is going.

Most cactus and succulents have shallow roots to soak up the rain after rare showers. Many wildflowers have roots that go only about two or three feet into the soil. Trees and shrubs are variable, most of the shrubs you will grow have roots that go about three or four feet deep, but a large number will go deeper.

As for how deep the water will penetrate the soil, it depends on the composition of the soil. An inch of water on the surface will saturate two feet of coarse, gravelly soil, one foot of sandy soil, and six inches of fine, silty loam. So if your Acacia, for example, has roots that go four feet down into the earth, and it is planted in sandy soil, you should give it four inches of water for normal watering or five inches if you want to leach the soil. But if the Acacia is growing in silty loam, it will take eight inches of water for normal watering and ten inches for leaching.

## Watering wildflower beds

The blooming season for wildflowers here is roughly from February through June. At the end of the season you should add a couple of inches of compost to your bed, turn the dead plants and the compost into the soil, and leach the bed. Leave the bed empty during the summer, but water it occasionally to decompose the organic matter you have just incorporated into the soil. In October, before you seed the bed for next winter's and spring's flowers, leach the bed again.

When the seed is germinating, it is imperative that you keep the soil moist. But you



must be careful not to disturb the seed. If you don't own one, go out and buy a fogger nozzle for your hose. It may take a little longer to water with a fogger, but you won't turn over the seeds and you'll get a good germination rate.

As the plants get older, you can use other methods to water. A hand-held hose will do the job if you're careful, but a bubbler is what I recommend. (A bubbler head is sometimes called a soaker, but it shouldn't be confused with a perforated soaking hose, which distributes water unevenly.)

The larger your wildflowers get, the less often you need to water, of course, but you will need to soak the soil deeper to get water to the growing roots. You should try to soak the soil in the wildflower beds to a depth of three feet. Check this with a soil probe, another useful garden tool.

Never let the beds dry out completely, but don't let the soil stay moist for too long either. Ideally you should water the day before the plants show signs of wilting. This is a hard thing to judge at first, but you learn quickly by experience. If a plant watered seven days ago looks droopy today, then step up the watering to every six days instead of seven. There may be one species of wildflower in the bed that wilts before the other species do, so keep an eye on this plant and learn how long the beds can go without watering.

Some other tips: Many perennial wildflowers have a deeper root system and need water less often. Beds that are exposed to the sun or to the wind will dry out faster than beds in a protected area. And of course you won't have to water flower beds as often in winter as in the warmer fall and spring months.

### Watering trees and shrubs

There are a number of methods for watering trees and shrubs. You can use a sprinkler to water large areas, for example. If you do use a sprinkler, let it run at night to keep evaporation to a minimum. Using a sprinkler during the day can damage plants. Droplets on leaves act as magnifying glasses and burn the leaves. Cactus are especially vulnerable to this kind of damage, since they retain the burn scars permanently.

There are various timers you can buy to regulate how long the sprinkler will run. They cost about fourteen dollars. I have found the Sherman timers are the most reliable. But the trouble with using sprinklers is that they are wasteful with water. They aren't selective. They spray water near the plants you want watered, and on the weeds, too.

You may prefer to build wells around your shrubs and trees and water with a hose. The wells should be four inches deep if possible, and extend as far from the trunk of the plant as the branches extend. Either fill the well or try letting a trickle of water flow into the well all night long.

Because you water your trees and shrubs less often than you do the flower beds, you need to leach them only once a year. The most effective time to leach is when the soil is driest.

But the best way to water is with a drip system. For an investment of fifty or sixty dollars you can install a drip system that will take care of the desert landscaping of an average-sized yard. The water is just where you want it and where the plant needs it. You won't water any weeds or waste any water. The only fault I can see in the drip system is that all the plants get watered at the same time, but you can get on-off valves and T-connectors to isolate the plants that need less frequent watering.

I plan to write about drip systems in more detail for a future issue of the Bulletin.

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Next month: Watering cactus and succulents.

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If you have problems with gardening or landscaping, please let me know, so I can make this column as helpful as possible. Also, if you have special successes, tell me so we can share the news with other Garden members.

## THE BLUE-FLOWERED GUYACAN *Guaiaacum coulteri*. Zygophyllaceae

Travellers in Sonora who make their way south from Hermosillo to Guaymas and beyond from March to July, the dry season, are frequently surprised to see brilliant patches of blue-violet erupting from the dry and dusty vegetation at the roadside. The plant responsible for these displays is *Guaiaacum coulteri* Gray. This is a drought-deciduous shrub or small tree with open and crooked branching habit. The leaves appear on short spurs at the nodes and are closely appressed to the branches. The leaflets are seemingly always folded against one another. The plants re-foliate quickly after rains, the leaves frequently appearing first along the trunk and old branches. Maximum height is about 20 feet with an almost equal width. Low horizontal branching and short gray-barked trunks are the general rule. The plants are rather common along the highway but nowhere do they form a dominant portion of the vegetation. Preferred habitat is dry slopes of the Thorn Forest and Short Tree Forest on volcanic soils between 500 and 2000 feet elevation.

The type collection was made between Rayon and Ures in Sonora. The distribution is from Carbo in northern Sonora to Oaxaca, Tepic and Guerrero in the south.

The flowers on close inspection look remarkably like creosote-bush flowers, only more robust, and are blue rather than yellow, which is not surprising, as both plants are in the same family. The flowers are reported to be fragrant, although I have not noticed this myself. This subject, often the quarry of photographers, is quite frustrating because the hue of the flowers is never quite right in the finished photographs. The flowers occur in groups of 3 to 12 on axillary peduncles. Individual pedicels are from 1 to 1.5 cm long. Perianth is five-merous. Petals are 5 to 18 mm long and clawed.

The ovary is usually five-celled, obovate, somewhat compressed, with a short wing on each segment. The fruit is star shaped in cross section. The capsules, 2 cm wide and 1.5 cm long, break apart from the center, the large seed (to 1 cm



An eight-foot Guyacan photographed near Guaymas, Sonora, Mexico in January. Winter rains have kept it green.

long) being expelled by the splitting of the axial suture. The fruit is green, sometimes tinged with purple, until it matures and turns yellowish-tan.

The leaves are 3 to 6 cm long, pinnately compound with 6 to 10 leaflets. These are linear-oblong and 3 to 6 mm wide and 1 to 2.5 cm long. The leaves are glabrous or nearly so.

Standley states that the wood is hard, durable, strong and resinous, "good for firewood, being used sometimes for fuel in railroad engines." Standley also states that an extract of the wood of *G. coulteri* is used in a manner similar to the extract of its close relative *G. officinale*. The extract of that species is known as *lignum-vitae* and was listed in the official U. S. Pharmacopoeia as having stimulant and diaphoretic properties. It has also been used in treatment of "syphilis, gout,

rheumatism, scrofula, and cutaneous diseases." It has been proved efficacious in none of these ailments. The resin was also used in treating these afflictions. In large doses, it is a purgative.

In our experience here at the garden, the plant survives, although it is extensively damaged by frost even in relatively warm winters. It is also extremely slow-growing. Our single specimen is ten years old, only three feet high and produces two or three flowers per year. We will have to content ourselves with enjoying this plant when we visit our neighbors to the south.

#### REFERENCES:

- Gentry, Rio Mayo Plants  
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert  
Standley, Trees and Shrubs of Mexico  
—RGE

## THE OCTOBER FIELD TRIP

Twenty field-trippers, along with two Garden staff members, assembled on Saturday morning, October 9th, for the first field trip of the season. Our destination was an old favorite, Seven Springs Wash.

Besides the usual perennial stream-side vegetation of willows, sycamores and ashes, two plants were seen which had never been noted on past field trips. One was a wild honeysuckle, *Lonicera* sp., with bright red, translucent, elliptical fruit, and the other was a snowberry, *Symphoricarpus* sp., which gets its popular name from the waxy white berries.

The *Symphoricarpus* is probably *S. rotundifolius*, although Kearney & Peebles says about the genus "The species are difficult to identify in the absence of flowers", and records this species as growing in Yavapai County but not Maricopa County, and having a lower elevational level of 4000 ft. Seven Springs is about three miles from the border of Yavapai County and has an elevation of 3500 ft. No other species of *Symphoricarpus* grows this low, so in the absence of flowers it is a reasonable guess that the species we saw is *rotundifolius*. If

so, this is a record of *Symphoricarpus* from Maricopa County.

The most striking plant of the trip was the full-blooming *Zauschneria latifolia*, which is one of the best native plants for attracting hummingbirds. Five or six plants were wedged in a large outcrop of rock six feet above stream level. The bright scarlet, irregular, tubular corollas are very attractive.

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Sherry Krummen just got a desperate phone call from a man whose neighbor had told him that his eucalyptus tree had cotton boll worms! Impossible, said Sherry. It turned out that his tree only needed iron.

Another gardener, following Sherry's directions for spraying cochineal-infested cactus, called back in a panic. "I did what you told me, and now my cactus is bleeding to death! Red blood!" Sherry calmed him down and told him that the "blood" was the red cochineal dye and there isn't any hemoglobin in cacti.

The Garden is certainly an interesting place to work.

## PINYA DE ROSA

(The second of W. Hubert Earle's reports on botanical gardens in Europe)

Jardin de Aclimatacion Pinya de Rosa is located at Blanes on Spain's beautiful Costa Brava, the Mediterranean coast of far northeast Spain, some 45 miles north-east of Barcelona and about sixty miles from the French border.

In the attractive setting of wooded hills and ravines that run down to the sea, Dr. Ing. Fernando Riviere de Caralt has developed 100 hectares (247 acres) for the growing and display of cacti and leaf succulents. Dr. Riviere is an internationally respected scholar and grower of the genus *Opuntia*, and although Pinya de Rosa reflects his interest in that genus it contains extensive plantings of many other genera, all displayed with great skill and identified with unusually handsome porcelain labels.

He met Jurg Rau and your writer early in the morning of May 17th and unselfishly took the time to show us his plants and the many attractive buildings in which are grown the smaller cacti and leaf succulents.

Never before have I seen whole hillsides of only *Opuntias*, all labelled with their



Dr. Riviere, W. H. Earle, and Jurg Rau at Pinya de Rosa.

species and variety. Other hillsides, which Dr. Riviere had cleared of the stubborn underbrush that characterizes this area, displayed *Yuccas*, *Agaves*, other Cacti, *Bromeliads*, *Euphorbias*, and many other genera.

A lovely valley, ringed with cypresses, held a vast collection of *Aloes*, many still in flower in May. Farther down the valley was a long, very effective lily pond, and finally a tempting Mediterranean beach with cabanas where Dr. Riviere's guests can change into bathing suits. The narrow inlet was protected on both sides by high cliffs. An idyllic spot for swimmers, but not for Jurg and me — we were there to see plants, not swim.

Back in the Garden are many raised beds, each holding a collection of the species of one genus. Among the separate "genus beds" were collections of *Faucaria*, *Glottiphyllum*, *Gibbaeum*, *Cheiridopsis*, *Pleiospilos*, *Cotyledon*, *Echeveria*, *Haworthia*, *Crassula*, *Lithops*, *Conophytum*, and *Sempervivum*. Many large buildings, made so they could be opened to the south on hot days, held *Mammillarias*, *Parodias*, *Notocactus*, and other small cacti and leaf succulents. A large number of these plants were in flower and beautiful to behold.

Can you imagine a hillside of 700 large Golden Barrel cacti? There is one at Pinya de Rosa, the grouping soon to be enlarged to 1000 plants. Close by is an area that contains 350 "white" Golden Barrels. This is a white-spined form of *Echinocactus grusonii* that appeared some years ago among plants an Italian grower was growing from seed. He segregated it and watched over it until it flowered and set seed, then planted the seed. Sixty per cent of the new plants were golden barrels and forty per cent were "white". The ratio still continues. If the plant is grown indoors the spines remain pure white, but out of doors they turn a "dirty" white. The plant is attractive as an oddity, but for beauty it



can't compare with the gold-spined Barrel.

Years ago Dr. Riviere replaced areas of hillside scrub with plantings of Mesembryanthemums. In time large clusters of these succulents covered entire hillsides to make spectacular splashes of color that were the envy of all garden owners along the coast. He has since removed the plants from a number of areas and has replanted with impressive groups of cerei from North and South America.

This is a tremendous garden, but so well laid out that most of it is visible from any vantage point, a sweep of cacti and leaf succulents punctuated by strategically set cypress trees and statuary.

Many scholars besides Dr. Riviere have studied here, one being Curt Backeberg, who identified and classified the cacti and

was able to finish his six volumes of "Die Kakteen", one of the standard reference books on cacti.

Pinya de Rosa contributes its vast supply of hard-to-find seeds to the Barcelona Botanical Garden, which lists them on its international seed-exchange list. The IOS (International Organization for Succulent Plant Study) met in Barcelona in 1975, and members spent a great deal of time at Pinya de Rosa.

Although a private garden, Pinya de Rosa is being prepared to admit visitors soon. Anyone wishing to see a spectacular garden should make arrangements to visit. Whether your interest is in succulent plants or merely in beautiful gardens, this is a "must" for your list of things to see in Spain.



## RESEARCH AT THE GARDEN

During the last week of September, Patricia Pierce was carefully filling plastic bags with slices of Agave leaves to take back to Harvard, where she is a doctoral candidate. She spent August and September at the Garden, working with Dr. Gentry and collecting material for study that will be part of her doctoral thesis. Before too long she will be Dr. Patricia Pierce, with a Ph.D. in botanical anatomy granted for a thesis concerning leaf anatomy of the Agave, and heading for a career in tropical agriculture.

If Pat's present and future work sound rarefied to most of us, they sound exciting to her. She used a study grant to spend two months here, although the Arizona desert isn't in the tropics, because Agaves have tropical as well as desert distribution, and the chance to work with Dr. Gentry, the acknowledged authority on Agaves, was a wonderful opportunity, she feels. Back in

Cambridge, the months ahead will be spent preparing her "loot" — using a microtome to slice leaf sections, making slides, using an electron microscope, observing, studying, thinking and writing. It will be hard work, we gather, but Pat finds it stimulating, especially since little work has been done in this particular area up until now.

---

The speaker at the December Cactomaniacs Meeting will be Anice Bromley of the Heard Museum Guild. Her subject will be the Hohokams, the prehistoric Indians of this area. Most Valley residents know that the Hohokams had an intricate system of irrigation canals and ditches, of which traces are still to be found, but other aspects of Hohokam society are equally interesting. Even if you're not a regular Cactomaniac, plan to attend the December Meeting.

## GARDEN ACTIVITIES

Remember that prepaid reservations are necessary for Garden Field Trips. The fee for Members is \$1.00 per person, for non-members, \$2.00 per person. Winter and spring trips are always popular, so early reservations are recommended.

### NOVEMBER

<b>Tues.</b>	<b>2nd</b>	CACTOMANIACS — Meeting	<b>8:00 p.m.</b>
<b>Wed.</b>	<b>3rd</b>	CLASS — Introduction to Desert Plants	<b>2:30 p.m.</b>
<b>Thurs.</b>	<b>4th</b>	LECTURE — Valley of the Sun Desert Plants	<b>3:00 p.m.</b>
<b>Wed.</b>	<b>10th</b>	CLASS — Succulent Plants	<b>2:30 p.m.</b>
<b>Thurs.</b>	<b>11th</b>	LECTURE — Arizona Cacti in Flower	<b>3:00 p.m.</b>
<b>Sat.</b>	<b>13th</b>	FIELD TRIP — Pinto Creek	<b>8:30 a.m.-4:45 p.m.</b>
<b>Wed.</b>	<b>17th</b>	CLASS — Cultivation of Succulent Plants	<b>2:30 p.m.</b>
<b>Thurs.</b>	<b>18th</b>	LECTURE — Arizona's Plants — Mountains to Desert	<b>3:00 p.m.</b>
<b>Wed.</b>	<b>24th</b>	CLASS — Desert Trees and Shrubs	<b>2:30 p.m.</b>
<b>Thurs.</b>	<b>25th</b>	THANKSGIVING DAY — Garden open	<b>9:00-5:00 p.m.</b>

### DECEMBER

<b>Wed.</b>	<b>1st</b>	CLASS — Cultivation of Desert Trees and Shrubs	<b>2:30 p.m.</b>
<b>Thurs.</b>	<b>2nd</b>	LECTURE — Arizona Wildflowers	<b>3:00 p.m.</b>
<b>Tues.</b>	<b>7th</b>	CACTOMANIACS — Meeting	<b>8:00 p.m.</b>
<b>Wed.</b>	<b>8th</b>	CLASS FIELD TRIP — Pinnacle Peak	<b>8:30 a.m.</b>
<b>Thurs.</b>	<b>9th</b>	LECTURE — Mexican Cacti	<b>3:00 p.m.</b>
<b>Sat.</b>	<b>11th</b>	FIELD TRIP — Estrella Mtn. Park	<b>8:30 a.m.-4:45 p.m.</b>
<b>Thurs.</b>	<b>16th</b>	LECTURE — Arizona Flowering Trees	<b>3:00 p.m.</b>
<b>Sun.</b>	<b>19th</b>	CAC & SS — Meeting	<b>2:00 p.m.</b>
<b>Thurs.</b>	<b>23rd</b>	LECTURE — Cactus Flowers	<b>3:00 p.m.</b>
<b>Sat.</b>	<b>25th</b>	CHRISTMAS — Garden open	<b>9:00-5:00 p.m.</b>

# SAGUAROWOOD

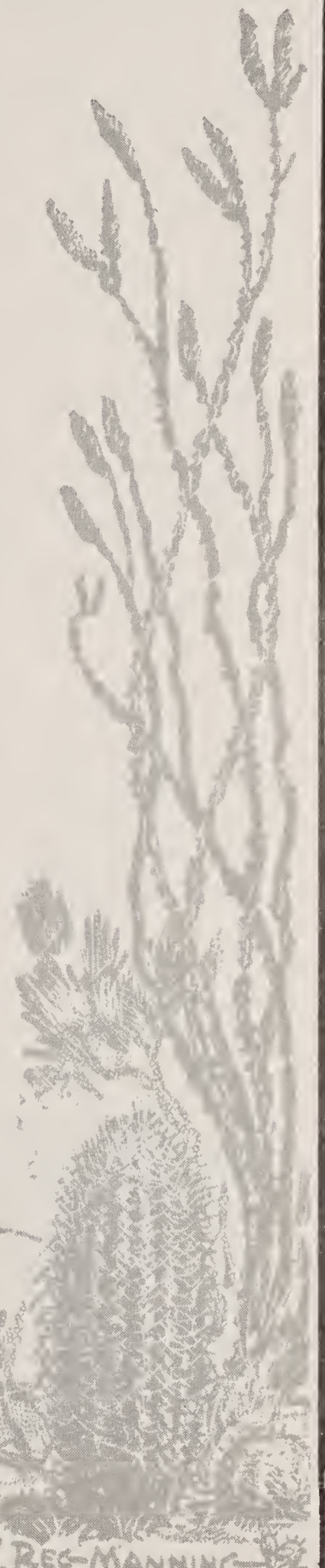
## BULLETIN

DESERT BOTANICAL GARDEN OF ARIZONA

Vol. XXX

December, 1976

No. 10



RES-MANNING

# SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden, P.O. Box 5415, Phoenix, AZ 85010. The Saguaroland Bulletin is published to disseminate information on the Garden and on desert plants and their culture. Issued 10 times a year.

Editor, Lillian Diven

Vol. XXX

DECEMBER, 1976

No. 10

## ARIZONA CACTUS AND NATIVE FLORA SOCIETY

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Cover: Aloes are in bloom now. The Garden grows 105 identified species of this genus plus seven unidentified species.



**DESERT  
BOTANICAL  
GARDEN**

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Corporate Memberships available in Benefactor, Life and Patron categories.



# News & Notes

To all of our friends:

## SEASON'S GREETINGS

from the Garden's staff and volunteers. We wish you happy gardening, prizes in the Cactus Show, plentiful spring wildflowers, enjoyable trips in the desert, and all other good things for 1977.

\* \* \*

Come and see our holiday decorations. Every year the Garden is decorated with desert things, and this year our "trees" are tall Agave stalks — the Garden adopted its new Agave symbol this year. They're decorated with bird nests and clever birds designed by Joy Lee Weber who has created many of our decorations in the past.

To get ideas for your own decorations, or just to see how nice the Garden looks, plan a visit during the holidays. When you come, utilize your Member's discount for those last-minute gifts.

\* \* \*

Good news for succulent plant fanciers. Lithops are now available in the plant section of the Bookshop. Our grower supplies us with twenty different species of these interesting and attractive little plants, all in excellent condition. To our knowledge, the Garden is the only place in central Arizona where you can see and purchase Lithops.

\* \* \*

A reminder: Our monthly Field Trips are probably the most popular of the Garden's activities. Participation is limited and prepaid reservations are essential. This year Members have found it's a wise thing to make reservations a month or more in advance in order to be sure of space on the list. Reservation fees are \$1.00 per person for Garden Members, \$2.00 per person for non-members.

\* \* \*

This was the year our Boojum Trees set seed for the first time in years. Blossoming had been profuse and attracted many bees and several hummingbirds. Also noteworthy is the large group of succulents we received from the International Succulent Institute. Many of the plants have never been grown at the Garden before, and some of them are quite rare. They are growing well and will be on display be next spring. And we have planted an interesting assortment of seeds that Joyce Tate brought back from Rhodesia where she attended the Aloe conference. These are seeds of shrubs and trees from the arid areas of that central

(continued on page 114)

## QUEEN OF THE NIGHT

### *Peniocereus greggii* (Engel.) B.&R.

Our native Arizona Queen of the Night (La Reina de la Noche, Arizona Night Blooming Cereus, Huevo de Venado) is one of the most talked about and least seen of the state's native cactus. It is not that the plant is so very rare, but that it is so well camouflaged by its mimicry of a dead dry branch. It grows among shrubs and in thickets of desert trees along arroyos, and on the open creosote plains, although I have seen one unusual pink-flowered specimen wedged between large boulders near the top of the southernmost peak of the Harcuvar Mountains. A lavender-flowered variety, *Peniocereus greggii* var. *roseiflorus* Kunze, from near Deming, New Mexico, has not been relocated in recent years. The species is frequently undetected even by those searching for the plant. Occasionally one is found on our field trips to the low desert. Some people, it



*P. greggii* can be photographed by daylight only in the very early hours.

is claimed, can locate plants at night when they are in flower by following the sweet scent, drifting on the night breeze, back to its source. This author has sat up all night to watch the giant 8-inch-long, moon-white salverform flowers open with a series of spasmodic jerks, and dipped his nose into the throat of the flower only to extract it covered by pale yellow pollen and rewarding his olfactory senses with a faint musky smell.

The plants in a given area have been observed to open all on the same evening, usually in May, June or July. This synchronized flowering allows cross-pollination. Pollination is presumably effected by night-flying insects and bats. The flower is one of the most delicate and graceful in the Cactaceae. The flowers wilt very early the morning following flowering and never open again. If the flower was pollinated and seed has been set the large three to six inch long elliptical fruit (including a beak formed by the dried perianth) will ripen between September and November to a bright scarlet berry with minute downward projecting spine clusters. It is at this time that the plants are most conspicuous, the red fruit standing out like a flag. At this time too, birds generally spot the fruits and peck holes in the bulbous fruit and carefully pick out and eat all of the seeds, leaving behind a hollow fruit which withers and falls to the ground. Perching birds drop the undigested  $\frac{1}{8}$ -inch-long dull black seeds in clumps of bushes. Plants found standing in the open are assumed to have germinated and prospered in similar circumstances, the protective cover-plant having subsequently died and rotted away.

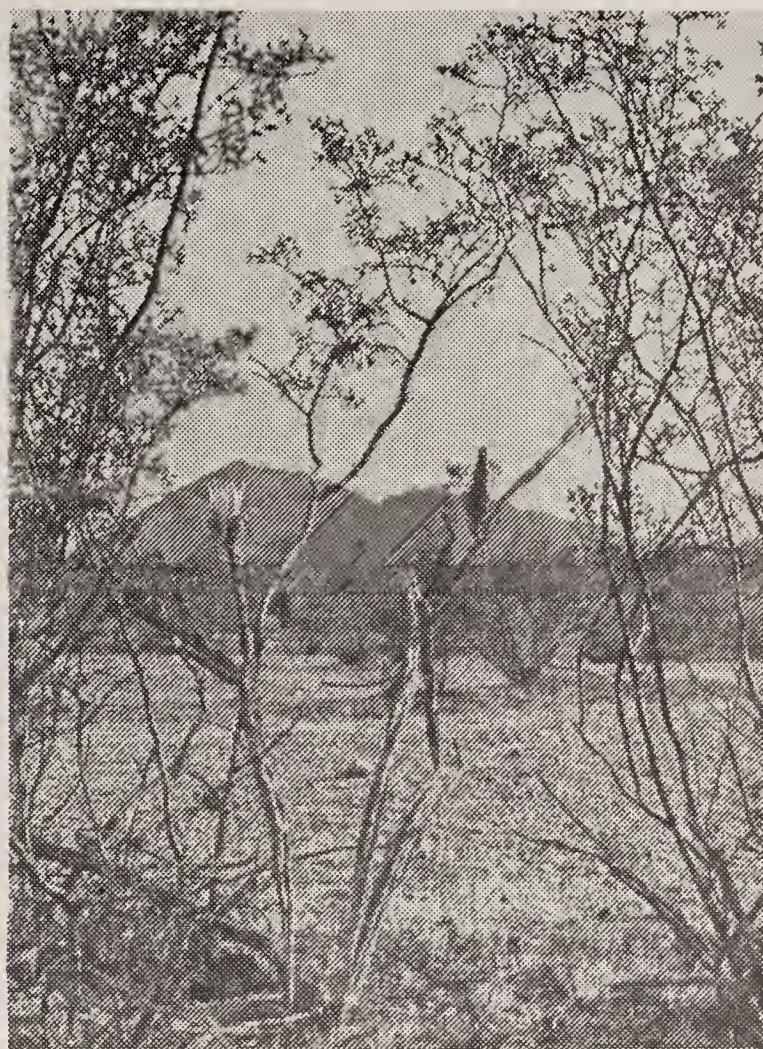
Desert peoples throughout the plant's range have also harvested the fruits. Although sweet and palatable, the fruits are not found in large enough quantities to be a significant source of food.

Most of the year the plant above ground

consists of one to about five bare gray-green, fluted, angular stems. These are little branched generally, although very large, old plants may be densely branched shrubs to three feet high under favorable conditions. One plant in cultivation at Tucson reportedly reached eleven feet high with support. The brittle stems are up to about one-inch thick at their widest point and have four to six ribs. They are generally narrower and terete at the base, which a very good field mark, most plants being widest at the base or trunk. The ridge of each rib is studded with close-set areoles each with 11 to 13 short (1/32 in.) spines. All of these are appressed to the surface of the ribs, straight, terete and acicular. The spines are generally black but there may be two to four white ones in the lower portion of the areole.

Next to its mimicry adaptation, the other character of this plant which contributes most to its survival is the massive tuber which stores moisture and energy reserves below ground in the relatively high humidity and low temperature of the soil. This storage capacity allows the plants to survive drought and regenerate new branches if the existing ones are destroyed by foraging animals or by wind. Cattle and other large animals seeking the shade of desert trees have been observed breaking the stems from the plants unintentionally as they loll in the shade. The capacity to withstand drought was thoroughly tested some years ago by our staff when we removed a mature plant from the ground and suspended it in a sling from a wire frame. This was done for an exhibit during the cactus show. Five years later the plant was still on exhibit in our auditorium. The stems had died back to the tuber and the tuber itself was beginning to turn slightly green in an attempt to photosynthesize. We finally took pity and returned the plant to the ground. It quickly regenerated new branches.

The tubers are generally turnip- or parsnip-shaped (napiform), but may be lobed due to the excavations and eating habits of fossorial animals such as ground-



Even in fruit and flower, this plant is well camouflaged.

squirrels and gophers. Average tubers weigh from two to fifteen pounds. A report of an 87-pound tuber was noted by Kearney and Peebles in *Arizona Flora*. We had always been skeptical of this until a specimen weighing a total of 135 pounds was donated to the Garden. It was a globose tuber, 21 inches wide and 21 inches long.

The tubers are generally turnip- or their size might constitute a very considerable food source were they not relatively slow-growing and desirable as specimen plants. Local Indians collected the fleshy tubers, sliced and deep-fried them. Flavor is somewhat like a turnip although not as strong. Joyce Tate in her *Cactus Cookbook* lists such exotic treats as *Peniocereus greggii* Fritters, French Fries and Roasted Tubers.

The typical variety of the species is found from southern New Mexico and west of the Pecos River of Texas in the U.S. south through the state of Coahuila, Durango, and Chihuahua in Mexico.



An eight-pound tuber on a plant being transplanted in the Garden.

Chihuahua city is the type locality of the typical variety, *P. greggii* var. *greggii*. This taxa was formerly known as the variety *cismontanus*, until the rules of botanical nomenclature made it necessary to change the subspecific epithet to agree with the species epithet. The other common known variety is *P. greggii* var. *transmontanus*. It is found throughout the southwestern and low-elevation central portions of Arizona. It is known from Yuma, Mojave, Yavapai, Maricopa, Pinal and Pima counties. The type of this variety was collected in the "table lands" of the Gila and San Bernadino Rivers in Arizona. It is also found in northern Sonora.

Some authorities today have placed the genus *Peniocereus* in synonymy with the genus *Cereus* to which it was originally assigned by Engelmann in 1848. Thus in many of the more recent floras the taxon described here are to be found under *Cereus greggii* Engelmann.

The plants are mainly of interest to botanists and collectors rather than the

landscape trade, as seed is difficult to obtain and the plants would go unnoticed in the typical landscape. In cultivation, a deep, well-drained sort with a fine, sandy texture is best. Over-watering is to be avoided because the tuber rots if it remains in soggy soil for long. In the Phoenix area, of course, no watering other than rainfall is necessary, but a thorough drenching of the soil once a month during the late spring and early summer speeds growth. If seed is sown in pots the pots should be quite deep as tubers develop rapidly, being detectable within one year of germination.

#### REFERENCES:

- Altschul, *Drugs and Foods from Little-Known Plants*  
 Benson, *Cacti of Arizona*  
 Britton and Rose, *The Cactaceae*  
 Kearney and Peebles, *Arizona Flora*  
 Kirk, *Wild Edible Plants of the Western United States*  
 Sanchez-Mejorada, *Revision del Genero Peniocereus*  
 Shreve and Wiggins, *Vegetation and Flora of the Sonoran Desert*  
 Standley, *Trees and Shrubs of Mexico*  
 Sturtevant, *Sturtevant's Notes on Edible Plants*  
 Tate, *Cactus Cookbook*

—RGE

## News & Notes (Continued)

African country, not previously represented in the Garden.

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We'd like to call your attention to the Volunteer Check List you'll find in this issue. Preparations for the Thirtieth Annual Cactus Show, coming on February 20-27, are being made. There have been two meetings of the Show Committee, the Classification List is being printed, and information on the Show is already being sent out.

New Garden Members needn't feel that only experienced Volunteers are needed. This is a fine time to begin participating in the Garden's activities and meet other Garden Members.

## THE BOOKSHOP STAFF SUGGESTS —

From the many new items in the Bookshop the staff has picked these favorites to give Garden Members an idea of what's available. Come with your gift list and you're sure to find the right present for everyone, plus a few things for yourself. Remember that Members receive a ten per cent discount on purchases, and that everything you buy helps the Garden.

Flowering Christmas cactus will be only one of the good-sized plants in the expanded plant section. Our large cacti and succulents are in superb condition, as are the little ones and the dish gardens. Some nice terrariums, too.

Books this year, for all ages, are more plentiful, with emphasis on gardening, house plants, desert subjects and Indian culture. Attractive new notepaper and cards are here, plus an inexpensive sunprint kit for children. Also for children, as well as adults, the Garden t-shirt with its colorful Agave.

Exclusive at the Garden: original ink-and-wash pictures of the desert and handsome large ironwood boxed by a fine craftsman.

For someone's house, potholders, place mats and aprons with cactus designs, candles of jojoba wax, new wind bells, and chunky candles with pottery holders.

Just this month we've acquired some outstanding bola ties made of ironwood and inlaid with turquoise or abalone, made by the man whose ironwood boxes are so impressive.

And the nicest gift of all — give a membership in the Desert Botanical Garden — a lasting, meaningful present.

### Cactus Show Volunteers

The Thirtieth Annual Cactus Show will be held from February 20th through the 27th. There would never have been a Second Annual Cactus Show — much less a Twenty-ninth — without the help of Volunteers.

Last year, it took the combined talents and hard work of 80 Volunteers to make the Show the great success it was. Your help will make the Thirtieth Show another success.

Starting this month, and building week by week, pre-Show work is taking more and more of the staff's and regular volunteers' time. We need your help now, during the Show, and even after it.

Here is a check list of jobs-for-volunteers connected with the Show. Will you check the ones you want to do and let us know?

- |   |  |
|---|--|
| <input type="checkbox"/> Pre-show mailings                  | <input type="checkbox"/> Helping set up Show           |
| <input type="checkbox"/> Typing                             | <input type="checkbox"/> Acting as host, hostess       |
| <input type="checkbox"/> Filing                             | <input type="checkbox"/> Being guard or 'traffic cop'  |
| <input type="checkbox"/> Sales in Shop                      | <input type="checkbox"/> Helping with publicity        |
| <input type="checkbox"/> Selling Nature Walks               | <input type="checkbox"/> Keeping attendance count      |
| <input type="checkbox"/> Restocking in the Shop             | <input type="checkbox"/> Answering visitors' questions |
| <input type="checkbox"/> Registering entries<br>before Show | <input type="checkbox"/> Lettering, posters, etc.      |
| <input type="checkbox"/> Mailing, stuffing envelopes        | <input type="checkbox"/> Distributing posters          |
| <input type="checkbox"/> Tabulating the Show                | <input type="checkbox"/> Handling phone calls          |
| <input type="checkbox"/> Listing entries, exhibitors        | <input type="checkbox"/> Miscellaneous chores          |
| <input type="checkbox"/> Figuring totals during Show        | <input type="checkbox"/> Running errands.              |
|   | <input type="checkbox"/> Anything at all!              |

How many days a week? On weekends? An occasional evening? When? Now? During the Show? After? Call 947-2800 and tell us.

## THE BEAUTIFUL DESERT LILY

Against the bare sand flats and dunes that are its home, the Desert Lily (*Hesperocallis undulata*) is an unexpected sight. The tall spikes of fragrant white flowers and the long blue-green leaves look out of place in such an arid setting, but the Desert Lily is found only in inhospitable sandy soil in western Arizona where the elevation is below 2000 ft. and in similar areas of the Mojave Desert and northern Mexico.

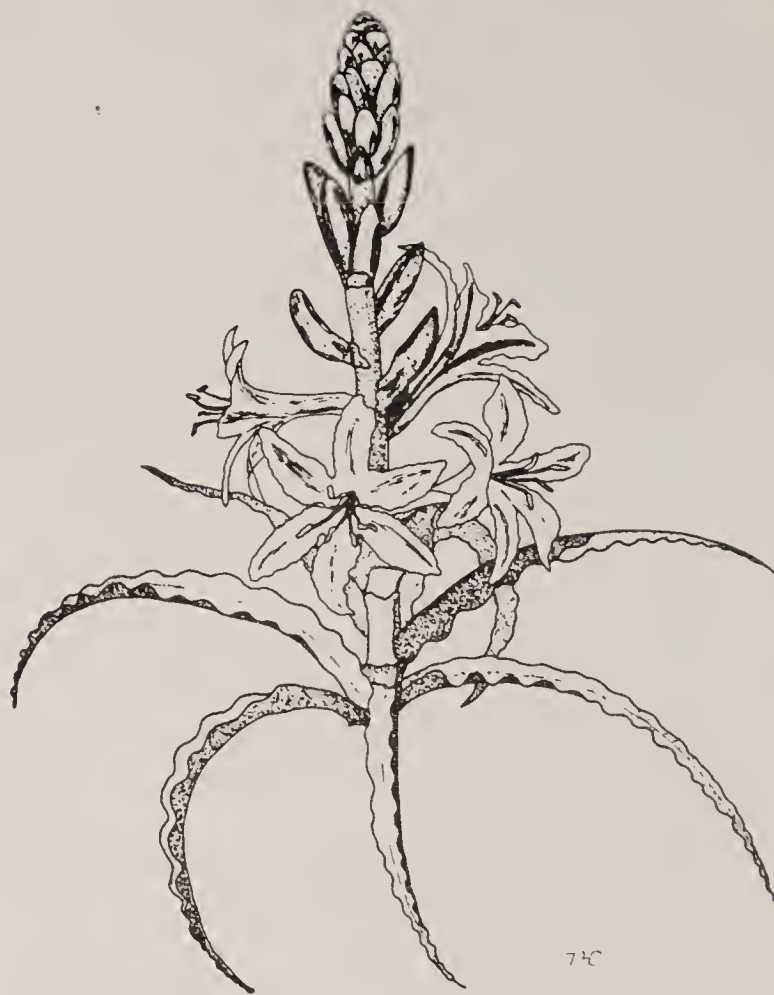
In January the bulb sends up a cluster of narrow leaves a foot or more long. Their color is a distinctive blue-green, with a thin band of white along the wavy edges.

The appearance of the leaves, however, is no guarantee that the plant will flower. Unless the right combination of rainfall and warmth occurs, the leaves will wither and die in the cold, windy, late winter before the plants have a chance to bloom. Sometimes more than four years go by before the proper conditions occur.

In a good year, the plant produces a stout bluish stem that is usually about two feet high, but can grow to a height of four feet or more in a year when conditions are very good. The flowers, in racemes, that look like three-inch-wide Easter Lilies, have a bluish-green band down the middle of the back of each perianth segment. Each pure white flower has yellow anthers and a white stigma. As they wither the flowers become papery and curiously transparent. Flowering begins in February and continues until April or May.

*Hesperocallis undulata* is the only species in the genus. It has a large tunicate pseudo-bulb with a thin, dry coat, and pencil-thick roots that are often sand-coated. On the whole, the organization of the plant is very much like the genus *Manfreda*, although *Hesperocallis* is included in the Lily Family and *Manfreda* is in the Agave Family.

The pseudobulbs, which can be roasted or boiled, have a distinct onion flavor. They are not easy to obtain, since they are



Desert Lily flowers, drawn for the Bulletin by Tom Caldwell.

eighteen or more inches below the surface and hardly justify the effort to dig them up. Just the same, the flavor of the Desert Lily bulbs is the reason why the town of Ajo, Arizona has its name.

When Spanish explorers came north into what is now Arizona they found the abundant Desert Lily bulbs a welcome addition to their field rations and named the mountains in the area after the onion-y bulb, giving them the Spanish name "ajo", which means garlic. The later town was named for the "Desert Lily Mountains".

The Garden's March Field Trip, on the 12th, was planned with this wildflower in mind. We'll be going to Ajo, always an excellent area for a field trip, and we're hoping for just the right conditions in the coming months to produce flowering Desert Lilies in their namesake area.

(Photo and references on p. 120)

# WATERING CACTUS AND OTHER SUCCULENTS

by Russell Haughey, Garden Horticulturist

Many succulents other than our natives can subsist on our meager rainfall, but some of the exotic succulents need extra water. It is important to know the water requirements of your plants. I keep saying this because, in my opinion, it is the most important factor in growing an attractive desert garden. Different plants have different water needs. What is enough water for a Hedgehog Cactus is certainly not enough for an Echinopsis.

There are a few general rules to follow with all cactus and leaf succulents. First, most need to be planted in well-drained soil. (The exceptions are a few of the tropical cacti.) Decomposed granite and gravelly loam are excellent, but if you aren't lucky enough to have soil like this in your yard you can mix gravel or decomposed granite  $\frac{1}{2}$  to  $\frac{1}{3}$  by volume into the upper foot of original soil. It is also a good idea to plant your succulents on mounds to further insure good drainage. You will not want to plant any desert succulent where the water will stand for any length of time.

Before you water, check to see if the soil is moist. If it is, wait until it has become nearly dry. Too much water around the roots of drought-hardy plants for too long is bound to rot almost every one of them. Overwatering is the most common cause of death among cactus and succulents in Arizona gardens. Remember this rule: When in doubt, don't water!

When you do water, the best method is to let a hose drip, not run, near the base of a plant for an hour or so. Make sure the soil doesn't get so soggy that the plant falls over — I've seen it happen to a yucca and a large cactus.

Generally, succulents may need supplemental water in the summer but should be watered sparingly if at all in winter when they are dormant and most susceptible to rot from overwatering.

## WATERING CACTUS

Most of our native cactus do just fine on rainfall, but certain exotic cactus, such as the popular Echinopsis and Acanthocereus, will need supplemental water during our dry summers. Group your plants if you can, so that you give water only to the plants that need it. By the way, if you give your Echinopsis a little water when the flower buds appear in the spring you will have a more spectacular show of flowers.

When you water cactus, don't spray water directly on the plant, especially in the summer sun. Drops of water act like magnifying glasses, and the burns will scar your cactus permanently.

When you transplant cactus, even in summer, hold off on watering until new growth is evident. Water before this time doesn't encourage growth, just rot.

In general, taper off on watering in early fall, and resume watering in March. Be sure not to water frost-tender cactus like Senitas, Totem Poles or Organ Pipes in the fall and winter because the new growth is likely to freeze.

Symptoms of overwatering are easy to spot. An overwatered Saguaro looks fat, turgid. Often it will split along the side between the ribs. Overwatered Prickly Pears are also turgid. Sometimes the plant can't support the weight of the moisture-filled pads and they'll drop off. You should stop all watering until the plants slim down.

An underwatered cactus looks dry and shrivelled, but so does one that isn't receiving any water from its rotted-off roots.

## WATERING AGAVES

Most Agaves growing in the Valley need a little supplemental water. Large Agaves like *Agave americana* show they need water when leaves lose their turgidity and bend down. In others, leaves are shrivelled and wrinkled. But again, plants that have rotted at the base show the same symptoms.

As with all rosette plants, be careful not to get water in the crown of an Agave in the summer. Bacteria will grow in that nice warm water that has settled between the leaves and can rot the crown.

Some Agaves are frost-tender, Plant them in a protected area. It is necessary to ease off watering Agaves in the fall and winter to prevent frost-damage to old leaves. The new leaves are protected by the older outer leaves and the frost seldom gets to them in our area.

#### **WATERING YUCCAS**

Native Yuccas will survive on just rainfall, but respond very well to extra water, especially in summer. Other cultivated Yuccas are from the eastern part of the United States and elsewhere and are not very well adapted to our arid climate. These include *Yucca elephantipes*, *Y. recurvifolia* and *Y. aloifolia*. Water these Yuccas every two to four weeks in summer, less often in winter. Remember to check soil moisture before watering.

#### **WATERING ALOES**

You will find books that tell you not to water Aloes in summer, but most of the Aloes we grow here need a little water in summer. They generally do well with just rainfall, but summer rains are erratic, so water if the plants need it, but carefully. Shrunken leaves are a sign of underwatering, but remember that this is also a sign of root rot.

Aloes rot easily in summer and in winter. You can check for rot by feeling the trunk of the plant. If the trunk is firm, you're okay, but if it's soft you've got rot. We have sometimes been able to rescue a rotted Aloe here at the Garden by cutting off the rotted part, dusting with sulphur and replanting, but all Aloes don't respond to this treatment.

Aloes flower in winter, but need no watering unless the fall has been especially dry. In that case, apply a small amount of water in November but be extremely careful. Too much water in the leaves means greater damage when it freezes, but water makes the plants look nicer, so it's six of one and half a dozen of the other. Make your own decision.

#### **OCOTILLOS AND BOOJUM TREES**

Ocotillos don't need watering. During dry spells you might want to make your Ocotillo leaf out by giving it a good soaking, but remember that these are desert plants adapted to getting very little water.

If you're lucky enough to own a Boojum you may treat it pretty much like an Ocotillo. You may give it a little extra water in summer, but it isn't really necessary. Be careful not to overwater in winter when the plant is dormant.

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If you have any questions on how to water your desert plants, call us at the Garden and we'll be glad to help you. Also, our Library is open to any Member who wishes to learn more about his plants.

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#### **NOW IN BLOOM**

December at the Garden surprises many visitors with the number of plants in bloom. Australian acacias and *Acacia farnesiana* are in full flower, as is *Caesalpinia cacaloco* — all of these small trees add color to the pathways.

In the Succulent House, African plants from the Southern Hemisphere are in flower. The Stapeliads finish blooming but Aloes, *Euphorbia splendens* and *Kalanchoe fedtschenkoi* bloom all month.

Outside, Arizona natives in bloom are Beloperone (Hummingbird Bush), *Baileya* (Desert Marigold), white-flowered *Melampodium* and yellow-flowered *Dyssodia* (both composites), *Salvia greggii*, *Oenothera speciosa* (a large evening primrose) and *Salazaria mexicana* (Paper-bag Bush) which is also fruiting heavily. Also in bloom, the African *Moraea*, called the Blue Tulip but actually an iris.



## LES CEDRES

(The third of W. H. Earle's reports on European botanical gardens.)

An invitation to visit this famous garden is the unfulfilled dream of most succulent plant enthusiasts. For years we have all read about "Les Cedres" and its wonders and listened to the fortunate few who have visited it. I felt myself particularly lucky to visit "Les Cedres", which was even more beautiful than has been reported.

M. Julien Marnier Lapostolle inherited the estate from his father, who had purchased it from King Leopold II of Belgium in the early twentieth century. It consists of a spacious house on 15 hectares (about 38 acres) of land on Cap Ferrat which juts out into the blue Mediterranean halfway between Nice and Monaco. Over the years the naturally dry slopes of the small peninsula have been beautified with a lake, many water plants, palms and citrus, and Marnier Lapostolle's great interest in succulents led him to accumulate a superb collection of these plants and make "Les Cedres" the most beautiful botanical garden I have ever seen.

Today the garden is a memorial to Marnier Lapostolle. Although he died last winter, many of the garden staff say that they feel his continued presence at "Les Cedres". I was sorry to have lost the opportunity to meet this fine collector with whom I had corresponded and exchanged seeds for the past twenty years.

Happily, Mme Marnier Lapostolle was at "Les Cedres" when we visited. She is a charming person, interested in all the plants, an excellent photographer. She escorted us through the impressive house and took us up to the library which occupies the entire third floor. The uniformly bound volumes make up one of the finest private botanical libraries in Europe.

"Les Cedres" has been, and will continue to be, a center of botanical research for botanists from all over the world. It is a storehouse of marvellous plants that will attract researchers for years to come.

As every visitor does, I marvelled at the perfect condition of the countless plants

outdoors and in the large greenhouses. The greenhouses are so filled with handsomely grouped collections of mature cacti and succulents that it was difficult to take photographs, even difficult to take the time to take photographs. When every plant is outstanding it is impossible to choose favorites, but the crested *Myrtillocactus mitriformis* shown on these pages was one of the most beautiful cacti I have seen.

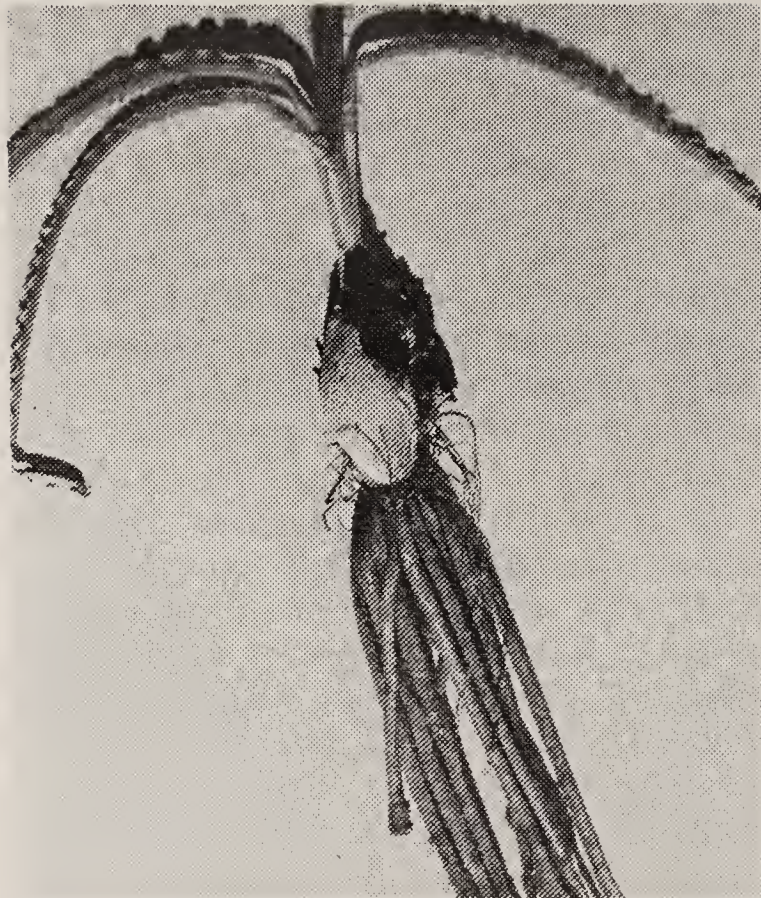
The vast plantings at "Les Cedres" include, besides the *Cedrus atlanticus* for which the estate is named, immense stands of Aloes, Cordylines, Bromeliads as well as cacti. The present superintendent of the garden is M Rene Hebding who worked under the direction of Marnier Lapostolle for the last ten years. Fortunately for all of us, "Les Cedres" will remain the outstanding garden that its founder created.



The crested *Myrtillocactus* at Les Cedres, five feet two inches tall.

# DESERT LILY —

(Continued from page 116)



The remarkable thick roots and pseudobulb of *Hesperocallis undulata*.

## REFERENCES:

- Armstrong, Field Book of Western Wild Flowers  
 Jaeger, Desert Wild Flowers  
 Kearney & Peebles, Arizona Flora  
 Mockel, Desert Flower Notebook

—LD.

FIELD TRIPS are popular. Reserve your space well beforehand. Prepaid reservations are necessary. Fee is \$1.00 for Members, \$2.00 for non-members.

CACTOMANIACS in January. The speaker will be Kent Newland from the Boyce Thompson Arboretum. His subject, "The Endangered Species Question".

TWO THINGS to remember: Your Garden is open from 9 a.m. to 5 p.m. every day of the year. Our telephone numbers are 947-2800 and 946-9942.

## GARDEN ACTIVITIES

### DECEMBER

Wed.	1st	CLASS — Cultivation of Desert Trees and Shrubs	2:30 p.m.
Thurs.	2nd	LECTURE — Arizona Wildflowers	3:00 p.m.
Tues.	7th	CACTOMANIACS — Meeting	8:00 p.m.
Wed.	8th	CLASS FIELD TRIP — Pinnacle Peak	8:30 a.m.
Thurs.	9th	LECTURE — Mexican Cacti	3:00 p.m.
Sat.	11th	FIELD TRIP — Estrella Mtn. Park	8:30 a.m.-4:45 p.m.
Thurs.	16th	LECTURE — Arizona Flowering Trees	3:00 p.m.
Sun.	19th	CAC & SS — Meeting	2:00 p.m.
Thurs.	23rd	LECTURE — Cactus Flowers	3:00 p.m.
Sat.	25th	CHRISTMAS — Garden open	9:00-5:00 p.m.

### JANUARY

Sat.	1st	NEW YEAR'S DAY — Garden open	9:00-5:00 p.m.
Tues.	4th	CACTOMANIACS — Meeting	8:00 p.m.
Wed.	5th	CLASS — Introduction to Desert Plants	2:30 p.m.
Thurs.	6th	LECTURE — Arizona Cacti in Flower	3:00 p.m.
Sat.	8th	FIELD TRIP — Picacho Peak State Park	8:30 a.m.-4:45 p.m.
Wed.	12th	CLASS — Succulent Plants	2:30 p.m.
Thurs.	13th	LECTURE — Arizona's Plants — Mountains to Desert	3:00 p.m.
Wed.	19th	CLASS — Cultivation of Succulent Plants	2:30 p.m.
Thurs.	20th	LECTURE — Arizona Wildflowers	3:00 p.m.
Wed.	26th	CLASS — Desert Trees and Shrubs	2:30 p.m.
Thurs.	27th	LECTURE — Mexican Cacti	3:00 p.m.
Sun.	30th	CENTRAL ARIZONA CACTUS & SUCCULENT SOCIETY	2:00 p.m.