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"CONTINUALLY STRIVING TO EXPAND OUR HORIZONS AND CONTENT IN THE INTEREST OF CACTOPHILES EVERYWHERE."		
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P.O. Box 3723 College Station      Tucson, Arizona 85722		

## FACTS AND FIGURES OF THE MOMENT FOR TCBS 1976

Total membership as of February 17, 1976  
136.

Arrangements for all monthly 1976 programs have already been completed. Congratulations to our super-active and ambitious Program Chairman, Roger G. Dean. A bus load of approximately 28 members materialized for a February 28 trip to visit the Annual Cactus Show of Desert Botanical Garden, Papago Park, Phoenix, Arizona. Ed Busch was trip manager. Entries in the contest for best table centrepieces for the 1977 CSSA Convention in Tucson numbered over 20. The 5 winning entrants chosen by member vote at the February 8 meeting, won plant prizes.

"Adventuring with Cacti" at the February 8 meeting with Harrison Yocum, TCBS member, opened new trails and vistas for many less informed but interested members.

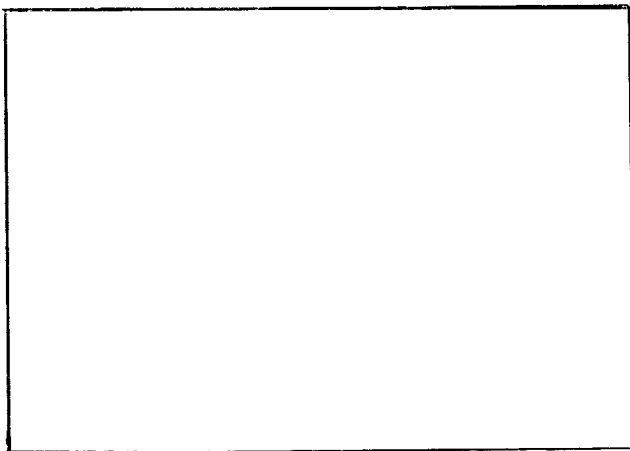
TREATS TO ANTICIPATE: October program by Joyce Tate of CSSA -- her trip in 1975 to Africa. A June special meeting featuring world renowned Brian and Edgar Lamb of England. Our meeting this spring

at world-famed Arizona-Sonora Desert Museum. A field study trip to Boyce Thompson Southwestern Arboretum, Superior, Arizona. The TCBS Cactus Show on May 1, 2, 1976. Nature's Own Cactus Show in the great Sonoran Desert begins at any moment now, with the approach of cactus blooming season. In May 1976, you can sign up for a 10-day field trip with Dr. Robert R. Humphrey, U. of A., to Baja to study its ecology.

OH, YOU LUCKY SONORAN DESERT CACTOPHILES LIVING IN THE HEART OF NATIVE CACTI HABITATS IN THE "CACTUS CAPITAL OF THE WORLD"!!  
(ed.)

Dr. and Mrs. William G. McGinnies were present at the March meeting of TCBS. Dr. McGinnies is the founding president of our Society, and was a good friend of our founder, "Cactus John" Haag.

## CACTUS CAPITAL CHATTER



### LOPHOCEREUS SCHOTTII FORMA SPIRALIS

William A. Pluemer

Most readers are familiar with the so-called "totem-pole" cactus, whose botanical name is *Lophocereus Schottii forma monstrosus*. The *forma monstrosus* also has a close relative, somewhat skinnier in build, known as the *forma mieckleyanus*. These two tongue-twisters are collector's favorites because their spineless, knobby, somewhat contorted cuttings make fine conversation pieces. I have found that both do well here in Tucson in the yard, with minimum frost protection. Another variant of *L. Schottii* -- the *forma spiralis* -- may not be as well known as its cousins above. On previous trips to Baja, I had collected both the *forma monstrosus* and *mieckleyanus* near the 28th parallel at Pozo Aleman and Rancho La Union. Desiring to add the third *Schottii* aberrancy to my collection, a trip to the newly established Estado de Baja California Sur was promoted in November 1975.

Good friend and neighbor, Ray Lucas, *mecanico par excellence*, and I left La Paz on a warm Sunday morning, enjoying the blacktop of "MEX 1" to Ciudad Constitucion, about 120 miles to the North. The spiral form of *L. Schottii* had been discovered some years ago by Dr. Annetta Carter between the villages of Cerritos and San Ramon, somewhere northeast of C. Constitucion. Neither of these points appeared on any of our maps, including the

most recent Baja map produced by the Auto Club of Southern California. Arriving in C. Constitucion before noon, I approached a queue of taxi drivers with my hand-sketched map showing Cerritos and San Ramon. The first three cabbies struck me out in short order, with a negative shake of the head and shrug of the shoulder that either indicated futility or indifference. Later we wondered if these cabbies really hadn't heard of these villages, or whether only potential fares were privy to their back-country navigational secrets. C. Constitucion straddles the highway for some distance. From open vantage points, no road scars could be seen leading into the eastern foothills. Relying on our old time-consuming but well proven practice, we began to work through the town streets in an easterly direction, eliminating the dead ends one by one. At last we came upon a road leading out through the community garbage dump, and instinctively we knew this was the route. Time and again, in attempting to find roads out of Mexican towns leading into the back country, the scenic route through the garbage dump has proven out. It did so again in this instance.

Sometime later we were able to confirm our position in the tiny village of Cerritos, where a large weather-beaten sign proclaimed: "Cerritos - Agua Potable". A

short discussion with a knowledgeable truck driver put us on the right turn-off to San Ramon. As usual, his estimate of distance, whether converted from kilometers to miles, miles to kilometers, or even nautical miles to any of the above, left something to be desired. As the odometer continued to run well past his estimate, my degree of unhappiness increased. Ray, in the right seat, was content to watch the scenery and keep an ear tuned to the engine, chassis, or anything else that might cause him to delve into his toolbox. The shock of finally seeing the first plant almost in our tracks brought exclamations from the both of us. Long shadows, cast by a low winter sun, accentuated the unique spiral rib formation of the plant stems. Baja had once again surprised us with one of her bizarre botanical specimens. I have found no way to convert my mental image of this extraordinary plant into words. As a youngster, a then popular challenge was: "I bet you can't describe a spiral staircase without using your hands". So much for my attempt with *L. Schottii* forma *spiralis*.

The road ran through deep alluvial soil, bone dry and ankle deep in dust. However, the plants were healthy and very succulent, with the average stem rising three to four feet. A few, offered support from overhanging trees, raised stems over six feet high. Much to my surprise, a few large specimens of the normal *L. Schottii* were in the immediate area. These were now bearing fruit, but the forma *spiralis* showed no evidence of the normal flower-seed reproduction cycle. I believe it is a common assumption that the three aberrant *Schottii* forms reproduce only by vegetative means. Before leaving the site, I turned once again to look down the road at these strange plants and let my imagination wander. What if *L. Schottii* still had a trick or two up its sleeve? What if Mother Nature had already written Act IV of this botanical comedy of errors, and the curtain has risen in some yet unexplored spot on this wonderful peninsula? I pondered the possibilities as we made camp not far from Cerritos.

The next day called for a sentimental trip via the old Baja road to visit a colony of *Machaerocereus eruca* at Santo Domingo. The plants were in abject condition due to

lack of rain, and I was rather dismayed at the sight. We then crossed the peninsula to Loreto via Mission San Javier. The 70-some miles required 4½ hours of hard driving -- the true Baja of old! Our camp was made on the white sands of Coyote Bay under a full moon. Arriving at El Arco before noon, I made a cursory inspection of the forma *monstrosus* colony and we continued to the forma *mieckleyanus* colony near Rancho La Union some 12 miles distant. With the completion of "MEX 1", it is now possible to visit all three localities within 48 hours - a feat heretofore impossible, using the old road.

Ref. *Cactaceas y Succulentas Mexicanas*, Tomo XI, March 1966. No. 1.

### CACTUS-PLANTS FACE VARIETY OF THREATS

Demand for cactus plants is so high in the United States, Europe and Japan that smuggling the ornamentals out of Mexico has become lucrative business, according to a report by the National Geographic Society. The thieves are not the only threat to cacti in Mexico and other countries. Growing towns, roads, overgrazing and mining have taken their toll.

Native to the Americas, cacti have diversified into more than 1000 species and have developed hundreds of distinctive shapes. Many cacti bear edible fruit, and shelter or otherwise help sustain creatures of the desert, including man. The saguaro may house white-throated wood rats at its base and the Gila woodpecker and gilded licker nest in holes in it. After they move out, a succession of occupants move in -- elf owls, flycatchers and sparrow hawks. The cactus flowers splash the deserts with color. Hedgehog cacti have bright red or purple flowers, and prickly pear blossoms range from yellow to orange and often take on deeper hues with age. The golden barrel cactus opens its flowers during the day and closes them at night. In contrast, the delicate greenish-white and brownish-green petals of one variety of organ pipe cactus unfold only at night. The cactus family has given up most of its leaves as they are water spendthrifts, but the green hue in the stems reveals the presence of chlorophyll which takes over photosynthesis, a role that leaves perform in most other vegetation. (Arizona Daily Star, 9-7-74.)

## THE SONORAN DESERT

by

Robert R. Humphrey

## Soils

visibility; Soils of desert areas, including those of the Sonoran Desert, differ in many ways from those of less arid regions. Perhaps the most commonly noted of these differences is the visibility of the soil itself. This, however, is not a true soil characteristic but rather the result of a sparse plant cover. Areas with a heavier rainfall that supports forest, brush or even grassland produce enough vegetation to partly or completely hide the soil under a layer of living or dead plants. Because of the low precipitation, low relative humidity and high temperatures of the Sonoran Desert there are few plants, either living or dead, and the soil is usually readily visible to even its casual visitor.

This condition is particularly striking to one new to the desert and often prompts the question - "Is this openness due to some kind of toxin secreted by certain species that keeps others from becoming established?". The generalized answer is "No, the reason for the wide spacing is that there simply isn't enough precipitation in this arid region to produce a denser plant cover".

**Topsoil** It might be assumed that in such a dry climate, the limited amount of dead organic matter that is produced would not decay and consequently would accumulate and ultimately form humus and top soil. An accumulation of this sort does not occur, however, which leads to a second characteristic of desert soils: they are typically low in organic matter and have little or none of the topsoil that results from the accumulation of organic matter in the surface layers. As a consequence, soils of the Sonoran Desert, except very locally, where sodium salts accumulate, tend to be light in color.

There has been much speculation as to what happens to the dead organic matter, limited though it may be, that is produced in the Sonoran Desert. Its sparcity seems to be due to three primary factors: (1) many of the leaves and smaller twigs are simply washed away in the torrential rains that

characterize the summer rainy season; (2) the always-waiting termites make short work of much of the remainder including such second-run types as the feces of grazing animals; and (3) oxidation is rapid under the high temperatures that prevail so much of the year.

A topsoil does develop in the few limited grassland areas that are encompassed within the boundaries of the Sonoran Desert. These - tobosa-grass swales and sacaton flats - are small in area and are restricted to relatively low-lying alluvium where temporary flood waters or a high water table provide enough moisture to grow dense stands of grass. Even in these situations, although the upper soil layers are dark in color from the humus they contain, little or none of this is derived from the stems and leaves - the above-ground portions - of the plants. As in grasslands typically, the organic constituent is obtained almost entirely from the roots which are, in a sense, entrapped in the soil medium and little exposed to the hazards that lie aboveground.

**Water Erosion:** Despite the little apparent protection from torrential rains, most undisturbed Sonoran Desert soils suffer surprisingly little water erosion. This is evidenced by the few roots that are exposed on long-lived trees such as palo verdes and ironwoods or even on old cacti such as sahuaros and cardons that may be 200 or more years old. One might explain the minimum erosion beneath the trees by the protection offered the soil by the canopy of branches and leaves. In the case of the cacti, however, with their few branches and no leaves, as well as an extremely shallow root system, the persistence of individuals through so many years could not be possible under conditions of much soil loss.

There is, obviously, some soil movement, particularly during the heaviest rains. Indications of this are seen in the partial exposure of portions of the roots of old sahuaros. When one considers, though, how many years it has taken for even this evidence to be visible, one cannot help but conclude that erosion has been slow. And, even in these instances, the question comes up - how much of this erosion would have occurred in the absence of man and his culture? Except for some portions of the Sonoran Desert in Sonora and Baja California, little of it remains today that



Desert pavement photographed in West-central Baja California. Here all the fine soil particles have been blown away, leaving the immovable coarse pebbles. The large white object is a bit of seashell.

does not bear the imprint of some aspect of civilization. Of all these aspects, domestic livestock grazing in too large numbers and in areas that should not be grazed, such as most of the Sonoran Desert, is the major culprit.

Were there much erosion, the landscape would be characterized by gullies, both large and small, that had been cut by the floodwaters and the erosive burden they were carrying. Undisturbed (typically non-overgrazed) areas, however, are not gullied. They do usually show a dendritic pattern of stabilized washes of varying sizes that carry off the excess water after a storm. These, however, are essentially stable drainages, which, except for the fact that they conduct water, have little or nothing in common with cancerous gullies.

**Wind Erosion:** There is little wind erosion in most of the Sonoran Desert. This is in strong contrast to extreme deserts such as the Sahara of northern Africa, the Arabian of Saudi Arabia, and the Takla

Makan of Central Asia, among others. In the Sonoran most of the wind erosion occurs in extreme southwestern Arizona, across the Colorado River in California, and in contiguous northern Sonora and Baja California Norte. Active dunes have developed in these areas, formed from the blowing sand. Although the California dunes west of Yuma may seem extensive as one crosses them on Interstate Highway 8, in reality they represent a minimal fraction of the entire Sonoran Desert area.

One or more of several conditions are required to provide a situation suitable for extensive wind erosion and these do not obtain in most of the Sonoran Desert. Initially there must be little vegetation, a condition that may occur naturally because of low rainfall, extreme alkalinity, periodic flooding as in normally dry lake beds, or as a result of man's activities, usually in the form on long-continued overgrazing or plowing.

Secondarily, there must be long-continued winds of high intensity, preferably across areas with little or no plant cover.

We are fortunate in that most of the Sonoran Desert supports sufficient vegetation to reduce wind velocity at and near the ground. We are doubly fortunate in that wind velocities are not excessively high over most of the area.

**Desert Pavement:** One of the most interesting effects of erosion in desert areas, including parts of the Sonoran, is the feature usually referred to either as **erosion pavement** or as **desert pavement**. This so-called "pavement" typically appears as a close-fitting mosaic of small pebbles in areas largely devoid of vegetation. Although the pebbles provide a highly effective armor against the erosive effects of either wind or water, the pavement they form is in fact the end product of one or both of these forces.

The rocks that now protect the surface of the soil were at one time distributed throughout the upper layers. As the finer particles were gradually removed by wind or water the heavier rocks were left behind, more and more of them becoming exposed until they finally came to form an almost continuous cover. Scrape them away and the vulnerable soil will be exposed immediately beneath.

Excellent examples of desert pavement may be seen in extreme western Arizona adjacent to U.S. 95 between Yuma and Quartzite. These, as well as more limited but equally striking examples in Baja California occur in regions of low rainfall and higher than normal wind velocity. This suggests that the phenomenon is a result more of wind than of water erosion. Excessive floods could carry the pebbles away; for the most part, however, they would presumably not be moved by winds even of hurricane force.

**Caliche:** Most of us who have tried to garden or grow ornamentals in the Sonoran or other deserts have had firsthand experience with caliche. This is a calcareous hardpan that is often visible at the soil surface, particularly where the superficial layers have been eroded away, or at varying depths below the surface.

Caliche tends to have a dirty white color indicating its calcareous nature. It probably forms largely as a result of salts from the soil that are dissolved by rain or irrigation water, carried downward by percolation and then deposited at the lower limits of moisture penetration as the water evaporates. As the process is repeated throughout the years a denser (and harder), and deeper caliche layer is gradually formed. This retards and reduces future moisture and root penetration and results in an increasingly arid habitat for the desert plants.

#### CENTRAL ARIZONA CACTUS & SUCCULENT SOCIETY NEWSLETTER

Volume I, Number 1, September 28, 1975

This is a brief review of its contents presented to describe its interesting and educational subject matter.

1. "A Remarkable Aloe" by Melvir Firestone. Observations of an American scientist recently returned from a sabbatical year in England. The "Aloe" turns out to be an Agave flowering in 1774 near Kingsbridge.
  2. "A Trip by Minibus to the Tip of Baja California", by William Tucker. His personal travel experiences and impressions there.
  3. "The Lath House Caper", by Philomena Hennessey. How to construct a lath house.
  4. "Under the Lights" by Lee Tolleson. Growing cacti and other succulents indoors under fluorescent lights.
  5. "Succulent Script", by Kent Newland. Review of *Ashingtonia*, bimonthly journal of the *Ashingtonia* Botanical Trust, Surrey, England.
  6. Book Review: "A Field Guide to the Common and Interesting Plants of Baja California", by J. Coyle and N. C. Roberts.
  7. CSSA News. Garden Show news. Miscellaneous.
- Tucson Cactus & Botanical Society through its newsletter editor, sends its hearty congratulations to Central Arizona Cactus & Succulent Society on the appearance of its first newsletter. They and we are exchanging newsletters. (Ed.)

## HILDEGARD NASE READS FOR YOU

Kakteen Sukkulenten No. 3 1974 Pages 37 & 38

Author: G. Milkuhn, 8132 Cossebande,  
Weinbergstr. 8 DDR (East-Germany)

Translated by: Hildegard Nase

## AYLOSTERA heliosa

The homeland of this relatively new and interesting cactus plant is near Tarija in Bolivia at altitudes from 2400 to 2500 Meters.

This plant has been discovered by Walter Rausch and was given his fieldnumber R 314 and in the meantime has been described in the German Cactus Journal "Kakteen und andere Sukkulenten." 1970 No. 21, Pages 30 & 31.

These attractive small plants will be hardly ever more than 2.5 cm. in diameter and 2 cm. high. The base of the plant continues into a carrot-like root. The whole appearance reminds one of a miniature form of *Sulcorebutia*. Especially the elongated areoles and the pectinate spines point toward a special place within the Genus *Aylostera*. The 24-26 appressed radial spines per areole are up to 1.5 mm long; their color is white with a brown base. The petals are in most cases of an intensely orange color and from 4.5 to 5 cm. long; the flowers are about 4 cm. in diameter. The stamens and stigma are white to light yellow. The style is partly attached to the floral tube. The dark violet fruit is about 4 mm. in diameter and contains from 15 to 20 seed. The cultivation of this interesting and somewhat showy plant requires a minimum of care. Up to now, most plants are available grafted, which makes them grow to a much larger size; makes them flower more profoundly; and also makes them produce many offsets. I would like to mention that there seem to be several types.

Some plants are more elongated while others remain short. Seedlings produced flowers of different color shades, from light to dark orange, but generally, it is a very uniform specie. *Aylostera padcayensis* (Rausch) is in its appearance related to *A. heliosa* (helios - sun Greek). Another related kind is *A. pseudoheliosa*. Lau found

also some more related varieties. These are only known by their fieldnumber and regretfully still hard to obtain.

## BUDS OF CACTUS PLANTS - THEY WERE PRETTY GOOD

John B. Hales

So says Linda Forney, a 25 year old nurse from Pittsburgh who was lost in the Grand Canyon of Arizona for 20 days, on her way to Supai Village and "The Land of Sky-Blue Waterfalls" in the area. It was on August 1, 1975 that Linda made the wrong turn and became lost, and the Canyon's rugged splendor turned into a blurred nightmare of blazing hot days and bone-chilling nights.

Linda Forney was found 20 days later, 15 miles away from the mail trail in Havatagvitch Canyon -- weighing 85 pounds after having lost 21 pounds on her diet of "cactus buds" and a small amount of water each day from a trickle out of a crack in the rocks. She acknowledges that "the only thing I had to eat were buds of cactus plants -- they were pretty good." Her dog wandered off and was found by a group of hikers who nursed him back to health. When found, the dog could hardly raise his head off the ground, due to dehydration.

What a sad experience for an adventuresome young lady who is lucky to be alive. This was reported by John Schroeder, Northern Arizona Bureau of the Arizona Republic, Phoenix. Linda received front page publicity with her picture, after being received into a hospital.

Undoubtedly Linda Forney was not a serious "cactus botanist", as August is very late in the season for the various *Opuntias* to be in bud. They generally bloom in springtime at most elevations. What she probably found was the reddish to reddish-purple fruit, fleshy and juicy at maturity, of various *Opuntias*. It is the consensus of opinion after I talked with friends who are familiar with this area, that it was not buds but the fruits that saved her life. According to "documented distribution" maps and other information, we find the following *Opuntias* that would bear edible fruits, and others producing a dry-seedy fruit at maturity that are relished only by the small animals along the side walls of the Canyon:

## CACTUS CAPITAL CHATTER

*Opuntia Littoralis v. martinana*  
*Opuntia phaeacantha v. discata*  
*Opuntia phaeacantha v. phaeacantha*  
*Opuntia phaeacantha v. major*

A lot of credit should go to a Supai Indian, Hardy Jones, who told the searchers he had found tracks in an area "where nobody should be." Linda did see a helicopter overhead and knew they were looking for her. After being admitted to her room, she had her first meal in 20 days -- chicken salad and chocolate ice cream. She also called her mother in Pittsburgh, Pennsylvania. So ends the story.

References: Cacti of the Southwest Earle. The Cacti of Arizona - Benson.

### KEW ROYAL BOTANIC GARDENS

A massive collection of more than 150,000 illustrations of plants is an important by-product of Kew Royal Botanic Gardens near London, England. They are the work, in the form of both sketches and paintings, of more than 120 British plant artists who have used their talents to picture with scientific accuracy, plants from all over the world. Such illustrations are invaluable research tools. One of the greatest of the artists was Walter Hood Fitch who, in 40 years of dedicated effort, painted more than 10,000 plant illustrations of matchless quality. Two exhibitions of the pictures are held in London each year, sponsored by the Royal Horticultural Society.

### 1976 OFFICERS OF TUCSON CACTUS & BOTANICAL SOCIETY

President	Richard Wiedhopf	790-0946
Vice President	Roger G. Dean	326-9863
Secretaries	Mr & Mrs. Earl Christensen	297-5128
Treasurer	Julius Geest	296-6900

### 1976 BOARD OF DIRECTORS MEMBERS

William Pluemer	299-9015	Thomas DeHaven	327-0676
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Miss Nancy Clarke	325-1838	Paul Henshaw	299-9023
Alan Blackburn		743-0655	

### WE ARE TEMPORARY CUSTODIANS.

In any land of extremes such as the deserts of the world, the ecology is exceedingly delicately balanced. Every animal, bird, insect and plant plays a role in maintaining that balance. It is not a fixed balance. It is ever changing, involved, interwoven and fluctuating. For years, man has through ignorance done irreparable damage by altering his habitat with the excuse of "bending, taming or controlling" nature to his own ends. The time is at hand when man must learn to work WITH nature, to make use of its complex interwoven pattern of the interdependence of one form of life upon another. WE DO NOT OWN THE LAND ON WHICH WE LIVE. WE ARE ONLY TEMPORARY CUSTODIANS AND WE MUST MANAGE IT WISELY. -- From "South African Aloes" by Barbara Jeppe.

### TUCSON AIRPORT LANDSCAPE A WINNER

Tucson International Airport has the best-maintained grounds and landscaping of any airport in the country, Grounds Maintenance Magazine has decided. The Magazine and the Professional Grounds Management Society named the local airport winner of the 1975 airport ground maintenance award during a conference in Williamsburg, Virginia. The award recognizes excellence of ground care in 11 categories.

Receiving the honor was Harrison G. Yocum who is responsible for maintenance at Tucson International Airport. He is a member of Tucson Cactus & Botanical Society.



## TCBS CACTUS LIBRARY REPORT

Myrtle Ethington

Several of the journals and pamphlets published recently by other cactus societies have a great deal of good reading matter which should interest TCBS members. *Cactus & Succulent Journal*, Sept. - Oct. 1975 has fine articles on: conophytums, lithops, echinomastus cactus, "Proper treatment of mail order plants and dealers", "Potting and repotting", "Labeling & conservation", "Propagation". Every month, *Kaktos Komments* of Houston C&SS has good information on cacti and succulents. Sept. 1975 issue has a 2-page article on *Euphorbia Candelilla* that is outstanding. *San Diego C&SS*, Sept. & Oct. 1975 is well worth reading. *Los Angeles C&SS* generally carries an article on cactus and succulents. The months of Aug. & Sept. 1975 were especially good. June & August 1975 *New Zealand C&SS Journal*'s good articles are "Oddities in the Glasshouse", "Seed Production", "Ground Versus Pot Planting", among others.

2800 East Fort Lowell Road, office of Nancy Clarke is the address of the TCBS Library where members go to check out all the above publications.

## DO OR DIE!! CONSERVE OUR NATURAL RESOURCES NOW!!

The last few years have seen us becoming increasingly aware of shortages of natural resources. We are told that this is a situation that has come to stay. Mankind is overpopulating the earth, particularly its most desirable areas, and over-using its resources. We may be sure that in 1976 we will be hearing more and feeling the effect of more shortages. If we care about future generations, we must do our share in using less of some things, preserving the very existence of others, and finding alternatives which are less demanding and wasteful.

This applies even to hobbies like collecting cacti - mankind always has and always will need things to do for pleasure and recreation. Apart from the growing need for conservation of species, we may very well give thought to other shortages which may affect us. Books and journals are rapidly becoming more expensive, or out of print and too expensive to reprint. We should take care of ours and make them available to

others when we no longer have use for them. Shortages of fuel and power affect heating, artificial lighting, sterilization of soil. Should we keep our greenhouses cooler, avoiding the plants which need more warmth? Raise our seedlings in the warmth and light of natural growing seasons? Practice growing healthy plants so that soil can be changed less often, and reused?

Possibly, more books should be consigned to libraries rather than every collector owning many, or, at least be shared by those living in close proximity. Should we restrict our collections, to be more reasonable in our need for accommodation? Instead of a competitive attitude, should we restrict ourselves to the plants we grow best, appreciating other kinds grown better by fellow collectors?

An issue receiving a great deal of attention everywhere we turn today is *Conservation*. It would seem that all cactus and succulent journals and periodicals are printing articles and letters -- facts, suggestions and general controversy on this subject. Resolutions are passed, and pleas are made to all persons for awareness before it is too late. There seem to be two basic areas of debate -- who or what is the real danger to the survival of species, and what can be done about saving them. It is probably human to try to over-simplify the issues and come up with pat answers, meanwhile sitting back and sincerely believing ourselves to be "good guys". Another escape is to think that anything we could say or do is not worthwhile -- like one grain of sand on the shore. That does not stop us from caring, from taking an intelligent interest in the issues, so that when we are given a chance to take a stand, we are ready to do so. (To be continued). Courtesy of Mrs. Grace Rollerson, Editor, *CACTUS & SUCCULENT INFORMATION EXCHANGE*, Burnaby, B.C., Canada.

TCBS members who are corresponding with European cactus enthusiasts and hobbyists are: Ruth and John Zimmerman, Barbara Rogers, Hildegard Nase, Bill Pluemer, Josephine Shelby, and J.G. Gaston.

# AN S.O.S. TO CACTUS AND SUCCULENT LOVERS IN THE UNITED STATES

In 1973 the United States Congress passed the Endangered Species Act - Public Law 93-205. This "directed the Smithsonian Institution to prepare a list of endangered and threatened plant species, to review methods of adequately conserving these species, and to report the Institution's recommendations to the Congress." In the Continental United States, this list comprises about 10 per cent of the flora, 2099 species with 100 species recently extinct or possibly extinct, 761 species endangered and 1238 species threatened. There are 52 species of cacti and succulents commercially exploited in the Continental United States, 5 species of cacti extinct or possibly extinct, over 60 species of cacti and succulents endangered and over 70 species of cacti and succulents threatened.

This list of plants is only a beginning at getting to the problem of troubled plants. The Interior Department must publish a plant list before any action is afforded. Smithsonian and Interior Department are charging the government with "dragging its heels". The first botanist was hired only last May. Even when the list is published officially, it will only protect endangered plants from inter-state commerce. Meanwhile an estimated 25,000 cacti a week are removed from an area near Lajitas, Texas and sold to private greenhouses. Cacti are being stolen from the Big Bend National Park in Texas and from Pipe Springs Monument in Arizona.

Certain U.S. plant writers have made it a fad to have a large cactus as a decorative piece in their homes. What chance does a 40 or 50 year "Barrel Cactus" have for survival when plucked from its habitat, potted and sold by a florist? If YOU are interested in plants, cacti and other kinds, you must realize that their habitats must be preserved if many rare species are to survive. Please WRITE, urging support of this action to:

Your Congressman and Senators

Hon. Nathaniel P. Reed, Assistant Secretary for Fish & Wildlife & Parks, Department of Interior, Washington, D.C.  
20240

Also a letter of support to: Dr. Edward S. Ayensu, Chairman, Department of Botany, Smithsonian Institution, Washington, D.C.  
20560

Courtesy of Cactus & Succulent Information Exchange, Burnaby, B.C., Canada

## MAMMILLARIAS

Myrtle Ethington

During the month of February, many Mammillarias start blooming. Give them plenty of water from early spring on into early fall. Their spines provide protection, allowing them to take a great deal of filtered sunshine (with the exception of a few). Repot them every second year in a good porous soil with extra lime added for the white-spined ones. I use crushed egg shells. Mealy bugs are their worst enemy.

Haworth named them from the Latin word - *mammilla* (nipple). The spines are borne only in the areoles on the ends of the tubercles. The flowers appear in the axils of the tubercles in a circle near the top of the plant. This group of cacti holds great interest, due to a wide variety in the shape of the plants and their spines, plus the variety in the form, size and color of the flowers. *Mammillaria Gulzewiana* is not only a beautiful mam but has one of the largest and most beautiful flowers.

For more information on mams and their flowers, be sure to read a new book in our Library, "Interesting New Mammillarias", put out by the Mammillaria Society. References: C & S Journals.

CACTUS & SUCCULENT JOURNAL (U.S.)  
Vol. XLVII. 1975

Unfortunately, experience has shown that one last word on propagation is in order: propagate your own plants, not those in others' collections! Too many collectors see nothing wrong with taking cuttings from other collectors' plants, occasionally, even the whole plant, **without permission**, having somehow convinced themselves that this is not stealing. One hears collectors state with pride that they have never bought a plant, and with great rationalization convince themselves of the self-serving superstition that a piece of a plant has a better chance of growing if you "snitch" it. It is unfortunate for all of us that we tend to tolerate this sort of attitude in our associates, rather than letting them know that what they're doing is STEALING. Page 234.

## STATE CACTUS SALE ONE KIND OF STICKUP

Florence, Arizona - Ouch and double ouch! Bring along a lot of dough and a good pair of gloves if you're interested in the 873 items the State Land Department will auction on the steps of the Pinal County Courthouse here Dec. 12. (1975). Land Commissioner Andrew L. Bettwy says the state won't take a penny less than \$3099.99 when the auctioneer sings his call for: 28 saguaro cacti, 130 barrel cacti, 7 pin-cushion cacti, 209 yucca, 68 hedgehog cacti, 27 cholla cacti, 44 ocotillo, 60 sotol and 300 prickly pear. The plants, which will be sold only as a single package, are all located on land to be purchased by Arizona Public Service for a right-of-way. "It used to be that people would buy land for right-of-way and just go in there and push down the cacti and destroy it -- they didn't give a damn," Bettwy said. "But we don't do it that way anymore. That cactus has a value and we should collect for it. Arizona Public Service doesn't want it, but we had all the plants on that proposed right-of-way appraised, and if we don't get the price we're asking, APS will have to buy it whether they want it or not." The successful bidder will be required to remove the native plants. Removal of the cacti is required to accommodate the construction and operation of electric transmission lines and access roads by APS in Pinal County --Citizen, Oct. 24, 1975

Stella Macdonald, long-time, 1960's Tucson Cactus Club member, writes to CHATTER: "I brought only 4 of my choice cacti to California when I had to move to El Toro. I did not know where I would have to plant them. I have only a dinky little patio. I would not dare plant cacti outside the wall. Cacti are stolen all the time here. My golden barrels are beautiful. Mildred Ransler and Marge Spring (former Tucson Cactus Club members) call me ever so often. This surely lifts my spirits. I would like to move back to Tucson. I do enjoy hearing from Tucson friends." Stella Macdonald's address is: "The Timbers", 23333 Ridge Route Drive No. 7, El Toro, California 92630.

Lura and Lee Fuller attended the March meeting of T C B S - their first in six months. It was good to have them with us. Lura served many years as head of the mailing service for CACTUS CAPITAL CHATTER, assisted by faithful Lena Marvin. Lura has been on a strict rest schedule due to a heart condition. All of her cactus friends wish for her continuing and steady improvement.

## HARRISON YOCUM OF TCBS TEACHING A LANDSCAPE GARDENING COURSE

This course is being offered by Pima Community College, and permits each student to develop a landscape plan to meet his own needs. Emphasis of the course is toward low-maintenance landscaping, particularly with reference to native and introduced drought-resistant species, cacti, and rock gardens. These can attain a high degree of perfection in Tucson's salubrious climate. Cultural Maintenance and Propagation practices are stressed. Among subjects covered in this course are: portable gardens; use of plants in gardens -- color, texture, location of plants; plant combinations and arrangements. Selection of plants is brought forth, taking up the study of Trees, Shrubs, Vines, Lawns, Ground Covers, Flower Beds and Borders. And much more. Those members of TCBS who are taking this course can tell you how much they are learning from Harrison who is a talented and experienced horticulturist.

John D. Robbins. "I was fortunate to be home for Christmas and had a real nice time. Got to do a little exploring and found a colony of the beautiful Agave huachucensis growing some 15 miles west of Tombstone, Az. This is at least 40-50 miles from the next known locality, the foothills of the Huachuca Mtns. where it is widespread. I sure wonder how they got way over there." John gets out of the USMC on 6-4-76. He has promised to write a series of articles for CCC.

Pat Read (Mrs. C. P. Read) Surrey, England. "Thanks for the "CHATTER". It's most interesting. You live in such a lovely part of the world that I can quite understand how hard it must be to sit down to write letters."

### ANNUAL REPORT OF CACTUS CAPITAL CHATTER 1975

The 4 quarterly issues were mailed to the following: all TCBS members in Tucson and Green Valley; 6 foreign cactus societies; 16 individual subscribers; Cactus & Succulent Society of America -- 2 copies; 7 U.S. cactus societies; 4 desert museums and botanical gardens; 2 Arizona cactus societies; 3 University of Arizona departments: Library, Herbarium, Arboretum; 4 Tucson Public Library branches; variable numbers of complimentary recipients. **Cactus Capital Chatter** was mailed to these foreign countries: Ghana, Africa, New Zealand, Australia, Japan, England, Belgium, East Germany, Czechoslovakia, Canada. It was mailed in the U.S. to these states: California, Texas, Iowa, North Dakota, Pennsylvania, Wisconsin, Florida, Arkansas. Many recipients send us their compliments on what they consider the ever improving quality of our newsletter. Many have requested reprint permission to use our articles in their own journals and newsletters. This is a reciprocal courtesy among the various cactus publications.

TCBS member-written contributions increased, in the numerous reports and articles submitted. Many fine color prints illustrating one member's articles, continued to add quality to our newsletter. Its goal for 1976 is rededicating its efforts to gain higher quality and wider scope, in order to achieve its long established aim: "Continually striving to expand our horizons and content in the interest of cactophiles everywhere."

The content of **Cactus Capital Chatter** will include: (1). Increased member-reporting of personal experiences with plants. (2) Stressing highlights of 1976 activities of TCBS. (3). Special reports on cacticulture. (4). Reports of foreign cactus societies as well as CSSA affiliated ones. (5). Book reviews and summaries from publications of various cactus societies. (6). Pre-1977 CSSA convention reports. (7). Professional, semi-professional, and amateur articles about field trips to native cacti habitats, as well as other subjects pertinent to cactus interests. (CCC Ed.)

### IMPORTANT ANNOUNCEMENT

All TCBS members are invited and urged to turn in to CHATTER editor all news items appropriate for CHATTER -- steadily and promptly throughout 1976. (CCC Ed.)

### CACTUS SEEDLINGS IN STATE PARK

The Pima Cactus Preservation Group urges and practices conservation and reforestation of Arizona native cacti. During November 1975, Joe and Ethel Brick, Alan and Betty Blackburn, members, and Ed and Peg Busch, guest, planted 200 three year old *Ferocactus acanthodes* seedlings in Picacho Peak Arizona State Park. The Park Board gave permission to this Group to do this planting. The ground was ideally moist for planting which was attacked with pride, gusto, and ability. This trip was one of several made in the past three years to this location. Other previous localities in which this project has been in effect have been checked. Results are outstanding. *Echinocereus rigidissimus* cacti in the Coronado National Forest in the Santa Catalina Mountains are responding beautifully. Group members find fun and satisfaction in taking part in this project which will be of great interest to future generations. -- Joe Brick, Leader.

Persons interested in information about the Study Tour to Baja in May 1976, led by Dr. R. R. Humphrey of the University of Arizona should call him at 298-3732.

CSSA president, Leo Pick-off, urges all members of cactus societies to take an active part in all the affairs of their societies. We get so much more out of our membership. We make more friends; also, when we participate in activities. We will find out that it is better than merely occupying empty seats.

# NEWSLETTER OF TUCSON CACTUS AND BOTANICAL SOCIETY

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"CONTINUALLY STRIVING TO EXPAND OUR HORIZONS AND  
CONTENT IN THE INTEREST OF CACTOPHILES EVERYWHERE."

## PUBLISHED QUARTERLY

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### DANIEL T. Mac DOUGAL

Betty Blackburn

What do you know about the man after whom  
the following are named:

1. *Fouquieria macdougalii*: a tree ocotillo found along the road south from Nogales, Sonora, Mexico. Native Mexicans call it Jabonillo (little soap). The bark was found useful in washing woollen fabrics.
2. *Mammillaria macdougalii*: a small cactus found in Arizona.
3. *Populus macdougalii*: cottonwood of the Lower Colorado Valley.
4. *Terebinthus macdougalii*: the copal tree.
5. Mac Dougal Crater: 400 feet deep in the Pinacate Mountains in Sonora, Mexico.

Daniel T. Mac Dougal was born March 16, 1865 on a farm near Liberty, Indiana. His grandparents were from Scotland. He received a B.S. degree from De Pauw University and a Master's degree from Purdue University. In 1891 he began botanical explorations in Arizona for the U.S. Department of Agriculture. While on a plant collecting trip from Colorado to Sonora, Mexico his horse was stolen when he was in Flagstaff, Arizona. This misfortune

led to his meeting Godfrey Sykes of Boojum tree (cirio) fame. In 1904 Mr. Mac Dougal and Mr. Sykes explored the Colorado River to the Gulf of California. In 1903 the Carnegie Institute of Technology asked Daniel T. Mac Dougal to help organize the Desert Botanical Laboratory on Tumamoc Hill near Tucson. He remained its director from 1905 through 1928. While there, he was considered an authority on desert ecology. He made studies of and wrote about cycles in plant life due to weather.

He was an assistant professor at the University of Minnesota and worked at the New York Botanical Gardens. The University of Arizona honored him with an LL.D. degree. He retired in 1933. The "Grand Old Man of Botany" (as he was called) died at Pacific Grove, California, at age 92.

### TCBS WINNERS AT 29th ANNUAL CACTUS SHOW AT DESERT BOTANICAL GARDEN PAPAGO PARK PHOENIX

Ribbon Award Winners. 1. *Ariocarpus*. 1st - Mrs. Richard Wiedhopf. 10. *Gymnocalycium*. 3rd - Mrs. Richard Wiedhopf. Class D. Collections. 2nd - Mrs. Richard Wiedhopf.

# The Sonoran Desert

by  
Robert R. Humphrey  
Part III

## Ecosystem - What the word means and an initial example.

This little series on the Sonoran Desert makes no pretense of being exhaustive. If it were, it would also be exhausting to most of you and, in addition, would merely rephrase material already available from other sources. This would be particularly true if I were to attempt a complete classification and description of the vegetation. And here, I would again recommend, as I did in the first segment of the series, that the serious student refer to Shreve's very readable ecological analysis in Volume One of *The Vegetation and Flora of the Sonoran Desert*.

As an alternative to a probably boring complete classification of the vegetation, I shall jump around from place to place and talk informally about what I have seen as some of the distinctive and most interesting of the desert's sub-ecosystems.

The term "ecosystem" had not yet been coined when I went to school; instead we thought "ecosystematically" but talked in terms of "communities", "sites" and "habitats". These terms still have a place and are still in common usage. To them, however, has been added the very useful and even indispensable concept of an ecological system, or "ecosystem". And the mere fact that we now have this word tends to focus thought on a "system" of which the plants and animals are merely components.

I find it easier to explain the concept of ecosystem than to define it in non-technical terms. Therefore: an ecosystem is a site, a locality, a habitat, an area - where a similarity of physical factors results in a more or less homogeneous biota, or community of plants and animals. The organisms, both plant and animal, not only affect each other but are affected by all facets of their physical environment. As a result of their growth, maturity, death and decay, some aspects of the habitat or environment are also changed, bringing about physical changes and in turn, subsequent changes in the biota.

When we put these ideas together we find that an ecosystem is an ever-changing or dynamic situation that includes both the plants and animals, the physical habitat, and the actions and interactions that these have on each other and consequently on the biotic community and habitat they represent. Thus, an ecosystem is not just a group of plants and

animals in a particular habitat, it is a combination of these and their effects on each other, producing a combined biotic-abiotic unit.

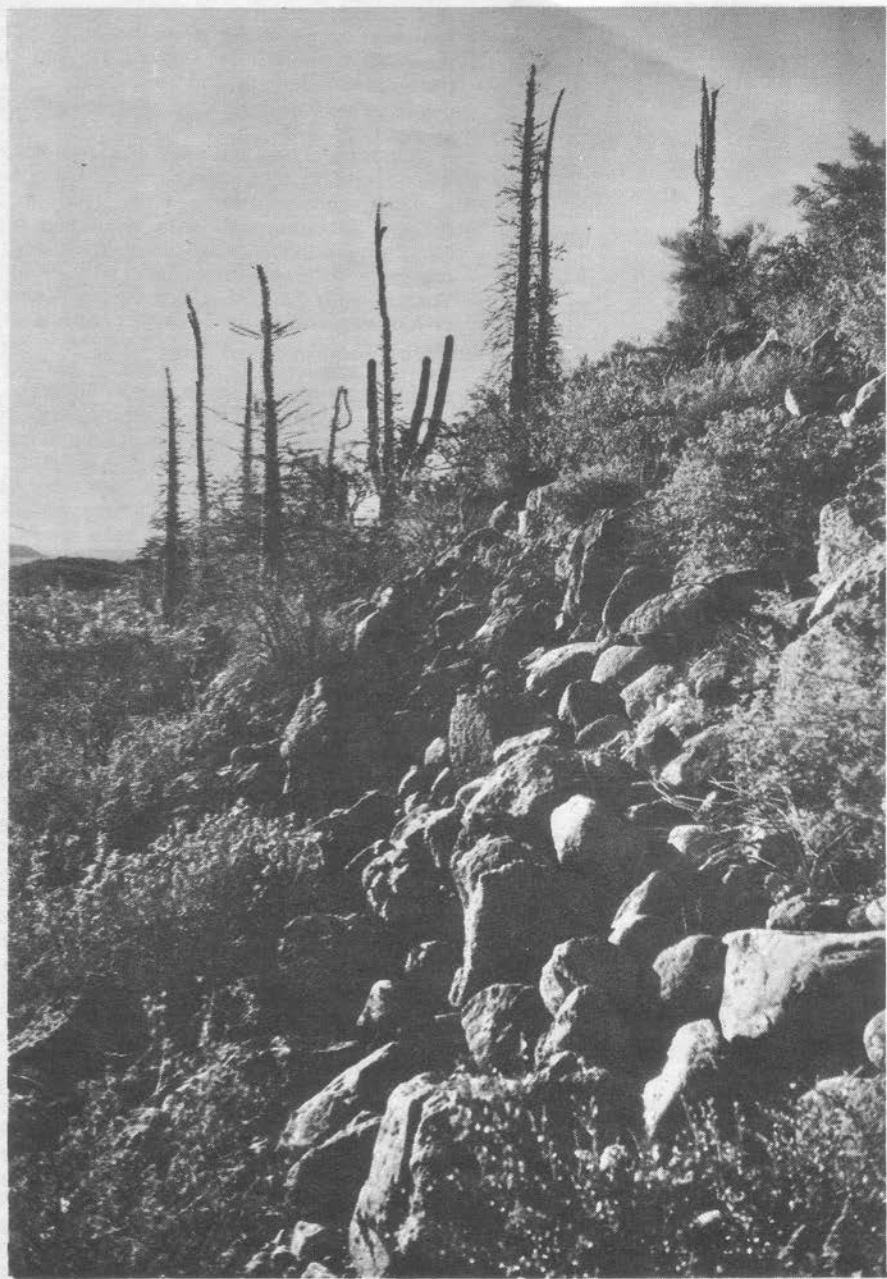
Perhaps a few examples may help to clear the water. The entire Sonoran Desert, characterized as it is by certain broad physical and biotic features, is one large ecosystem. This, however, can be broken down into many smaller or "sub" ecosystems, each with its own particular combination of species and physical characteristics. We usually recognize these as specific kinds of plant communities as, for example, a creosotebush community; a palo verde-bursage-sahuaró community, etc. Each of these, however, has its own distinctive flora and fauna because each also has specific physical factors that favor the establishment and survival of particular species of plants and animals.

## The Sierra Bacha Coastal Ecosystem

An ecosystem may be named for its dominant plants (or animals) or it may be given a geographical place name. There are valid reasons for each of these two alternatives but in the present instance I am using place names. Thus I am calling this particular subsystem after the Sierra Bacha, a low mountain range where it occurs. And since it occupies an area near the coast it logically becomes the **Sierra Bacha Coastal Ecosystem**.

Fly some 120-150 pelican miles southeast of Puerto Peñasco in Sonora, Mexico to the small coastal town of Puerto Libertad. From there you will be able to see, some six miles beyond, a jutting headland that plunges steeply into the Sea of Cortez. This is known locally as Punta Cirio or Cirio Point, so-called for the cirios or bogiums that occur here and for a few miles further south.

The Sierra Bacha coastal ecosystem extends southeasterly close to the coast from Punta Cirio for about 30 miles almost to the small Seri Indian village of Desemboque. The characteristic plants occur as a sort of fragmented discontinuous community that apparently requires the tempering effect of the adjacent sea. Low rainfall, high temperatures and shallow soils combine to provide a harsh habitat where it is difficult for seeds to germinate and, even more important, for young seedlings to become established. Many years may pass, for example, when no cirio seedlings survive. Even then, the few that do live are found almost invariably on north-facing slopes of this desert mountain range where the hot rays of the sun are less direct than on other exposures



*Boojums growing among basalt boulders near  
the southern end of the Sierra Bacha.*

The Sierra Bacha coastal system, being a part of the very extensive Sonoran Desert ecosystem, has physical and biotic characteristics that are, for the most part, similar to those of the Sonoran Desert. Thus, both have an arid climate with most of the precipitation occurring in the summer and winter seasons. Temperature during the spring, summer and fall is high and relative humidity is low.

Two major climatic characteristics appear to distinguish the Sierra Bacha coastal system from the encompassing Sonoran Desert. These are the extreme aridity and higher humidity of the coastal system where mean-annual precipitation is less than 5 inches and relative humidity is abnormally high. This apparently anomalous situation derives from the proximity of the area to the Sea of Cortez. The temperature of this large, deep body of water changes little from one month to the next and, for practical purposes can be said not to vary at all from day to night. Because of these constant temperatures that contrast markedly with those of the adjacent land, the coastal area has specific wind-direction and consequent relative-humidity characteristics. Although these are most in evidence during the warm-season months when there is the greatest difference between daytime land and sea temperatures, this daily pattern of air movement from sea to land and back again is maintained yearlong. This results from the fact that warm air rises and cold air falls or flows downward, a feature that manifests itself along the coast of Sonora as an on-shore breeze as the land warms up during the day and an off-shore breeze as it cools during the night.

The moisture-laden wind from the water, coming as it does during the heat of the day when water stress for plants is greatest, is often quite literally a life saver for the vegetation but most particularly for seedlings, with their weak and inefficient root systems. Such a daily bath of moist air would benefit the Sonoran Desert anywhere, but in this particular area where rainfall is only about half that of the larger ecosystem, it is particularly essential.

For the last three years I have obtained a continuous record of precipitation, temperature and relative humidity at four locations near Punta Cirio. During part of this same period I also collected similar data at our home in Tucson. The entire record is extremely interesting but one random fragment of it illustrates the relative humidity story.

I selected the record sheet for May 1975: May, because this is one of the months when any reduction of moisture stress might be

highly critical; 1975, because the sheets for that year lay on top of the pile and were the first that came to hand. In order to compare the relative humidity at Punta Cirio and Tucson I tabulated the high and low records for each day at the two locations and calculated the average for each.

The differences between the two locations were found to be striking. Punta Cirio had an average high relative-humidity reading of 61 percent as contrasted with a Tucson high of 39. Comparative average daily lows were also markedly different: Punta Cirio with 27 percent; Tucson with 12. On a day-by-day basis only twice was the high Tucson reading greater than that on the coast, and in every instance the low readings for the coastal station were higher than for the same day in Tucson.

The vegetation of the Sierra Bacha coastal ecosystem is made up of a scattered stand of medium-size trees and columnar cacti interspersed with smaller shrubs. Both the species and their relative abundance vary widely from site to site depending largely on whether exposures are north- or south-facing, or whether soils are comparatively shallow or are deep and alluvial as in the major drainages.

In general the tallest and most conspicuous plants are the curious boojum or cirio (*Idria columnaris*), the massive cardon cactus (*Pachycereus pringlei*) and its more slender cousin the sahuaro (*Carnegiea gigantea*). Also, abundant and conspicuous, although not as tall, we find the evanescently golden-flowered foothill paloverde (*Cercidium microphyllum*); ironwood (*Olneya tesota*) with its pale lavender blossoms; that hoary headed relative of the organ-pipe, the senita or garambullo (*Cereus schottii*); and that widespread relative of the cirio, the ocotillo (*Fouquieria splendens*). Interspersed between their taller neighbors occurs a variably abundant mixture of comparatively low-growing shrubs. Some of these, such as creosote-bush (*Larrea tridentata*) and brittlebush (*Encelia farinosa*) bursage (*Ambrosia deltoidea* and *A. dumosa*), teddybear cholla (*Opuntia Bigelovii*) and jojoba (*Simmondsia chinensis*), are also common in the northern Sonoran Desert and southern Arizona and are well known to most of you. Some of the others, with a more southerly range, may not strike a familiar chord. For example, the shrubby cliff spurge (*Euphorbia misera*) that leaks a milky juice on the slightest touch, or the gray-barked matacora (*Jatropha cuneata*) that looks so like the cliff spurge but has instead of a milky sap, a clear juice that soon darkens after a short time of contact with air. Both of these resemble the ocotillo in that they lose their leaves on the slightest



suggestion of drought and grow a new crop even more rapidly after a rain that moistens the soil to a depth of only 3 or 4 inches.

The only way that one can truly get to know an ecosystem is to become a part of it by experiencing it in all its various moods, day and night, season by season and year after year. Any description of its various parts: climate, rocks, soil, plants, whatever, lacks the feel and the ever-changing moods of this or any ecosystem. Good pictures help but even these only show particular sites or things and they too, lack that all-essential feel and can capture but a suggestive few of its infinite moods.

My wife, Roberta, and I have absorbed some of the intangible feel of Sierra Bacha during the years that have passed since we first ventured down to Punta Cirio in a Model T Ford in 1930. Later, we returned spasmodically for many years as time permitted. The visits became more frequent and lasted longer during the period from 1967-72 while we were collecting data for *The Boojum and its Home*. Finally, during the last 3 years we have returned without fail every 30 days to collect data on the climate of the area and its effect on plant development. Down through the years we have developed a growing feel for this particular ecosystem and its endless moods, its vegetation and the more visible of its animals. We have also come to know its weather, from the chill of a winter day before sunrise to the oven-like midday heat of mid-summer or the rare but blessed drenching of a summer rain. We have not changed this particular ecosystem but as we have become more and more a part of it, it has changed us.

## MESEMBRYANTHEMACEAE L.

(Aizoaceae, Ficoidaceae)

James A. Robbins

A family of the plant kingdom with perhaps the longest name, 19 letters, with the relatively simple meaning of, pistil in the middle. It was formerly spelled, *Mesembrianthemum*, with the meaning of "midday flower", but as some bloom in the morning, afternoon and many at night, the name was changed. The family is composed of mostly succulent plants of which 99% are found in South or Southwest Africa; the other 1% are found in coastal areas of Australia, New Zealand, Mediterranean area, Canary Islands and the western coasts of Chile and California.

Plants of the Aizoaceae, as they were first known, have been studied as long ago as 1652 and came into cultivation about then. Some

who worked with them were Prof. Paul Hermann, Richard Bradley, Andrian Hardy Haworth, Alwin Berger, Dr. N.E. Brown and Dr. H.M. Louisa Bolus. Dr. Brown was one of the first to start to separate the large genus *Mesembryanthemum* into many smaller units. This division was carried on by Dr. Bolus, Prof. K. Dinter, and later Prof. Dr. G. Schwantes. Still later workers in this field were Dr. Marloth, Prof. Nel (Lithops), Jacobsen, "(Vol. III, A Handbook of Succulent Plants" and the most recent English Edition of his "Succulent Lexicon"). Volk, Prof. Desmond Cole (with his recent revision of the genus *Lithops*), and Rawe (with his revision of the genus *Conophytum* which is going on right now in the "American Cactus and Succulent Journal, Vol. XLVII, 1975"). Probably, though, we owe most of our present day knowledge to that grand old man of succulent collectors, Hans Herre, former curator for many years of the gardens at the University of Stellenbosch in South Africa. His many expeditions to the little known parts of South Africa increased the number of genera and species hitherto unknown. His book, "The Genera of the Mesembryanthemaceae", printed in 1971 is a beautiful work of art as well as a tribute to his vast knowledge of these plants. His kindness to collectors everywhere, (including the author), with information, and many seeds is well known. Another collector to be mentioned here is Harry Hall, formerly of Kirstenbosch, S. Africa, who also gave of his time and seeds and plants.

Most of the Mesembs., (the shortened name is most often used) are perennials with a woody rootstock and highly succulent leaves. There are a few annuals but most are of little importance and will not be discussed here. The family consist of roughly 125 genera and about 2,000 or more species.

Family characteristics are:

1. **Showy petaloid staminoids**, ie, there are no true petals but merely modified stamens that look like petals.

2. **Inferior ovary**, ie., the ovary is below the stamens, pistil and other floral parts.

3. **Hygrochastic capsule**, ie., closed fruits (capsules) that open on wetting and close on drying. Seeds are ejected by the kinetic energy of rain drops which propels them some distance from the plant. Seeds start germinating rapidly, usually within 24 hours and 98% will have germinated within one month. Seeds of the "Fig Marigold" (the common name) have a long viability, as much as ten years.

4. **Gynaecium** consist of three to many carpels.

5. Also can be divided by pollen morphology and the number of chromosomes which is  $n=9$ .

The family is divided into two sub-families according to the attachment of the seeds to the wall of the capsule.

I. **Aptenioideae** where the seeds are attached to the central wall of the capsule. Genera in this sub-family are *Aptenia*, *Dactyloopsis*, *Scletium* and some 16 other genera with some annuals as well as perennials.

II. **Ruschiodeae** with the seeds attached to the basal as well as the outer wall of the capsule. This sub-family has those genera most collectors are interested in, i.e., *Lithops*, *Conophytums*, *Faucaria*, *Pleiospilos*, etc. and about 100 or more genera.

### GENERAL CULTIVATION

Discussion on soil, pots, watering and position, etc. will be considered.

#### 1. Soil

I use sand, such as river sand, as long as it is not too fine. Usually one to three parts, depending on the plant. This will be explained under individual genera. Leaf Mold is the other constituent most often mentioned but being hard to find, I use a commercial potting mix called "Baccto" which is put out by Michigan Peat, Box 66388, Houston, Texas, 77006. In my mixture I usually use one part.

#### 2. Pots

The square plastic pots are good and the small bonsai pots can be used. For the highly succulent genera, clay pots are best with which I use just a slightly heavier soil mix. Drainage seems to be very important, i.e., when watered, the water should not stand but drain through quickly. Mesembs. do not need repotting very often as their demand on the mix is very slight. I repot mine every 3 to 5 years. Try to do the potting when they are flowering or showing new growth or new leaves.

#### 3. Watering

In general, watering of most genera can start in late August or early September when plants start to show flower buds or new leaves. For some species it varies but can usually be started at this time. When watering, give the plants a good soaking then let dry out. In Arizona this takes about one week. When resting, most start around the end of February or first of March; the schedule is cut down to once every two weeks or once a month. With

some of the highly succulent ones (see under individual genera), I use a 1 or 2 ounce rubber ear syringe and apply a little water to the outer edge of the pot, just enough to keep the roots from drying out. I have also started using a fogger attachment, (Fogg-It Fine, IGPM., Fogg-It Nozzle Co., P.O. Box 16053, San Francisco, Calif., 94116), on the garden hose. This gives a fine fog-like mist from which the plants can obtain some moisture much as it is in their homeland on the extremely arid west coast of South Africa. Those planted out in the ground and established can take some supplemental water during our dry hot summer months before our monsoons of July and August arrive. If not sure, it's best to delay water for at least a few days because a perfectly resting plant can go a long time without watering, and if watered too soon, it can turn into a gooey mess overnight.

#### 4. Position

In Arizona it is best to give some shade during the hottest part of the day. In their homeland they are often found in the shade of small rocks, grasses or where they can withdraw down into the soil with contractile roots. They will take considerable sun if actively growing, and the color of the leaves is better, too.

#### 5. Fertilizers

Actually Mesembs. can be grown without any fertilizer as they take so little out of the soil. When the new leaves start growing they utilize the water from the old outer leaves, which dry up and form a protective covering over the young leaves. At the start of the growing season a solution of *Sodium Phosphate*, either *mono* or *di*basic, using 3 grams to 1000cc, can be applied at two week intervals for three or four times. This chemical has no nitrogen so no lush growth is produced but it does help in forming new leaves and flowers.

#### 6. Pests

Sometimes red spider mites or root meemies attack the Mesembs. but these can usually be controlled with one of the systemic sprays. Otherwise, depot the plant and cut the roots way back, then reroot in new soil in new pots or sterilized old ones. Occasionally birds and grasshoppers take a liking to some of the plants but if you feed the birds and kill the hoppers they are easily kept from doing too much damage.

## 7. Air

Possibly this should come under the heading of position but I believe that it is of enough importance to be considered by itself. I have noticed, over the years, that if I am going to lose plants it usually occurs in August and September. This is time of year that we have the hottest temperatures and the cold frame I keep some of my plants in doesn't have a free flow of air. All other things considered this is the only thing I can think of that might cause the plants to rot. Especially since watering increases the moisture content of the air and bacteria and fungus can proliferate. It is very true with Mesemb. seedlings that within two or three days after germination, any cover used to aid in germination should be completely removed.

### Cultivation of some individual genera of the Mesembryanthemaceae.

In my collection, which started in 1949, I have over 25 genera and more than 200 species of Mesembs. The following notes are from observations made during that time. I must say here that my losses have been more than my successes, or at least my card file indicates this. It has only been during the last ten years that my losses have come down considerably.

1. *Aloinopsis*

Dwarf tufted plants with tuberous rootstocks. Use a deeper pot. Flowers January thru March. Growth starts around this time. Mine are planted out in the rock garden and have taken frost down to 14 degrees F. Here in Sierra Vista we have about 100 nights a year it frosts as we are at an altitude of 4,600 feet. We also have from 7 to 11 inches of snow per year.

2. *Argyroderma*

I have had very limited success with these plants. Growth and flowering seem to start in the fall. Probably clay pots with very porous soil mix should be used and water only when new growth or flowers appear. By February, water should be in the form of mist or small amount to outer edge of pot.

3. *Bergeranthus*

Flowers December thru March and sometimes in the fall. Growth should be rested for few months in winter.

4. *Bijlia*

Growth starts in October with flowers shortly after. Will take considerable water when growing. Needs resting period starting in March.

5. *Cheiridopsis*

Flowers January thru March. Growth can be off and on the year round especially with those in rock garden. Usually starts in October when in pots. Some plants hardy to 14 degrees F.

6. *Conophytum*

Small succulent plants which can be cone-shaped, (thus the genus name) cylindrical with windows, or bilobed. This lovely group should be more widely grown. I have 45 species in my collection from ten years old on down to one year. One clump of *C. minutum* has over 100 heads. These plants on the whole will take a heavier soil, (equal parts), and more water. Flowers start appearing in the latter part of August, and usually are finished by the first part of November. Growth starts showing thru the old leaves about the month of January and continues thru March. Rest for at least 6 to 8 weeks, giving small amounts occasionally of mist, or water to outer edge of pot. Water heavily when growing. *Conophytums do not* do well planted out in the ground.

7. *Dinteranthus*

One of my favorites, as the plants look unreal, i.e., as if carved out of stone. Flowers start appearing the middle of August and continue thru the first part of November. Use a soil mix of about three parts sand to one part Bacto. Plant in clay pots and under-water at all times. I have 4 of the 6 species and most of them live about three to five years with me., although one plant of *D. microspermus* I have had for seven years. At least one of the species, *D. puberulus*, grows well in the rock garden and didn't freeze until the temperature went down to 6 degrees F. one night last winter. Lovely plants well worth the effort it takes to keep them alive. When my plants flower, I often take them to work, (at the pharmacy), and *Dinteranthus* always causes people to stop and look and exclaim in wonder, "Are those really plants?".

8. *Faucaria*

An interesting genus of about 33 species with succulent leaves that have cartilaginous edges and often stout awn-shaped teeth along the margin, that look like gaping jaws, hence the genus name. Quite often *F. tigrina* or *F. tuberculosa* are among the first Mesembs. a collector gets. Those in the rock garden start blooming in August and continue (in pots) up into November. Growth starts any time after blooming and seldom are these plants lost to overwatering. Most are hardy down to 14 degrees F. and some down to 6 degrees F.

9. *Fenestraria*

Flowers can appear from end of August up thru the end of January but on the average they appear in November. Rest from March onward for several weeks. Will take quite a bit of water when actively growing. Not hardy.

10. *Frithia*

*Frithia pulchra* the only plant in the genus which is stemless with alternate windowed leaves and pretty reddish-purple flowers. Use plastic pot with equal parts of sand and

Baccto, then add some more sand. Place the base of the plant in a top dressing of pebbles so that it is not touching the soil. The two plants that I have had for the past five years have bloomed in the following months; May, June, August, October, November and December. New leaves appear January thru March.

#### 11. *Gibbaeum*

A genus of 21 species that, with me, has proven impossible to grow. The only member of this genus I have had any success with at all is *Gibbaeum heathii*. One plant was in my collection for 7 years that I raised from seed. This was planted out in the rock garden and the following observations are based on that plant. Flowers appear in April and new leaves January thru April (one time in September). Hardy to 14 degrees F. I would like to know more about the cultivation of these plants as most are outstanding in appearance and flowers.

#### 12. *Glottiphyllum*

Flowers appear September thru December. New growth anytime after that. This genus appears at its best when potted in clay pots with a very porous soil mix, (3 parts sand 1 part Baccto), and watering kept to the very minimum. If watered too heavily, these plants tend to lose their characteristic form and become leggy and unnatural in appearance. *Glottiphyllum oligocarpum*, is in my estimate, one of the most beautiful plants that God made.

#### 13. *Herreanthus*

*H. mereri* is the only plant in this genus. A lovely plant with Argyroderma-like epidermis and scented white flowers, that once open remain open day and night for two weeks. Buds appear in late October and blooms open from November 15th thru the 30th. New leaves appear in February or March. Water should be withheld from May thru June or thereabouts. Lovely Plant.

#### 14. *Lapidaria*

Another beautiful plant that is monotypic, i.e., only one species in the genus, *L. margaretae*. Yellow flowers appear from the end of September up thru the end of October. Porous soil but plastic pots are O.K. Keep water at a minimum. New leaves start showing from January thru March.

#### 15. *Lithops*

These interesting South African succulents have been cussed and discussed in great detail, even a whole book has been written about them. In my collection I have 22 species, 7 varieties and 1 duplicate. *L. localis* (*L. terricolor*), raised from seed 21 years ago, has been planted out in the rock garden for the past 18 years. *L. salicola* and *L. turbiniformis* have been planted out in the ground for nine

years. Along with others, they have withstood temperatures to 14 degrees F and some even to 6 degrees F. *Lithops* can be planted in plastic pots with a fairly porous soil mix and watered heavily during their growing period, from August up thru February. Plants in pots should be planted up higher than those in the ground. Those in the ground can be planted down to their leaf tops. Flowers appear from August to November, except *L. optica* var. *rubra* which flowers in December or January. Very interesting and fascinating plants. For an up to date list on *Lithops* see Dr. Desmond Coles Checklist in "Excelsa, No. 3, December 1973".

#### 16. *Mitrophyllum*

Very touchy genus. Use porous soil and plastic pots. Growth starts in September and is over with by first of March. NO WATER at all from March thru September. The leaves can be fogged with a spray once every two or three weeks. I have three species, two for five years and one for four years. As yet they haven't flowered for me. Plants have an interesting type of leaf growth as they form two types of leaves each year, (heterophylly) Difficult but worth the extra care they take.

#### 17. *Nananthus*

Dwarf tufted glabrous plants with tuberous rootstocks. Use deep pots and somewhat porous soil. Water when new growth shows, usually in December to January. Flowers from January thru March. Easy plants if not overwatered. Will take temperatures down to 14 degrees F.

#### 18. *Oscularia*

Shrubby plants that are easy to grow. Medium soil with lots of water from September thru February. Tender below 25 degrees F.

#### 19. *Stomatium*

Minature plants that are highly succulent and somewhat resemble *Faucarias*. Flowers are straw color and open at night. Some have withstood temperatures of 14 degrees F. Easy to grow in medium soil mix and plastic pots. Growth starts in January and often continues right on thru the summer.

#### 20. *Titanopsis*

Short-stemmed, very succulent perennials with spatulate leaves, the ends covered with raised pustules containing calcium. These plants, when withdrawn into the soil, greatly resemble the tufts of limestone, among which it grows. Use porous soil, plastic pots and minimum amount of water to keep them looking natural. Flowers December thru March. New leaves appear in summer. I have had one plant of *Titanopsis calcarea*, (that I raised from seed), for 23 years. It has done well in the rock garden for 20 years. Very interesting group of plants and quite hardy.

## 21. *Ophthalmophyllum*

Highly succulent plants somewhat resembling Lithops on the one hand and Conophytums on the other. I have five species and three duplicates. Flowers start appearing in September and bloom thru October. Most are white, some diurnal, others nocturnal. New leaves appear in March. My favorite plant is *O. rufescens* with its red windowed leaves and fragrant white nocturnal flowers. This plant of two heads has won four blue ribbons and one red. Use clay pots, porous soil and only water when blooming or showing new growth.

## 22. *Pleiospilos*

Blooms August to December. Hardy to 14 degrees F. Of easy culture. *P. nelii* blooms in March and is only hardy to 28 degrees F. Medium soil, clay or plastic pots and lots of water when flowering or showing new leaves.

## 23. *Vanheeridia*

Very succulent plants of diversified leaf forms. I have two species in my collection. One, *V. divergens* looks like a fat Cheiridopsis, while *V. primosii* looks like a windowed leafed Lithops. Use plastic pots with porous soil and water only when flowering or showing new leaves. New leaves appear in March while flowers appear in May. *V. divergens* is hardy to 14 degrees F.

This covers some of the genera in my collection that I have personally watched over a period of years. I hope these notes will be of some use in the growing of these wonderful plants. Lots of T.L.C. is needed but is well worth it. After all we talk to our plants and the molecules of *heme* (hemoglobin) and chlorophyll differ only slightly in their configuration, one having iron, the other having magnesium.

I would like to end this article with a quote that covers my feelings about these beautiful mimicry plants. It expresses my feelings about raising them and enjoying their diversity.

Psalm 96:12 - "Let the field be joyful and all that is therein; then shall all the trees of the wood rejoice."

## UA STUDIES FEASIBILITY OF FEEDING GOURD TO CHICKENS

A research team at the University of Arizona is working on the feasibility of feeding chickens the wild buffalo gourd native to Arizona, as a way to reduce feed costs. This gourd is a good source of high-protein feed that is readily eaten by poultry. It can be grown without any irrigation in areas of raw desert. The more moisture the plants get, the bigger the gourds get.

## SPRING SAFARI TO ARBORETUM

Agnes Daniels

How fortunate our Tucson Cactus and Botanical Society is, to have two members like Peg and Ed Busch to make tour and bus arrangements for the members to see the Boyce Thompson Arboretum.

On March 27th by 8:15 a.m., 27 members arrived at Randolph Park with lunch and cameras in hand, ready to catch the bus. By 10:00 a.m. we were in front of the Arboretum Visitor's Center, deciding which direction to look first. Most of us visited the greenhouses with their exotic cacti and succulents and the cacti and plants in pots which were being studied for adaptability to our desert environment. At noon we enjoyed lunch in the well shaded picnic area.

About 1:00 p.m. Dr. Carol Crosswhite met us and started our guided tour of one and one-half miles past Ayer Lake, around Magma Ridge, past Picket Post House, with Queen Creek bordering our trail. Plants were grouped according to type, and some of us were finally able to identify plants growing in our gardens. There were plants from all over the world that had adjusted to the desert. Dr. Crosswhite not only explained each one but also the geology of the rocks, Magma Ridge and Picket Post Mountain. It was interesting to note how the types of cactus varied from one side of Magma Ridge to the other because of sun and temperature differences. In the palm area we quieted down so that all of us could see the rabbit-eared owl watching us at a safe distance. We also investigated a pioneer home practically built into the mountain side. No thanks, I prefer a microwave oven.

Back at the Center, Dr. Crosswhite showed us some of the experiments in plant propagation. From there, we collected the plants that had been made available to us for sale by the Arboretum. Then back to the bus. The trip there was made via Florence Highway, returning by way of Hayden and Winkleman - all cactus country.

Roger Dean took 56 slides of cactus to be shown at a future meeting. Again, our sincere appreciation to Peg and Ed Busch for a memorable trip.

## AREA OF DESERTS

Deserts constitute about 8 million square miles, or 14 per cent of the Earth's land surface. Most of the world's deserts occur in two subtropic girdles that touch or straddle the Parallels of Cancer and Capricorn.

**Do or Die!****Conserve our National Resources Now!**

The I.O.S. (International Organization for Succulent Plant Study) at their Congress in 1974 set up a committee to advise members (and thereby concerned persons generally) "how best they can support the conservation of succulent plants". This Committee has summarized its recommendations in a '**Code of Conduct**' for collectors and growers.

Quoting D.R. Hunt of the Royal Botanic Garden, Kew, writing in the American C & S Journal, May-June 1975, "Many of the suggestions in the Code counsel restraint on the part of collectors in the field and at home, to curb the unnecessary exploitation of wild plants. Although the damage done by collectors in the field, and by all of us who create the demand for wild plants, is small in comparison with the amount of plants, or whole habitats and ecosystems, lost to agriculture, afforestation, grazing, new roads, towns, industrialization, etc., we are highly *selective*, which these other factors are not. Cases are known of populations being decimated or even wiped out by *greedy collectors*. On the credit side, of course, a collector can occasionally be instrumental in saving a species, but more commonly we are the *unwitting agents for the destruction of the plants we most cherish*. Rather than continue to import quantities of plants from the wild, we should *aim to become successful propagators*, and indeed it is very heartening to see that nowadays more nurserymen are concentrating on raising from seeds and cuttings. Controlling trade in wild plants and increasing nursery propagation are ways in which the threat over some species of succulents can be lessened."

The '**Code of Conduct**' was printed in the May-June 1975 issue of the American Journal, on page 138.

Supporting any legislation passed by our government to protect and conserve plant life in its natural habitat is something which every one of us can do. We were recently sent a copy of a resolution passed by the Cactus & Succulent Society of Detroit, citing legislation passed by Congress of the U.S.A., the Endangered Species Act of 1973, "which law vests broad powers in the Secretary of the Interior; provides for cooperation with the states; specifies penalties for enforcement purposes; and authorizes and appropriates sums of money for carrying out these responsibilities, including a land acquisition program". The Smithsonian Institution produced a technical report outlining what should be done. We are told repeatedly that we should write to our Congressmen or our Members of

Parliament and let them know what we as individuals feel. This is something which every one of us can do. We should also familiarize ourselves with the 'Code of Conduct' of the I.O.S. and apply it to our own actions as collectors.

— Courtesy of Mrs. Grace Rollerson,  
Editor, CACTUS & SUCCULENT INFORMATION EXCHANGE Burnaby B.C. Canada.

## **TUCSON CACTUS & BOTANICAL SOCIETY'S 1976 DISPLAY**

John B. Hales

The Tucson Cactus and Botanical Society held its Fifth Annual Cactus and Succulent Show May 1 and 2, 1976 at the El Conquistador Shopping Center Mall in Tucson. Record crowds surged around the display tables at all times, beneath the Rotunda Area where sunlight filtered thru, casting its charm on the many specimen plants exhibited. Approximately twenty-five exhibitors brought in 274 potted cacti and succulents, which were arranged, to a degree, according to family groups. This was not a juried show and all plants were labeled so they could be identified from a distance; this eliminated a lot of hovering over the plants. Fifty-six *Mammillarias* were counted with possibly 90% of them flowering for the occasion, creating a rainbow of colors of superb quality.

A few admirations, I shall comment on; any omissions are due to lack of space and not to partiality:

*Mammillaria pygmaea*, a small clustering pincushion of 50 heads with tan-creamy flowers.

*Mam. zeilmanniana*, attractive 25 heads with purple blossoms.

*Mam. bocasana*, the Powder Puff Cactus, 7 heads of yellowish-white flowers with a red midrib and tip.

*Mam. baumii*, a huge clump with yellow flowers.

*Mam. schiedeana*, very soft textured with 17 heads with white blossoms, the golden-yellow spines giving the plant a frilled appearance.

Also, a *Mam. nivosa* with last year's fruit of 18 heads. Very spiny with dense white wool in the axils.

*Mam. standleyi*, 10 in. high, full of buds and reddish-purple flowers.

A huge *Mam. elongata cristate* filled an 8" pot nicely. Its spination is golden star-like.

*Mam. prolifera*, in bud and heavy with last year's fruit. A beautiful clump of some 40 heads.

*Notocactus tabularis* with a single lemon-yellow flower.

The **MOST OUTSTANDING CACTUS** was *Notocactus aprieus*, with 45 heads mound-shaped nicely potted

*Gymnocalycium venturianum* with 7 beautiful red flowers.

*Gym. triacanthum* & *Gym. gielsdorffianus* in yellow flower seldom seen displayed, from Lamb's Collection in England.

*Gym. Saglionis* var. *variegata* 5" in diameter. Another jewel.

A graft, *Coryphantha nelliae*, some 30 heads in bloom and in bud.

*Aylostera Helliosa*, a 40 headed cluster with dark-orange flowers.

*Neoporteria subgibbosa*, with 7 pink blossoms.

Two *Parodia mutabilis*, in yellow flower and last year's fruit.

Three huge flowers on "A Texas Rainbow Cactus" (*Echinocereus dasyacanthus*)

A crested *Mammillaria zeilmanniana*, 8" across in flower.

*Haworthia fasciata variegata* var. *alba*. two rosettes with pups.

*Aloe aristata* with flower stalk in bloom.

The **MOST OUTSTANDING LEAF-SUCCULENT** was *Aloe dichotoma*, 4 ft in height - an excellent specimen.

Two large *Euphorbias splendens* in bloom added color to this display of (13) entries.

*Euphorbia bupleurifolia* with leaves - always an attraction.

*Euph. horrida*, a clump of 12 branches.

*Euph. tirucalli*, a small tree type - a mass of thorns.

A bowl of *Rheo discolor purpurea* in flower (wandering Jew)

A lush three-headed "climbing onion" was *Bowiea volubilis*.

Many other entries should be mentioned: *Columnar cereuses* - hanging baskets - dish gardens - two Hoyas on trellis - a *Bursera microphylla*.

The novelty of the show was a "Stuffed Saguaro" potted; crazy-quilt design and a "Not For Sale Sign" attached. The artist is an aunt of Betty Blackburn.

It is at this time that TCBS members hold their Annual Plant Sale. Twenty display tables in (4) divisions surrounded the Show Area, giving a good representation of the "Cactus & Succulent World of Plants". Featured were a great variety of small potted plants of various sizes and age; cuttings of cacti and succulents of all kinds; excellent potted specimens. Many could be ready for next year's show. A grand display for beginners and also the serious collector at bargain prices.

The chairmen for the show were Dick Wiedhopf for plant exhibits and Nancy Clark and Myrtle Ethington for plant sales. All in all it was a "BLOOMIN' GOOD SHOW". All participating members should have a feeling of

pride and satisfaction in making this show the best ever and a grand success. My trip to Tucson was very eventful with nice experiences to be long remembered.

## PROPAGATION OF CACTI & SUCCULENTS

by

T. C. B. S. Members

All the below (6) various types of propagation were properly illustrated making this **Educational Display** very informative, and assisted the volunteers in answering the many questions from John Q. Public.

- 1.-Root Cutting from Aloe - Agave - Yucca were displayed.
- 2.-"Plantlets" - propagation from leaf. A plastic container planted for this purpose was very attractive.
- 3.-Pups. Also known as **Offsets** from cactus plants were shown.
- 4.-Grafts. Cacti & Succulent grafted on root stock. Several examples were offered.
- 5.-Stem Cuttings. Several cut *Cereus* were shown in the process of drying.
- 6.-Seeds. Various cacti & succulents seed pods properly labeled were displayed on posters.

In conjunction with this exhibit some 50 different kinds of Cacti - Succulent - and other Desert Floral Seeds were offered for \$25 a pack. An **Instructions** sheet showing the (5) steps necessary for successful seed germination was also given to the purchaser.

Also 'soils' for propagation was not overlooked: including glass jars of - **Fine sifted sand - humus - perlite - charcoal**.

Most interesting was the extensive display of Saguaro Seedlings from 0 to 7 years of age in separate pots. Also, to show the rapid germination of Saguaro seeds, plantings of 2/22, 3/21 and 4/4/1976 were shown individually.

All TCBS Members contributing, including the Seedling Committee headed by Barbara Rogers, are to be congratulated for this excellent display.

### DESERT TREASURES

Dr. Paul Henshaw

A beautifully-framed picture of (6) examples of **Prickly Pear Cactus Skeletons** on a black background artistically arranged could grace anyone's den or living room, and certainly be a conversation piece for guests. Dr. Henshaw was generous in giving us his formula which is rather simple. "Opuntia Lace" should be used more in Dried Desert Arrangements. It carries an intricate design and has a rather fragile appearance.

#### Preparations:

1. Use pads one year or more old.
2. Soak (6) weeks in concentrated lye solution. Don't use metal container. (½ pint of lye to three gallons of water.)
3. Use rubber gloves; press and wash to skin and pulp.
4. Dry between paper toweling in a plant press.

This interesting picture was placed on an easel at eye level for all to admire — at the 1976 T C B S Cactus Show.

Do not miss reading "Through the Years at the Desert Botanical Garden" (Phoenix, Arizona) in the Nov.-Dec. 1975 C & S Journal, along with other subjects such as Pests and Diseases, Mammillarias, Ferocactus, and Stapelia. Herein is offered much information with picture illustrations.

November 1975 Saguaroand Bulletin of Desert Botanical Garden of Arizona offers much. "New plants in the Garden" guides those wanting plants that will thrive in their desert yards. October 1975 Kaktos Komments of Houston C & SS tell about Coryphantha and Euphorbias. In the November issue are Pelecypfers, Encephalacarpus, Normanbokea and Hoya.

August 1975 Cactochat of Christchurch, N.Z. C & SS has a fine article on many of the winter-growing Mesembs, plus descriptions of each variety of the Cochemias and many of the opuntias. September 1975 lists 10 Mammillarias with descriptions. A humorous article is "The Answer Lies in the Soil". October 1975 tells benefits of "Charcoal" and advises one to "Live and learn". November 1975 describes each variety of Thelocactus.

### MYRTLE ETHINGTON REPORTS TO YOU ABOUT YOUR TCBS LIBRARY

The January-February C & S Journal 1976. "Baja California Revisited", by George Lindsay, is an informal report of his pleasant days on a mini-expedition for plant hunting. This was an international venture between Mexico and the U.S. Pictures galore of most of the plants seen — many varieties of Ferocactus, Echinocereus, Agaves, Cereuses, Dudleyas, elephant trees, Fouquierias, to name a few. This trip included visiting old friends, taking photos, and collecting, with memory flashbacks of 40 years ago.

The series of "The Culture of Cacti & Other Succulents" and the article on Questions & Answers" should prove to be educational and helpful to all. The new ISI list of plants for ordering can be found in this Journal. Many other 1976 catalogs for ordering cacti and succulents have been placed on the Library shelf, and bulletins from other sources are all up-to-date for your reading.





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"CONTINUALLY STRIVING TO EXPAND OUR HORIZONS AND  
CONTENT IN THE INTEREST OF CACTOPHILES EVERYWHERE."

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**A DESERT IS QUITE A DISTINCT ITEM:**

*It lends itself well to extended journeying, vid. Jedediah Smith, John C. Fremont, Jayhawkers, Kit Carson; it's nice for digging holes in: gopher, water, pack-rat, mining; also for developing: mineral claims, thirst, health resorts.*

*Deserts were invented before pictures, very opportune too, otherwise no desert pictures, no desert artists.*

*Deserts are frowned upon by fishermen, rubberboot makers, long distance swimmers.*

*Deserts are useful for collecting rock, hanging out wash in, shooting off X15's, acquiring sunburn, cactus spines in your hide, setting off dust storms.*

*Deserts can be had in many varieties, high, low, hot, cold, hard, not so hard, plain and colored. Most people take a position: for or against. Personally, we prefer the dorsal recumbent. It's more basic and functional.*

*Deserts are swell for getting away from it all. You will have to rub along living in up-to-date hotels and motels, with swimming pools, palm-tree oases, riding horses available, golf courses, natural phenomena within easy driving distances such as National Monuments, extensive caverns, spots of historic value, commendable botanical collections, fossil beds, plenty to see and to enjoy.*

*Deserts are not just for coyotes, lizards, ravens, buzzards, as there is also the Yuman desert.*

*We are for the Desert: no smog, no rain, no mud and always something in bloom.*

---Henry R. Mockel

# WELWITSCHIA BAINESII – WONDER PLANT OF THE NAMIB

Larry W. Mitich

North Dakota State University, Fargo, N.D.

In a small coastal part of the barren Namib Desert of South West Africa is found one of the world's most interesting plants, Welwitschia bainesii (Hook. f.) Carr. This area stretches from about 150 miles south of Walvisbaai, northwards along the coast to Angola and includes the so-called Skeleton Coast.

Nice examples of this species are found in the surroundings of the little town, Welwitschia, which was named after the plant. This is the only place in the world where the Welwitschias grow, and almost all efforts in trying to cultivate the plant have failed so far.

The region where the Welwitschia grows is the driest in Southern Africa, having an average annual precipitation of only 2 mm. (0.8 inches) over a period of 10 years; with the result that the soil is extremely dry, hard, full of pebbles and stones, and sandy. Welwitschia is well adapted in this habitat.

Above the soil surface, the plant has a swollen and undulated stem with a diameter of 1 to 1.5 meters. Very old plants may reach a height of 1 meter, but the average height above the soil is 45 cm.



Male inflorescence



Female inflorescence

After the seed cotyledons have decayed, one finds only two leaves at the top of the undulated crown, which exists for the entire life span of the plant. These leaves are flat on the soil, outstretched on both sides of the plant. They are simple and linear and after reaching a length of 10-15 cm., the tips become frayed due to the constant battering by the wind. This causes only straight tears to develop along the parallel veins.

The base of a leaf measures approximately half the circumference of the crown and grows continuously from the base of the crown. Plants grow very old (up to 100 years); consequently, the leaves are hard, long, and leathery. Leaves up to 5 meters (15 feet) long have been measured. The weird features of these plants, long and tattered and torn leaves, and a ghostlike habitat have been a stimulus for the origin of many ghost stories.

Once every year, during summer, reproductive organs are produced on the plants and this distinguishes the male and female plants. The reproductive organs are conelike (e. g. Pinus) and are borne on an inflorescence or pedicle. The plant is a native Gymnospermae, e. g., like the cedars (Widdringtonia, cycad (Encephalartos transvenosus) or yellowwood (Podocarpus spp.) Pollen

from the male cones is carried to the female cones by wind and sometimes by certain beetles. The pollen reaches the nucellus directly, the ovary is fertilized and, without much increase in female cone size, the cone matures during winter. Ripened cones burst slowly and, with enough moisture, the winged seed germinates within a fortnight.

Due to the dry habitat, *Welwitschia* has an extensive root system and the primary root penetrates 12 meters (36 feet) or more to reach subsurface water.

*Welwitschia* is a truly remarkable plant that is well worth getting to know better; it should be protected extensively.

*Welwitschia* in habitat



## THE EXOTIC COLLECTION

Edgar and Brian Lamb of Worthing, England issue a monthly publication based on their knowledge gained in their Exotic Collection in England. This wonderful collection of cacti and other succulents contains over 10,000 different species. The authors presented many of their colour slides at the June meeting of the Tucson Cactus & Botanical Society. This popular presentation was offered to the Tucson public. Fifty-five visitors responded, coming from the following places: Sahuarita; Boyce Thompson Arboretum, Superior; Cochise County Cactus & Succulent

Society, Sierra Vista; Green Valley; Cactus & Succulent Society of Central Arizona, Phoenix; Coolidge, Mesa. Out-of-state visitors came from Detroit, Michigan and San Diego, California.

William A. Pluemer of Tucson Cactus & Botanical Society has made a gift to its Library of his personal file of the Lamb colour magazine called "The Exotic Collection", 1963-1975 inclusive. Included are the Photographic Reference Plates which accompany subscriptions to the magazine. Many of these were viewed by persons attending the Lamb presentation at the June meeting.

## BELGIUM — 1976

### William A. Pluemer

Sabena flight 532 touched down at Brussels at 9:30 AM on the 25th of June, 1976. We had checked our baggage through from Tucson, Arizona, U.S.A., including one grip full of cacti for our good friend and host, Fred Lampo of Maldegem. Deplaning from a 747 is something akin to leaving a New York City subway during the rush hour. The terminal was a mass of people queueing up to pass through immigration and customs facilities. Struggling with five pieces of luggage, we approached customs with some apprehension, although I had the necessary phytosanitary certificate at the ready. We were waved through customs and greeted by Fred as we emerged from that area.

The one hour car ride to Maldegem gave us an opportunity to see the results of a record drought and heat wave enveloping western Europe. Based upon our previous living and travelling experiences in Europe, Mrs. Pluemer and I had taken mostly cool weather clothing. The hot, humid weather was excellent for cacti, but uncomfortable for the two tourists who had left Tucson to escape the premonsoon heat wave. Our hostess, Monique Lampo, greeted us from the kitchen where a large midday meal was in preparation. After catching up on some of the major events since our first meeting in Brussels about two years ago, I was on my way to the greenhouse. For several years I have been sending Fred seeds and small collected plants. Now I was to have the opportunity of learning first hand how he germinated these seeds and raised plants under conditions we here in the Southwest would consider extreme. Maldegem is but twenty miles from the North Sea. Summer can be fleeting; winter may be calamitous.

Fred begins his seed germination program in mid-winter - January to be exact. This is accomplished by means of an electrically heated seed box plugged into an outlet in the greenhouse. Since warm summer weather can be ephemeral, he can, by the end of May, make his first transplant and have the seedlings individually established before September. I saw and studied over the next ten days many of my old Mexican friends and hundreds of seedlings from Arizona and Mexican plants. Considering the odds against measurable success imposed by climatic conditions,

I was astounded by the excellent results he achieved. Potting soil is composed of about equal parts of ancient, well composted leaf-mold collected in a local heavily wooded park, and loam. The spination of most plants tended to be darker than as we know them, possibly due to lower light levels and local soil conditions. Insecticides, fertilizers and fungicides are applied as required. A nibbling rodent problem was solved by the acquisition of several guinea pigs placed in cages under

one of the benches. These happy pets emit an ultra high frequency squeal, inaudible to humans, that absolutely discourages foraging rats and mice. The center section of Fred's greenhouse is a raised bed, beautifully bricked, containing the larger cerial, ferocacti and clustering type plants. The usual benches run along the sidewalls. I found this arrangement to be almost universal. It not only allows free root run, but gives ample opportunity to exhibit plants at their best through artistic use of limited rock landscaping. A greenhouse guttering system collects runoff rainwater, which is used exclusively for the cacti.

Our genial host for a tour of Antwerp's Cathedral and harbor, Ed Van Hoofstadt, is also the mentor and driving force behind "CACTUSWEELDE" (Cactuswealth), an energetic group of cactophiles centered about that city. Ed also edits, publishes and is chief contributor to "CACTUS", an excellent and most professional bi-monthly periodical of wide distribution. In Wijnegem we were supper guests of the Van Hoofstadts, and here I had the opportunity of examining what I suspect to be one of the finest collections of cacti in Belgium. Again I found the placement of the raised center bed and surrounding benches tended to exhibit the plants at their best. In 1971 Ed and two cronies flew to Mexico City from Brussels. In a rented car they spent two weeks covering an amazing portion of central Mexico in search of plants. Being limited in space and weight by the return flight, they concentrated on finding seedlings rather than mature plants. My experience has been that this objective tends to be the more difficult. On their last day the three abandoned all their clothes other than those being worn, put their treasures in their suitcases and returned to Brussels. My efforts pale beside such dedication!

Returning to Antwerp that evening, I entertained members of "CACTUSWHEELDE" with slides of plants native to West Texas, Mexico, Arizona and Baja. Although Latin nomenclature is universal, Fred had briefed me that our "Americanized Latin" pronunciations might be confusing. My solution to this problem was to tap Fred on the shoulder at the end of each brief description, at which time he provided the European translation. We did quite well together. The raffle door prize that evening was a flawless 10-inch *Echinocereus Grusonii*, elegantly planted and provided by Ed. Jovial Frank Neels of Male near Bruges, who only a year and a half ago was severely bitten by the cactus-bug, won this plant. Frank is already planning an extension to his new greenhouse, and as with all Belgian cactophiles I had the pleasure of meeting, his enthusiasm for this hobby is overwhelming. Being an old time radio ham, call letters ON4HA, Frank has talked with counterparts in all fifty States and most of the countries of the world. His beautifully equipped ham station can also transmit television pictures to other hams who can receive them.

Several of my Arizona slides showed various groupings of saguaros, to which I gave approximate heights in meters. The obvious question was: how old are these plants? Of course, one can only give an educated guess. However, Fred and I visited one of the groundkeepers in the Castle of Wijnendale at Torhout, not far from Bruges. Here, Daniel Braem husbands an astounding collection of specimen plants. To my surprise, I noted two saguaros, well formed and healthy, which Daniel had grown from seed planted fifteen years ago. At my request he measured these plants and found them to be 36 cm (14¼") in height by 18 cm (7") in diameter, exclusive of the spines.

Through Fred Lampo, Etienne Lanssens of Ruiselede has been the recipient of many of the seeds I have sent to Belgium. Interested in observing his results, Fred and I visited Etienne one evening. Several years ago he was able to purchase a second-hand greenhouse in rather deplorable condition. For eighteen months Etienne labored on the refurbishing and painting of each piece of framework as the structure gradually took shape behind his house. The large, beautifully equipped greenhouse now there would be worthy of any con-

servatory. Again, the long center bed, presently occupied by overburdened tomato plants, until such time as they give way to cacti. The seeds from Arizona were producing flats full of healthy plants. During the summer months a row of cold frames along one side of the greenhouse becomes the nursery for established seedlings. Satisfied that the hundreds of progeny from my yard-plants were in good hands, we took our leave. There is no doubt that we here in the Southwest are spoiled by the ease with which we can grow cacti. A pinch of seeds thrown in a pot will germinate. A cutting placed in the ground will root. Our growing season can be as long as nine months. Our winters are mild. But our friends in Belgium must battle adversity much of the year. Extra precautions are required in seeding, repotting, grafting and achieving basic plant survival.

One of my greatest surprises came upon learning that two of the currently most sought after plants are our own *Opuntia Bigelovii* and *Ferocactus acanthodes*. Field-collected plants of both species are being imported by the DeHerdt brothers, largest dealers in Belgium. A white-spined and also spineless form of *Echinocactus Grusonii* have made their appearance in Europe and are considered quite desirable.

Since CACTUS CAPITAL CHATTER boasts of several Belgian subscribers, Mrs. Pluemer and I wish to take this opportunity to again thank all those wonderful cactophiles who did so much to make our stay there enjoyable and interesting.



# Cactus-Fancying German Pen Pal Is Visitor to Coolidge, Desert

By PHYLLIS HOOVER  
Staff Writer

An advertisement in a German cactus journal for a pen pal interested in cacti began a long friendship and eventually a visit to Mrs. W.H. Roberts, 529 W. Pima, Coolidge, by Oskar Froehlich of Wiefelstede, Germany.

In letters from Oskar, Mrs. Roberts found it difficult to explain her cacti collection and suggested to him that he should come and tour Arizona perhaps during the month of March. Flight preparations were made in November and Oskar arrived March 25.

Not having exchanged pictures and being complete strangers, it was arranged for the Roberts to meet their German visitor at Sky Harbor with a potted cactus in hand, for identification. It worked.

Oskar left Frankfurt via Chicago, landing in Phoenix 14 hours later.

The 37-year-old bachelor was very impressed with Coolidge. He observed, "you have a nice country and Coolidge is such a clean town and the people are so friendly."

His home is in northern Germany, near the seaport city of Bremen. A flower arranger by trade, he has now changed jobs to become foreman in a bottling plant. He lives with his mother, Mrs. Gertrude Froehlich in an upstairs apartment of two bedrooms, kitchen, one bath, living room, large balcony, garage and garden.

The apartment rents for \$125 American money, plus utilities, which is about \$700 a year for fuel and electricity and \$60 a year for water. He was surprised so many people in Coolidge are buying their home instead of renting.

Oskar learned English in 1952 in his ninth and final school year. One foreign language was required. Having a choice between English and French, Oskar chose English. Both Mr. and Mrs. Roberts act as interpreters when needed.

The primary reason for Oskar's visit was to see cacti in its native habitat, the desert. There are no cacti native to Germany, he explained. They can be bought in nurseries or ordered from Belgium. He plans to have some shipped to Germany from Coolidge after meeting the required inspection.

Photography is Oskar's hobby and Mrs. Roberts said his slides are professional quality. When he returns to Germany, he plans to present talks and show slides to the German Cactus Society, having taken many rolls of cacti film while here.

Mr. Roberts has acted as official chauffeur for his guest, taking him into the desert, leaving him for hours to explore then meeting him at the end of the day at a designated spot. A climb of "C" mountain north of Coolidge was made by Oskar, taking a leisurely five hours to explore it. A rattlesnake was discovered and photographed as was a scorpion. He said he had enjoyed hiking in the Cactus Forest area.

He seemed amazed after being asked of the rattlesnake: "Did you kill it?" He believes this is their land and that they belong here. "They are not bothering anyone, so should be

left alone," he said. However, he did not get to see a black widow spider.

A trip was made to an arboretum near Superior, and to Globe and the Salt River Canyon, also to Green Valley where he was impressed with the natural desert landscaping of the residents, and discovering so many different cacti varieties in a 50 mile radius.

Mrs. Roberts explained Oskar has been very upset because some people have contempt for cacti, referring to them as a "spiny weed". He found many near the Pima-Coolidge Industrial Park which had been bulldozed down to expand the park. He noted residents preparing gardens in town seem to grub out the cacti and discard them.

He was disappointed at this saying, "the natural heritage is being killed."

He visited the deserted town of Adamsville, taking an interest in the Indian adobes near there.

Money and time permitting, Oskar would like to return for a visit to northern Arizona. He said he had never dreamed he would come to Arizona and in sincerity said, "Arizona has everything: agriculture, cattle, lakes, beautiful forests, the lovely desert and cacti." And, he added with a large smile, "beautiful weather."

He is amazed at the western style dress saying "it's just like a western movie, big hats and boots." He attended a sheriff's posse rodeo and was thrilled with the performance and dress.

Items he plans to take home with him include bell-bottom Levi's. They do have them in Germany but there they are very expensive and of poor quality, he said. Bolo ties will also go home with him as will many cacti books.

In the food line, Oskar has enjoyed steak and asparagus the most. He explained in Germany, beef is 40 per cent higher than here and asparagus sells for \$2.50 American. In exchange for the good food, Mrs. Roberts has profited by Oskar potting at least 75 cacti plus planting some in the rockery.

Many long evening hours, using long, proper Latin cacti names floated through the Roberts household. Mrs. Roberts, to her knowledge, is the only scholarly collector of cacti in Pinal County.

Oskar's vacation ended April 16 so he could be with his mother for the Easter celebration. There is also a girlfriend waiting in East Germany. He is allowed to visit her and take limited gifts. Such items as Americans take for granted are treasured in East Germany, Oskar explained. For instance, coffee and cups, needles, thread, bobby pins, toothpaste, cosmetics and fruit. Mrs. Roberts says she has tried to send Arizona Highways magazine to East Germany, but it is on a black list.

Oskar confirmed the main reason for his visit was the desert plants. While attending the local flower show, his host, Mr. Roberts was looking at attractive women, Oskar was looking at the cacti.

When asked his opinion of American women, Oskar said "they are about the same as German women, all pretty, but...not as beautiful as an old saguaro."



THERE ARE no cacti native to Germany, so Oskar Froehlich came from Germany by plane to visit Mr. and Mrs. W. H. Roberts in Coolidge, and to examine cacti on the

desert. Here Froehlich examines some exotic species in the Roberts' yard.

(Examiner Photo)

Reprint permission granted by Editor, Coolidge Examiner, Coolidge, Arizona

## TWENTY-NINTH ANNUAL CACTUS SHOW PAPAGO PARK - PHOENIX JOHN B. HALES

The DESERT BOTANICAL GARDEN was well groomed for its 1976 Spring CACTUS & SUCCULENT SHOW. Many Desert Wild Flowers and African Daisies were blooming, with patches of Aloes, their reddish-orange flower spikes rising like many-branched candelabra, always exotic in appeal, along the pathways. A variety of Cassias, golden-yellow flowers, added more splash of color to the Garden. The freshness of it all after a recent rain gave camera fans an incentive to record their trip on the way to the Webster Auditorium, where 148 Exhibitors displayed 594 entries of Cacti & Succulents.

Virginia Martin and Vivienne W. Doney of California judged the Cacti & Succulent portions of the show. Other judges were used for 'Arrangements & Centerpieces' - 'Photography' & 'Arts'. Twenty-four Saguaro Trophy Awards were given in various categories, together with ribbons.

**SWEEPSTAKES AWARDS** to Fran Tolleson under both Cacti & Succulents; very deserving after many years of perfecting her excellent collection; she is a member of The Central Arizona C. & S. Society.

**ARRANGEMENT SWEEPSTAKES** to Lela Turner for her many artistic and beautiful Centerpieces and Arrangements.

**ARTS**, under SEC. VII in any media made an attractive showing above the plant display tables.

**PHOTOGRAPHY**, Sec. VI, (Desert Subjects) - Landscape - Wildlife - Plants, for the first time were properly displayed in the Herbarium, which enlarged the scope of the show, making the Patio Area a popular rendezvous for tired feet where ample seating was provided.

LIMITED SPACE WILL ALLOW ONLY A FEW "BEST AWARDS" TO BE MENTIONED, THE PLANT RECEIVING A SAGUARO TROPHY. OTHER "OUTSTANDING or UNUSUAL" PLANTS SHALL BE DESCRIBED BRIEFLY.

"BEST CACTUS AWARD" to an *ASTRO-PHYTUM CAPRICORNE*; "BEST SUCCULENT AWARD" to an *ALOE VARIEGATA* var. *AUSANA*; "BEST CREST AWARD" to a *NORMANBOKEA VALDEZIANA*; "BEST MAMMILLARIA AWARD" to *MAM. BONBYCINA* with many heads; "BEST DESERT BONSAI AWARD" to *BURSERA* SP; "BEST SEEDLING AWARD" to *TAVARESIA GRANDIFLORA*.

### OUTSTANDING OR UNUSUAL PLANTS

A beautiful clump of *Trichocereus* sp. with 24 stems in 14" square container. *Aeonium* under Div. 1 carried 13 entries. *A. arboreum* var. *atropurpureum* & *A. gigantea*, 16" across were outstanding. *SENECIO PENDULA* & *S. ROWLEYANUS*, 5 ft. long in bloom both excellent specimens. *ALOE* SP. some 27 in. high - tree-type entered by Richard Wiedhopf. Superb. An *EUPHORBIA RESINIFERA* var. *MOGORIDORA*, 20 in. across with remarkable growth. Three *PACHYPODIUMS* were displayed probably for the first time. A twin-trunk *IDRIA COLUMNARIS* some 18 in. tall. *CAUDICIFORMS*, Class C. had 12 entries, the most attractive being *BOMBOX ELLIPTICUM* - 2 *CALIBANUS HOCKERI* & *BURSERA FAGAROIDES*. Under Div. 14, Other *MESEMBRYANTHEMUMS*, *OSCLAREA DELTOIDES* was displayed on a 20x30 frame growing in a flat dish. Attractive. *MAMMILLARIA ELEGANS* var. *SCHMOLLII* with some 30 heads. *FEROCACTUS JOHNSONII* - 7 in. tall. *BOWIE VOLUBILIS* - caused lots of comment and finger poking.

### "BEST EDUCATIONAL AWARD"

Went to Kent C. Newland for his excellent poster work outlining as follows:

ARIZONA'S ENDANGERED CACTI & SUCCULENTS

Paragraph No. 1 - The Situation. No. 2 - What can be done. No. 3 - The Plants. No. 4 - How



you can help. No. 5. Why.

It was pointed out that 60 to 70% of Endangered Species of plants in the Continental U.S. are on Federal & State Lands.

Thirty members of the Tucson Cactus & Botanical Society chartered a bus to take them to this Show. Luther Jackson, president of Las Vegas Cactus & Succulent Society, attended with twenty members of that organization. Desert Botanical Garden staff said that it certainly was rewarding to have so many of their friends and acquaintances with them at this truly grand show.

## Arizona Album

Eighty-three years ago in the Old Pueblo

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TUCSON, ARIZONA TERRITORY, MAY 20, 1893

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### Cacti off to the fair

It is difficult to believe that when the 17 immense giant cacti, which are today boxed and loaded and ready to start tomorrow from here for the World's Fair, are set up on the exposition grounds in front of the Arizona building, they can fail to attract the admiring attention of multitudes of visitors even in the midst of that wonderful aggregation of objects of interests.

Each of the 17 boxed weigh over 3,000 pounds. The tallest is 23 feet, the average height being 18 or 20 feet.

The giant cacti occupy the whole of a flatcar. The rest of the collection of Ocotillo, cholla, century plants and others fit compactly in a boxcar. Woe is unto the unfortunate tramp who for adventure may think he can risk stealing a ride in that car,

Compiled by Yndia Smalley Moore, Citizen historical editor  
From the Arizona Citizen

### Seeds of an Abundant Desert Bush Are Studied For Possible Uses, From Lubricants to Foods

By Roy J. Harris  
Staff Reporter of Wall Street Journal.

SAN CARLOS, Ariz. - An oil industry is sprouting in the desert here, and there isn't a derrick or a sheikh in sight.

Actually, the barren San Carlos Apache Reservation here isn't lucky enough to have found black gold beneath its crust. But it does have jojoba oil, which grows on trees - jojoba trees.

The yellow-brown oil squeezed from jojoba beans doesn't compare even remotely with petroleum as a potential energy source. But it's nevertheless getting a lot of attention lately from researchers who suggest the oil has potential for other purposes.

Jojoba pronounced ho-HO-buh abounds in desert areas of the Southwest. The evergreen bushes, five to 10 feet tall, blend with majestic saguaro cactus in the otherwise bleak desert landscape. Jojobas always have provided a browse for deer and even cattle, and the Indians of the area still use the oily wax from jojoba seeds as a balm for wounds.

But researchers now are talking about a host of new uses for jojoba oil. There is hardly a product that jojoba oil couldn't help process, lubricate, polish or improve, these scientists say.

### Range of Possible Uses

A partial list of possible applications in a National Academy of Sciences report mentions, for openers: waterproofing compounds, leather softeners, paints, adhesives, varnishes, linoleum, printing ink, medicines, low-calorie foods, food-shrinkage retardants, paper, textiles, insulating material, matches, soap, chalk, crayons and almost any polish or lubricant.

The academy's report puts special emphasis on the possibility that jojoba-bean oil could replace lubricating oil obtained from the sperm whale, an endangered mammal whose by-products can't legally be imported. It calls jojoba oil a "unique" unsaturated liquid wax, and Agriculture Department scientist Thomas Miwa simply dubs it "A precious uncut diamond."

To help promote jojoba-oil development, the federal government, through the Office of Arid Land Studies at the University of Arizona, pays the Indians \$1.10 a pound for the seeds they harvest each July. This year, some 800 of the Apache reservation's 5,000 Indians picked 75,000 pounds of jojoba beans.

Part of the harvest will be used to start the reservation's first jojoba plantation and part to make wax for a fledgling candle business.

But most of the crop will go for the university and industrial research to develop markets for the oil.

For the impoverished Apaches, some of whom raise cattle but many of whom are unemployed, a new jojoba industry would clearly be a blessing. Lambert Noline, an Apache who is general manager of the Apache Marketing Cooperative Association set up to help develop jojoba markets, says that his people are beginning to see value for the first time in the profit motive.

### Lessons From "Blue Eyes"

"As long as there's money, we'll find the crop," he says. "We've caught onto the 'blue eyes' ways," he adds with a grin. He says one family hauled in enough beans in one week to earn \$1,200.

There are some problems in using the beans. Things aren't going smoothly, for instance, with researchers' suggestions that jojoba oil can be used as an additive in auto transmission fluids. Merrill Haviland, senior research engineer at General Motors Corp.'s Warren, Mich. laboratory, says preliminary tests show the jojoba oil would "sludge up" transmissions at high operating temperatures.

Experiments with jojoba meal as a potential livestock feed showed good protein content, but laboratory rats given the meal developed problems, including "severe testicular atrophy." Somehow, though, the pocket mouse survives nicely on a diet of jojoba seeds.

Sidney Albritton, a plant chemist for Carter's Ink, says jojoba oil is about the best substitute he has found for sperm-whale oil in typewriter-ribbon ink, but he adds that the \$6 a pound the Apaches are asking for the oil is too high.

Adequate supplies are also a problem. The San Carlos Apaches got an inquiry about a possible 300-ton order of oil from a Japanese concern looking for an alternative to whale oil. But this year's total harvest in Arizona, if converted to processed oil, would only be nine tons.

"Industry always asks how much do we have on hand and what's the cost," says D. M. Yermanos, a genetics professor at the University of California at Riverside and a jojoba researcher. "As soon as you can't answer these questions, you find the conversation has ended," he adds ruefully.

Successful development of the new plantation would be a big step forward. However, it will take at least five years for the plantation to bear marketable beans for the first few years, (seedless male plants are indistinguishable from the female seed bearers).

Source: Excerpts from The Wall Street Journal, by permission, (c) 1975 Dow Jones & Company, Inc. All Rights Reserved.

## TUCSONANS AT NATIONAL CACTUS SHOW

The Cactus & Succulent Society of America, Inc. presented its 1976 Cactus Show at the Arboretum on the Mall outdoors in front of the Queen Anne Cottage in the Botanic Gardens, County of Los Angeles, Arcadia, California. Southern California cactophiles extended their warm hospitality to four members of the Tucson Cactus & Botanical Society who visited this Show during July 2, 3, 4. - Mr. and Mrs. Roger G. Dean and Mr. and Mrs. Harold Church. Roger made fine slides of this Show as well as many in Huntington Botanical Gardens.

### REBUTIAS

The rebutias are a group of small clustering globular to short cylindrical plants, without definite ribs, and generally have hairless spines, some of which are very white, and they form groups of several to many heads. Argentina and Bolivia are their native habitat.

These plants are attractive and quite easy to flower — diurnal, closing in the evening and opening again in the morning, for 3 or 4 days. The bright, clear flowers are small to medium in size, funnel-shaped, and rise from the base or side of the plant, rather than from the top. Most of the flowers that encircle the plant are red or in the reddish orange color range, but there are also orange ones as in *R. chrysacantha*; pink in *R. violaciflora*, yellow in *R. Marsoneri*; and white in *R. albiflora*. The latter is usually grafted. These dwarf, free-flowering hardy cacti are ideal in a small collection or for those with limited space. There are several sub-genera: *aylostera*, *medilobivia*, *sulrebutia*.

.....Myrtle Ethington

# Earthquakes in Arizona

by John S. Sumner

Fortunately, our state has been relatively free from the awesome devastation by earthquakes that has become so well-known elsewhere. But we cannot be lulled into believing that it will never happen here, because there have been earthquakes in Arizona's past and there will be more in the future. Earthquakes are an important part of the earth's natural dynamic processes, and we can learn to live with them. Seismology is the study of these earth vibrations, and it has taught us much of what we know about the earth's interior. This article is intended to be a brief review of earthquakes, particularly as they might affect people living in Arizona.

## Arizona's Historic Earthquakes

The southwestern part of this state is not far from the San Andreas fault system, and indeed some related fault structures must now underlie this region. Yuma has felt tremors on several occasions from disturbances whose epicenters were located in nearby California and Mexico. Noteworthy seismic vibrations were felt in the Yuma area in 1968, 1948, 1947, 1942, 1940, and 1934 and continuing back in time at irregular intervals as long as can be remembered. The vibrational intensities felt in Yuma have caused damage to irrigation systems, and there was a considerable property loss sustained from the Imperial Valley earthquake of May 18, 1940.

The most devastating Arizona earthquake was the May 3, 1887 event, felt extensively in the southeastern part of the state. It destroyed the village of Charleston (Ready, 1962) on the San Pedro River near Tombstone and killed 42 people in Bavispe, Sonora, the largest town (1,500 people) in the region. Tucson was strongly affected, and the San Xavier Mission was damaged as were many structures in the Old Pueblo. The *Arizona Citizen* carried many stories on the event, as did all major newspapers of the time in North America.

From eyewitness accounts, the 1887 event must have been one of the most severe in historic times on this continent. The following version was presented in *Arizona Highways* of April 1940 by James G. Wolf:

I was over in the Huachuca mountains on May 2nd, 1887, when suddenly all the ground around me commenced to ripple and wave. It rose in billows to a height of two or three feet and would then drop almost in its old place, but leaving pronounced cracks.

The suddenness of it dazed me for one wild minute and I wondered if what I was seeing was actually occurring. I was panicked, but finally managed to calm down enough to figure out exactly what I had to eat and drink the previous few days. In that way I calculated for sure I had been all out of snakebite preventive for many days, and thus I knew an earthquake was quaking.

The rocky ledges along the sides of the Huachucas rose up and fell outward, breaking into all sizes of boulders that rolled down the mountain sides, snapping off all trees and brush that were in their path . . . .

I could see deer, coyotes and rabbits running from the hills. The wild cattle from along the San Pedro, who had never known what fear was before and only one generation back had scattered the Mormon Battalion, just stuck their tails straight into the air and, with eyes popping out, beat it for elsewhere, no two of them in the same direction.

The ground was heaving all around and there was nothing to indicate where a really safe refuge was to be found, but you could see their main idea was to be somewhere else immediately. I felt exactly the same way myself . . . .

On my way to Charleston from the Huachucas, I saw sheets of water spurting into the air at many places as I neared the river. Later I learned from others, this had occurred in hundreds of places on both sides of the river and for its entire length. The quake had shattered rock strata and this underground water escaped through the fissures thus made. Some of these new springs flowed a short time. A few flowed for a month and a very few longer than that . . . .

One still-visible 7-meter-high scarp from the 1887 temblor extends for almost 100 km south from the border near San Bernardino, Arizona, to near Bavispe, Sonora. Good scientific accounts of this earthquake are to be found in reports by Aguilera (1920), Richter (1958) and Goodfellow (1888).

The most recent Arizona earthquake occurred on February 3, 1976 in Chino Valley northeast of Prescott with a Richter magnitude of 5.2. The location is shown with an X on Figure 1. Two aftershocks were felt, and numerous smaller tremors were recorded. This earthquake could have been damaging if the area was more habited. Effects of this temblor were observed and reported from Clarkdale by Paul Handverger, a former member of the Department of Geosciences, the University of Arizona.

Source: "Field Notes" from the Arizona Bureau of Mines, Geological Survey Branch, The University of Arizona, Vol. 6, No. 1, Earth Science and Mineral Resources in Arizona, March 1976.

### Law Too Hard On Peyote

Dear Editor:

As owner of the Desert Plant Co. I have collected and sold peyote cacti (species of *Lophophora*) for 50 years. My customers included people from all walks of life, most well educated, and I am sure they cared little about the narcotic ingredient of the plant but appreciated it instead for its botanical rarity.

Recent changes in Justice Dept. regulations have made peyote a controlled plant so it is no longer available. I was recently visited by two Federal Narcotics Agents who (after I pointed out which plants were peyote) seized two rare "crested" plants from my private collection in the living room. I doubt that there are more than a half dozen of these crested ones in the world, and I had been offered \$5,000 each for them although they were not for sale. Yet they were taken and probably never will be returned, although such return was promised.

The law has overstepped its bounds and is punishing innocent people. Instead of confiscating, why not permit controlled sales through licensed, bonded suppliers and nursery dealers—similar to the system by which some drugs are handled in drug stores? Thus collectors could enjoy their botanical prizes and the government could keep an accurate record of peyote in the U. S.

Ralph Spencer  
Marfa, Tex.

Flower & Garden Magazine

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Roger and Goldie Dean sent a Kentucky cactophile a copy of ARIZONA HIGHWAYS. Owen Bailey sends them his thanks. "Thank you very much for sending along the copy of ARIZONA HIGHWAYS. It is a great magazine about a wonderful state. I really enjoyed it, especially the parts featuring the beautiful flowering cacti. My major interest is concerned with our native species of the U.S. and their propagation and culture from collected seeds. Thanks again. Sincerely, Owen Bailey."

YUCCARONE has been known and used for centuries by the Southwestern American Indian as a hair wash. It is extracted from the root of the yucca. The ingredient gives the shampoo its amber color and takes part credit for giving it its extra-billowy lather.

### THE DIFFICULT CACTI OF THE AMERICAN SOUTHWEST:

The deserts of the southwestern United States are among the most severe habitats for cacti, and the highly specialized plants which survive there are among the most difficult to cultivate. Few plants are as ephemeral in collections as are various species of *Sclerocactus* or *Pediocactus*. In the wild these species are rare and among the more endangered, and every effort should be made to preserve them both in the natural state and in cultivation, but that is no easy task for even the most experienced cactus growers, even those who live in areas where these plants occur, have difficulty keeping them alive in collections. The plants simply cannot take the more generous conditions of unnatural cultivation. A few growers have had some success by giving the touchy ones, such as *Pediocactus bradyi*, *P. paradinei*, *P. papyracanthus*, *P. fickeiseniae*, *P. ("utahia") sileri* or *Sclerocactus ("colorado") mesae-verdae* a completely dry, long and cool resting period throughout the fall, winter and early spring. We have had the greatest success by grafting the plants, thus forcing them to offset, then removing the offsets and rooting them, through which process they seem better able to cope with cultivation. These plants are great oddities deserving special efforts. Few cacti are more beautiful than a perfect plant of *Pediocactus paradinei* with long, silvery white, hairlike spines, or more unique than *P. papyracanthus*, hidden by papery, grass-like spines, or *P. fickeiseniae* with strange, coarse cardboard-like spines.

CACTUS & SUCCULENT JOURNAL (U.S.)

Vol. XLVIII, 1976

<b>NEWSLETTER OF TUCSON CACTUS AND BOTANICAL SOCIETY</b> Affiliate of Cactus and Succulent Society of America, Inc. Subscriptions: \$1.00 -- U.S.A.      \$1.50 -- Foreign		
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<b>ASSISTANT EDITORS</b> William A. Pluemer      John B. Hales		
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<b>SUBSCRIPTIONS</b> Josephine Shelby		
<b>CONTRIBUTORS</b> Joseph F. Brick      James A. Robbins      Myrtle Ethington Joyce Tate, C.S.S.A.      Hildegard Nase      William A. Pluemer		
<b>"CONTINUALLY STRIVING TO EXPAND OUR HORIZONS AND          CONTENT IN THE INTEREST OF CACTOPHILES EVERYWHERE."</b>		
<b>PUBLISHED QUARTERLY</b> <b>P.O. Box 3723 College Station      Tucson, Arizona 85722</b>		

#### A SIXTEENTH FOUNDING ANNIVERSARY

During November 1960, a group of cactus enthusiasts of Tucson led by John Haag and P.G. Nichols, met to organize the Tucson Cactus Club.

The Tucson Daily Citizen, Jan. 14, 1961, gave the following report: Dr. W. G. McGinnies has been elected president of the recently organized Tucson Cactus Club. The new president is director of the Tree-ring Research Laboratory, and is coordinator of the Arid Lands Program at the University of Arizona. He will be assisted by Alan Blackburn, supervisor of the watershed department at the Arizona-Sonora Desert Museum. Blackburn was elected vice-

president. Treasurer and director of public relations will be John Haag, botanist at the Desert Museum. Haag is chiefly responsible for organizing the new club. His home, 415 West Giaconda Way, is the site of the meetings. Mrs. Walter T. Dunlap was elected recording secretary, and Mrs. Howard Chang, corresponding secretary.

The members chose a seven-man board of directors: French Anderson, Lester R. Cole, Clinton E. Jarvis, Mrs. Dorothy S. Herr, Mrs. W. G. McGinnies, Mrs. Harry Snyder and Josephine K. Shelby. Nationally, the Tucson Cactus Club will be affiliated with the Cactus & Succulent Society of America, Inc.

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SO LONG! GOOD LUCK!

Joe and Ethel Brick will make their home in Fresno, California after December 1, 1976. As a parting tribute to Joe who has been an active and functioning member of Tucson Cactus & Botanical Society since 1963, CACTUS CAPITAL CHATTER reprints the following report from the Tucson Daily Citizen of several years ago-----  
"Johnny Cactusseed". We consider it to be a portrayal of the essence of Joe Brick whom we have respected and admired for many years. We wish for him and his wife, Ethel, much happiness in their new home outside of Arizona.  
-----The Editor.

## Johnny Cactusseed

From little seedlings grow  
the mighty cacti under  
Joseph F. Brick's green thumb

By JAY HALL  
Citizen Staff Writer

Tucson's Johnny Appleseed doesn't plant apple seeds at all. What he does plant is, at first blush, somewhat of a shock.

In this world capital of cactus, Joseph F. Brick plants cactus — out in the open desert.

With cacti seemingly everywhere in the Tucson desert, who needs more?

But Brick, a retired engineer, is more far sighted than that.

He said, "Some people told me my idea was crazy. But I was right."

He got the idea in 1969 and had a devil of a time persuading the right people. But now in his collection of communications to and from a large number of influential people, he has such responses as these:

"Your note about the cactus experiment sounded good to me." — Gov. Jack Williams.

"... Sounds like a fine and badly needed project, particularly in the face of the decline of this flora." — U.S. Rep. Morris K. Udall, D-Ariz.

Brick makes a good case of the decline of cacti, despite its seeming present abundance.

Bulldozers are raking a lot of it away to make room for new housing. Despite laws against it, people persist in digging up cactus to plant in their yards. Disease among the saguaro is increasing. Birds, rodents and other animals are gobbling up the seeds and hindering propagation.

And what is Tucson without cactus? In Brick's mind, it is conceivable that without some help like his, a cactusless city may be Tucson's fate.

So, without outside funding from any source and without profit of any kind, he is growing his own seedlings, nurturing them for up to two years to a transplantable state and replanting them in barren patches where once-proud cactus have disappeared.

It took seven months, when his idea was taking root in 1969, to find the right person in state and

federal officialdom to give him the kind of encouragement he needed.

Ironically, after letters to Phoenix and Washington, he found the man he needed right here at home. It was Clyde Doran, superintendent of the Coronado National Forest Reserve. "It's a great idea," he said after Brick made his plan clear to him.

Brick's difficulty was that "you can't just go setting out cactus. The land belongs to individuals, subdividers, rangers, the state or the federal government. You have to get clearance to plant on someone else's land, even the government's."

He decided federal areas would be his best hope. With Doran's help, he finally obtained official clearance to plant anywhere within the Coronado National Forest provided his work does not interfere with any existing federal regulations and policies.

To date, he has planted several hundred seedlings — saguaro, hedgehog, rainbow and barrel.

At his spacious desert foothills homesite at 5202 Genematas Drive, he rounds up seeds, nurtures them in bedding plots and transplants them in the desert during the rainy seasons. He has about 2,000 seedlings ready to plant now.

He now has some help. In February, he organized the Pima Cactus Preservation Society which has 10 members and

Cont'd. pge. 3

which he does not want to grow beyond a dozen.

Only people very knowledgeable about cactus can get into the society: "You don't just guess where to put your seedlings. You explore the area and decide what would be most adaptable to it. You must consider altitude factors. You must know how to plant so it will survive

Brick and his recently deceased wife got interested in cacti many years ago — in Cincinnati — because "we wanted some new interests and, to us, cactus was something very mysterious." They became members of a cactus club there. They moved to Tucson eight years ago.

To him and his Johnny Cactusseed associates, their work is "a legacy for future generations."

Said Brick: "Fundamentally, the original concept was based on the idea that it is essential that every man at some time or another return something to this earth to compensate for what he has taken out of it."



The first planting of cactus seedlings in Santa Catalina Mountains, Tucson, Arizona, Members of Pima Cactus Preservation Society, from left to right: Carl Horst, Joe Brick, Wanda Horst. On December 2, 1975, Joe and Ethel Brick, and Ed and Peg Busch visited this spot. The plants were great.

#### "TO COLLECT OR NOT TO COLLECT"

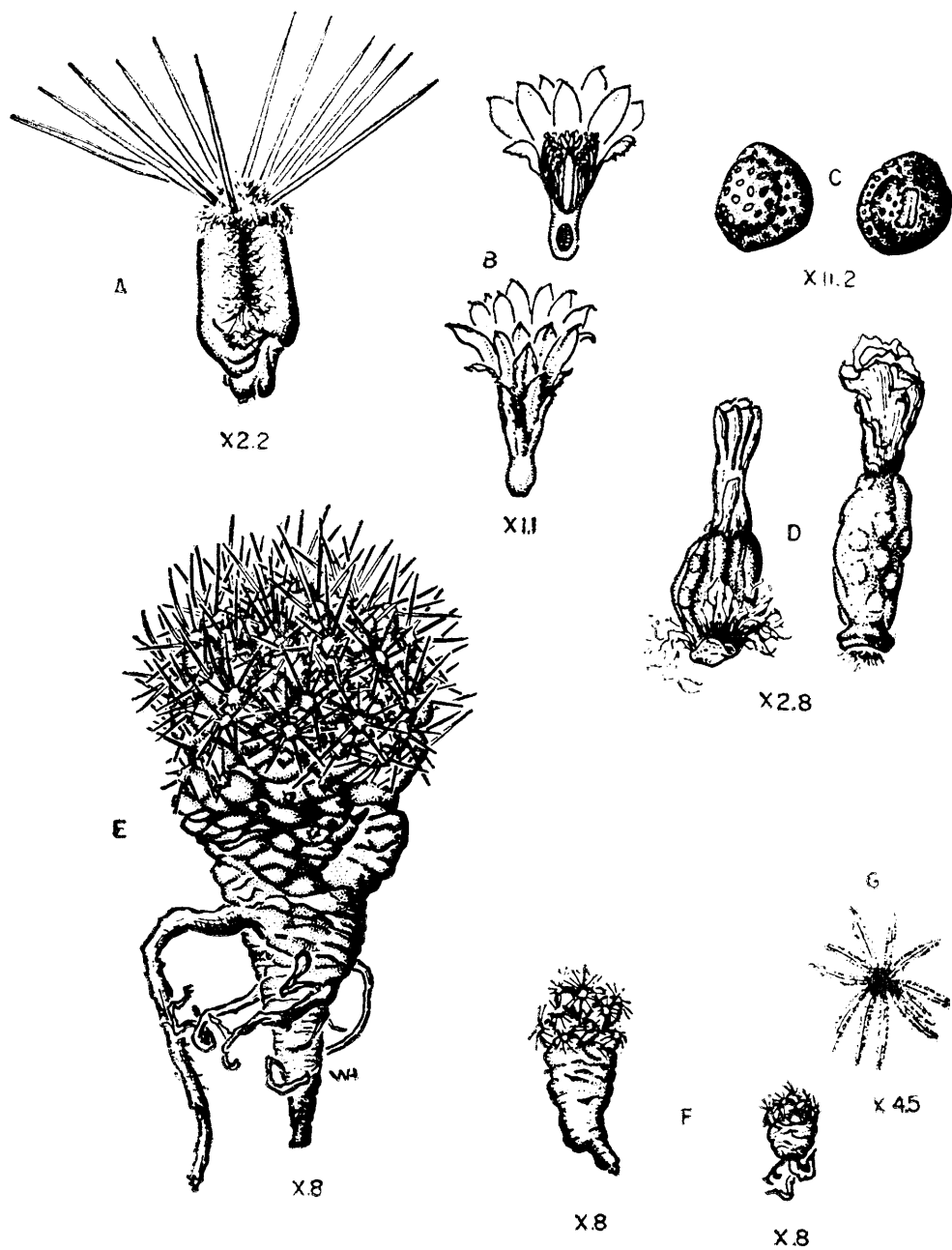
Edward S. Taylor, Editor of "Affiliate Reporter", Affiliate Chairman, and Convention Chairman 1977, CSSA, is urging all members of Tucson Cactus & Botanical

Society to find their copy of the Cactus & Succulent Journal, Sept.-Oct. 1976. Read thoughtfully the 3 articles on CONSERVATION, as follows:

The Editorial by the Editor, Charles Glass. Dr. Lyman Benson's article. The Column

by Mary Bleck-- "Questions and Answers". Your cactus library, 2800 E. Ft. Lowell Rd. in office of Nancy Clarke, has 1 copy of C & S Journal. If you check it out, please, please read and return in a short time--allowing many others to read it also.

Mr. Taylor believes that some, interested cactus enthusiasts fail to recognize the difference between "collecting endangered and/or threatened species", and the "collecting of other plants that are not endangered or threatened". He states that at this time, the important thing is to concentrate on getting the banning of collecting endangered and/or threatened species made into law. CSSA has for a long time backed conservation in the collecting of plants. He urges you to RE-MEMBER -- READ. MAKE UP YOUR OWN MIND--THEN ACT-- to get a good, workable CONSERVATION LAW. Talk this up in your own local cactus society.



Drawing shows *Cochisea robbinsorum* Earle and its parts: A, nipple; B, flower; C, seed; D, matured fruit; E, entire plant; F, seedling; G, seedling showing pubescent spines.



# Family discovers new cactus

By W. HUBERT EARLE  
Director  
Desert Botanical Garden

A new cactus has been discovered in Arizona. It is called *Cochisea robbinsorum* Earle.

It was found in southeast Cochise County, and 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 of Sierra Vista, who called his brother John to see it. John, 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.

Because this new species of cactus fit under no existing genus, a new one, named *Cochisea* Earle, was established for it.

(Editor's note: Since the new genus and the new species were established by W. Hubert Earle, they bear his name to indicate that fact.)

*Cochisea robbinsorum* Earle measures up to 50 mm in diameter and height, and has a firm carrot-like taproot up to 100 mm. Its spiraled projections are long, rounded and grooved; the areole is round to oval in shape, having copious wool. Spines are needle-shaped, with the central spine, if any, measuring

10-15 mm long; the plant has 12 spreading radials measuring 6 mm long.

This cactus flowers are pink to olive in color, with outer petals having brown backing and faces of petals hav-

ing a light brown mid-stripe. The flower's pistil is yellow; its anthers and lobes are light green.

Fruit is red, slender, fleshy, edible and 10 mm in size. Seeds are black, pitted and 1 mm in diameter.

*Cochisea robbinsorum* Earle flowers in April and the fruit matures the following July. It grows at about 4,250 feet in association with other cacti and some shrubs in southeastern Cochise County.

The genus is *Cochisea* Earle, a globe-shaped low cylindrical cactus. It has a short to long tapering rootstock, round projections arranged in spirals, an areole bearing copious wool and short spreading radials. Spines are needle-shaped, and colored white with brown tips. Flowers are small, and range from pink to olive in color; fruit is fleshy, red and club-shaped; seeds are black, pitted and small.

A herbarium sheet showing the first cactus of this type found in the area has been deposited at the Desert Botanical Garden Herbarium, in Papago Park, and a herbarium sheet showing other cactus of the same

type found in the area has been deposited at the Arizona State University Herbarium, Tempe.

Seeds and several plants have been deposited with the International Succulent Institute in San Francisco, which plans to have plants of *Cochisea robbinsorum* Earle for sale in a few years.

It is hoped that this promise of future availability will discourage collectors from hunting the location of the plant in Arizona, and "clearing out" the cactus.

The cactus is being placed on Arizona's Endangered Plant List in the "Collection Prohibited" section.

The Arizona Republic  
Sun. Aug. 15, '76



## JOYCE TATE IN THE WORLD OF ALOES IN AFRICA

Joyce Tate of Riverside, California became a member of the Los Angeles, California Cactus & Succulent Society in 1934. Fifteen years ago she found herself interested in uses of the succulent plants. As chairman of this CSSA Committee, she has done continual research in this field. She compiled the Cactus Cook Book which was published by CSSA. It has entered its third printing to date. Joyce is also a charter member of Gates Cactus & Succulent Society of Riverside, California, and is its affiliate chairman and historian. At present, she is a member of the Board of Directors of CSSA.

Joyce and her husband, Harry, attended the World Aloe Convention sponsored by Rhodesia, Africa in July 1975. They saw thousands of Aloes in bloom, both in habitat and in private gardens. They were thrilled to see *Adansonia digitata* (Baobab) trees in habitat; they toured national parks; attended various art exhibits; heard lectures by many of the world's great botanical authorities. They also visited South Africa and South West Africa and the Namib Desert, home of the *Welwitschias*; saw the Indian Ocean at Durban where it meets the Atlantic Ocean; saw *Proteas* in bloom in Cape Point; enjoyed Kirstenbosch National

Gardens at Cape Town in which all the plants are indigenous to South Africa.

During October 1976, Joyce and Harry Tate generously shared these rich experiences with members of Tucson Cactus & Botanical Society who declared the Tates' program to be among their very finest in 1976. While the Tates were visiting Tucson, Mr. and Mrs. Roger G. Dean of TCBS were their hosts for dinner and an evening of slide-viewing plants of the Sonoran Desert. They were also guests of Josephine Shelby during two more days of their Tucson stay. They went to Harwood Steiger's world famous studio in Tubac, Arizona, where hand-blocked silk screen prints in desert designs are available. They called at Ghost Ranch Lodge owned by the family of the founder of Arizona-Sonora Desert Museum, Arthur Pack. There they were greeted by William Carr, co-founder of this Museum. Dorothy Levering joined them for luncheon. Arizona Daily Star photographer, Jack Shaeffer, caught Joyce amid Ghost Ranch Lodge's cactus gardens, for pictures. Mrs. Sandall English, Food Editor of the STAR interviewed Joyce about her Cactus Cook Book and her fabulous trip to Africa. All in all, Joyce and Harry Tate's Tucson visit was a highlight of the year for members of TCBS.



# ALOES Myrtle Ethington

Aloes are succulents of the Lily family that are very attractive, and have many flowers, usually during the winter and spring months. They prefer filtered light and fairly rich porous soil that has good drainage. Care must be taken that the base of the rosette of leaves is kept above the soil level to prevent rotting. The majority of the Aloes are not too hardy; thus they must be protected from freezing. Most aloes produce rooted suckers or rosettes which is the easiest way of propagating which also may be done by cuttings or seed. Seedling plants will not always come true to the species. There are large Aloes, medium-sized ones, miniatures and dwarfs. Most of the below-mentioned Aloes are small ones, miniatures, and dwarf species which I have found to be quite easy to grow in Tucson, and are suitable for pot culture.

- Jacunda-rigid, shiny green, white spotted leaves; coral pink flower.
- Bellatula-slender, bright green leaves; reddish coral flower.
- Jacksonii-blue-green flecked leaves; reddish coral flower.
- Humilis-clustering blue-green stemless rosette; reddish orange flower.
- Aristata-gray-green stemless rosette, with white horny edges; reddish orange flower.

- Zanzabracalight green with mottled white markings; reddish coral flower.
- Brevifolia-short, blue-green stemless rosette;reddish orange flower.
- Variegata-upright,rigid,triangular rosette with wavy bands on leaves; reddish orange flower.
- Bakeri-light green, narrow, flecked leaves; apricot yellow flower.
- Albiflora-dark green, slender leaves; white flower.
- Parvula-blue-gray miniature, coral pink flower.
- Rauhi-miniature, blue-gray with many white spots; reddish orange flower.
- Haworthoides-dwarf, dark green, stemless rosette with feather-like teeth along edges; reddish-orange flower.
- Calcairophila-second smallest dwarf. Has leaves in two rows like in A.Plicatilis; white flower.
- Descoingsii-the smallest known Aloe; dark green clustering rigid rosette only 1 inch or so wide; reddish orange flower.

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Julian D. Hayden of Tucson says that these foods made of crushed, toasted mesquite pods are delicious: mesquite bread, mesquite pudding, atole de pechito - a beverage. Mesquite was the main food of desert Indians and could, if times get hard, supply food for even us folks. It just takes a little time and interest.

DR. ROBERT R. HUMPHREY AND  
THE TUCSON CACTUS & BOTANICAL  
SOCIETY

Since 1967, Dr. Robert R. Humphrey has generously given of his great store of scientific knowledge of and experience in, the great Sonoran Desert--to the members of Tucson Cactus & Botanical Society. He has delivered lectures illustrated with his color slides and his moving pictures. He has written numerous articles on the scientific level, for our newsletter, CACTUS CAPITAL CHATTER, furnishing his own photographs as well as sketches by his wife, Roberta Humphrey.

Thus, for nine years he has steadily and consistently proved his deep interest in and his loyalty to the goals and interests of Tucson Cactus & Botanical Society. His writings have added an authentic, professional touch to our publication, and have evoked from our out-of-state and foreign readers much praise and commendation.

At this time, we express to Dr. Humphrey our thanks and most sincere appreciation for his great interest in our Society, and for his most generous contributions of articles for publication in CACTUS CAPITAL CHATTER. We are proud to claim him as our good friend. Also, we thank his wife, Roberta, for her contributions of

sketches with the articles which her husband wrote.  
.....The Editor

HUBERT EARLE RETIRES

W. Hubert Earle, director of the Desert Botanical Garden in Papago Park, Phoenix, since 1957, and a staff member for 10 years previous to that time, announced his retirement on October 1, 1976. He has been named Director Emeritus of the Desert Botanical Garden, and plans to spend more time in writing, photography and field expeditions. He has lectured in North America, the Far East and Europe. He was invited to preside as Guest of honor at the opening of the Manazuru Botanical Garden in Japan, which he helped found. He has written three books: "Cacti of the Southwest", "Cacti, Wildflowers and Desert Plants of Arizona", and "The Southwestern Desert in Bloom", as well as numerous articles.

TCBS ANNUAL CHRISTMAS  
PARTY REMEMBERED THE  
CHILDREN

It is the custom of Tucson Cactus & Botanical Society annually to hold a Christmas luncheon as their December meeting. Members gathered at the Tucson Botanical Gardens for their 1976 repast. They took gifts of money and toys suitable for the children at the Tucson Cerebral Palsy Center.

## OVERSEAS CACTUS CLUB IN A CASTLE

Fred Lampo of Maldegem, Belgium has formed a cactus club in Ghent, Belgium. It is a branch of CACTUSWHEELDE similar to our CSSA. He is president of this group whose meeting-place is in an old castle near Ghent, with "a cafe of course". Tucson Cactus & Botanical Society might look into the prospect of meeting in Tucson's Castle-in-the-Tucson Mountains. Shall we? Fred Lampo remains a friend of long standing of our Cactus Society. He and our member, Bill Plummer, have become close, personal friends.

## A LIST OF PUBLICATIONS FOR SERIOUS STUDENTS OF CACTI AND OTHER SUCCULENTS

1. Cactus & Succulent Journal (U.S.) Box 167, Reseda, Calif. 91335. Culture and study of cacti and other succulents information. Annual subscription including membership \$10.00
2. The National Cactus & Succulent Journal (ENGLAND). Quarterly issues; scientific information; news; seed list in December issue. Annual subscription \$5.50. Address: Editor: E.W. Putnam, 72 Church Lane Avenue, Hookey, Couldson, Surrey. England. CR 3-3RT
3. Saguaro and Bulletin of Desert Botanical Garden, Papago Park, Phoenix, Arizona. P.O. Box 5415.

85010. Individual membership \$15.00 includes a subscription to this fine Bulletin monthly, reduced fees for classes and field trips, discounts, seed packets.

4. The Exotic Collection is a monthly all colour illustrated publication with notes, photographic reference plates. \$6.00 per year. Send to W.T. Neale & Co., Ltd. (Edgar and Brian Lamb) 16 Franklin Road, Worthing, Sussex, England.
5. Affiliate Reporter, bi-monthly newsletter of CSSA. Subscriptions run from January 1 to January 1. Individual Subscriptions \$1.50 per fiscal year. Keeps one in close touch with programs and activities of CSSA and all its affiliates. Make your check of \$1.50 payable to Cactus & Succulent Society of America, Inc. Mail your check to E.S. Taylor, FCSS, 3036 Nebraska Avenue, South Gate, Calif. 90280.

## CACTUS CAPITAL CHATTER SUBSCRIPTIONS FOR 1977 DUE BY DEC. 31, 1976

\$1.00 per calendar year in U.S.A., beginning January 1977.

\$1.50 per calendar year to foreign addresses, beginning January 1977.

Mail your check with renewal and new subscriptions to:

Tucson Cactus & Botanical Society, P.O. Box 3723, College Station, Tucson, Arizona. U.S.A. 85722.

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To our subscribers: We thank you for your continuing interest in our newsletter, CACTUS CAPITAL CHATTER; and for your steady support through subscriptions. Also, our thanks for your encouragement of our efforts, with your kind compliments, while we continually strive to expand our horizons and content in the interest of cactophiles everywhere.

#### READ ABOUT CACTI & SUCCULENTS IN THESE PUBLICATIONS

C & S JOURNAL, May-June '76 - Very good illustrations on many Haworthias, small Aloes, and Euphorbias. July-Aug. '76 - "Some New Developments in Conservation" plus many pictures and descriptions of Mimicry Mesembs, Stapeliads, Senecios, Opuntia Grizzly Bear, new Turbincarpus. Many other articles.

SAGUAROLAND BULLETIN, June-July '76 - *Cochisea robbinsorum* Earle--the new cactus discovered by and named in honor of the Robbins family of Sierra Vista, Cochise County, Arizona.

CENTRAL ARIZONA C & SS, June '76 - stocks for grafting cacti in the desert, by Bob Moulis.

COLORADO CACTOPHILES, June '76 - The Elephant's Foot of South America; July '76 - more good information on Euphorbias.

KAKTOS KOMMENTS-Houston C&SS, June '76 - *Ancistrocactus Scheeri* and *Euphorbia Grandicornis*; July '76 - *Echinocactus*, *Senecios* and scale; Aug. '76 - *Echinocereus* and *Aloes*.

CACTOCHAT-Christchurch (N. Z.) C&SS, Feb. '76 - *Coryphantha*, succulent trees, *Escobaria*; Mar. '76 - *Copiapos*, *Weingartia*, The Saguaro; Apr. '76 - *Astrophytum*; May '76 - *Stenocactus*, *Ariocarpus* and relatives.

ESPINAS Y FLORES-San Diego C&SS, June '76 - *Aporocactus Flagelliformis* (rattail cactus). *Coryphantha*, *Thelocactus*. Garden Hints; Aug. '76 - *Pachypodium* and *Echinocereus Fasciculatus*; Sept. '76 - Brazilian Cereoids and Euphorbias.

LOS ANGELES C&SS, June '76 - *Parodia* & *Ceropegia*; July '76 - *Echeveria* and *Rebutia*; Aug. '76 - Hooked spined mams. and *Jatropha*; Sept. '76 - *Matucana* and *Haworthia*.

HENRY SHAW CS, July '76 - *Gymnocalycium*; Aug.-Sept. '76 - *Ferocactus* and cactus and succulent cultural hints.

Members find these publications in the TCBS cactus library in the office of Nancy Clarke at 2800 East Fort Lowell Road.



PLANT LOVERS! Do you know that 750 species and sub-species of flora in the United States are endangered, and more than 1200 are threatened with extinction? In our country's short lifetime 100 species already have become extinct? Do you care enough to learn what is causing this tragedy, what is being done to protect our country's irreplaceable plant life, and how you can help? For \$12.00 you can order 12 issues of NATIONAL PARKS & CONSERVATION MAGAZINE, The Environmental Journal, and the free magazine on endangered plants.

Mail your check to NATIONAL PARKS & CONSERVATION ASSOCIATION, 1701 18th St., Washington D.C. 20009.

#### ALLAN MOLLISON GUIDES TCBS ON ANOTHER NATURE TRIP

Allan Mollison has been a member of Tucson Cactus & Botanical Society for many years. He is a true naturalist at heart, both professionally and for his hobby interests. He is a hunter --with his camera. His subjects can be birds, animals, insects, reptiles, plants, landscapes--all that is beautiful and interesting in Nature. Members of TCBS annually anticipate programs that he presents, added to which are

his time-lapse photos of buds of the cacti and other plants, slowly bursting into full bloom. On November 14, 1976, he again presented one of his time-lapse photography and slide shows. Once again members of TCBS accompanied Allan on a thrilling trip through southwestern deserts and mountains. As always, we thank you, Allan, very much.

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IN REMEMBRANCE  
Dana Sloan (d. May 17, 1976) was among the earliest members of Tucson Cactus Club, so named when it was organized in 1960. She and her husband, Hugh, were greatly interested in the southwestern desert of Arizona. The cacti and other native plants were their favorites. Their hillside desert home on the slope of Tumamoc Hill, Tucson, included extensive outdoor cactus gardens through which roamed their desert friends--wild hogs, deer, coyotes, foxes, rabbits, roadrunners and snakes --all, welcomed by Hugh and Dana. They worked on the staff of CACTUS CAPITAL CHATTER for several years and are gratefully remembered by its editor. Hugh served a number of terms on the Board of Directors.

Dana Sloan's friends cherish fond memories of her friendship through the years.

Hildegard and Werner Nase hiked to their favorite secret mushroom spot near Alpine in the White Mountains of northern Arizona in August 1976.

There they found one huge *Calvatia Giganteum* mushroom weighing 11 pounds, and two smaller ones weighing five pounds each.

She is a botany expert who learned to identify edible varieties of mushrooms when she was a child near Bremen, Germany.

Mrs. Marie Gentry, wife of Dr. Howard Scott Gentry, research botanist at Desert Botanical Garden, Papago Park, Phoenix, Arizona, was the guest of Josephine Shelby, editor of CACTUS CAPITAL CHATTER, on an October date when Dr. Gentry attended a Jojoba Conference in Tucson. A visit to Arizona-Sonora Desert Museum introduced her to this world famous living desert museum. Curator of Plants, Don Ducote, welcomed her visit.

#### TUCSON MEN'S GARDEN CLUB FALL SHOW 1976

Christopher City's auditorium was the scene of this popular annual plant show, November 13, 14, 1976.

The Show included a variety of cut flowers, potted plants of all kinds, including flowering varieties, plus hanging baskets, and fruits and vegetables. Local nurseries furnished exhibits of plants, including cacti, succulents, and other desert type plants that require little watering.

Members of Tucson Cactus & Botanical Society who exhibited cacti and other plants were: Myrtle Ethington, Helen Housman, Dorothy Levering, Goldie Dean, Nancy Clarke, Hildegard Nase, Mr. & Mrs. Richard Wiedhopf. TCBS cactiwomen exhibitors outnumbered TCBS cactimen exhibitors by 7 to 1. Hildegard Nase reported winning the following awards:

First-Mam.wildii cristata, *Astrophytum asterias*, *Sulcorebutia rauschii*, Second-Gymnocalycium quehlianum, *Strombocactus disiformis*, *Hildewinteria aureispeina cristata*, *Pachycormis discolor*.

Third-*Notocactus crassigibbus*, *Turbinocarpus lophophoides*, *Rebutia krainziana*, *Haworthia nitadula*. Fourth-*Parodia oybeyana*, *Notocactus haselbergii*, *Euphorbia polygona horrida*, Mam. candida.

CACTUS CAPITAL CHATTER will announce the awards that all other winners received in this Show, upon learning them from members involved. Please send in at once.

Among very successful prickly pear jelly makers this season are: Gretchen Kunze, Agnes Daniels, Goldie Dean, Dorothy Levering-all of whom generously presented CHATTER editor proof of their special skill. There are more members who belong to this special class of cactus cooks.