



SAGUARO versus SAHUARO

Which spelling do YOU use? And How do you justify your choice of spelling the name of this fascinating giant cactus whose white blossom is the state flower of Arizona? The name of the giant cactus was given to it by the Indians, whose language was spoken, not written. The Spanish word "saguaro" was simply a way to capture in writing the sound of the Indian name. And "sahuaro" simply represents an effort to Anglize the spelling.

The Spanish-speaking Europeans beat the English-speaking Europeans to this part of America by more than 2 centuries. Why should not the Spanish version of the spoken Indian word be the right one to survive? In 1931, the

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Arizona State Legislature adopted the "sahuaro" blossom as the state flower. Two years later, the legislature was big enough to admit its mistake and amend the name to "saguaro". We had hoped that the confusion, which was certainly understandable, over the two spellings was a thing of the past. It's SAGUARO National Monument, The SAGUARO blossom is the state flower. And your dictionary, if it is up-to-date, gives SAGUARO as either the only or the preferable spelling. (Adapted from a Tucson newspaper story).

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ADDITIONAL NEW MEMBERS OF TUCSON CACTUS & BOTANICAL SOCIETY

Miss Jessie Morin	1056 E. Milton Rd.	Mr. & Mrs. Earl Benton, 1231
Mr. & Mrs. Carl O. Horst	5656 South Joseph Ave.	N. Rosemont Blvd.
Miss Bessie L. Crews	5367 E. Fairmount Ave.	Mrs. Edna Wills 2539 E. Linden
Mr. & Mrs. J.E. Levering	7660 N. Village Ave.	Mr. Wm. A. Pluemer, 4825 Camino la Brinca,

All the above are residents of Tucson, Arizona

Mr. and Mrs. Carl O. Horst, who recently joined Tucson Cactus & Botanical Society, are making Tucson their retirement home. Mr. Horst was a civilian aerodynamics engineer with the Air Force for 28 years. As a boy in Ohio, in the early 1900's, he watched the new flying machines overhead and wondered why they were not designed to fly as birds do. He began an independent study of bird flight which he has continued. He has written two books on this subject. He has a collection numbering more than 20,000 color slides of various wild flowers. He has made detailed studies of mushrooms and cactus. In addition, he is a studied authority on American and Mexican reptiles. Mrs. Horst is a former Tucsonan.

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IN MEMORIAM  
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Tucson Cactus & Botanical Society extends its heartfelt sympathy to one of our members, Hallie T. Yenni, whose daughter, Muriel Rulas Hansen, passed away recently. Mrs. Hansen was a member of our Society also.

## CACTUS CULTIVATION OR CACTUS CONFUSION

by Louis Fodor, Green Hand Nursery

All cacti are succulents, but not all succulents are cacti. What is a cactus? There are five factors that make a plant a cactus:

1. Its seedlings have two cotyledons or seed leaves like a bean.
2. Its fruit is a one-celled berry or seed pod.
3. All cacti have areoles with or without spines.
4. The petals of the flower arise from the ovary or top of the fruit.
5. All cacti are perennial; that is, they live year after year.

Many plants have 3 or 4 of these factors, yet are not cacti. The rose is an example of a plant with 4 factors named above, yet it is not a cactus or a succulent. A pereskia looks similar to a rose--it has leaves, but it has one thing that a rose does not have--areoles.

The first requirement for growing cactus is proper climate. Most cacti are of succulent nature and, lacking tender foliage, they can tolerate lower temperatures than in their native habitats. Many are covered with snow in the winter which gives them protection from the cold. Many will thrive in poor and arid soil. Some require rich loamy soil and abundant moisture at least during the growing period. Others grow in dry sand with only dew for moisture. Some appear to grow in solid rock. In order to successfully grow many varieties of cactus in Tucson, one should have a greenhouse--a lath house, in addition to a cactus garden. Most cactus start to grow between temperatures of 50-55 degrees. At temperatures of 65-70 degrees most cacti are growing, and at this stage it is safe to start a watering program. At temperatures over 95 degrees, most cacti slow down in their rate of growth in Tucson.

Soil of the correct kind is another requirement. It should be loose and porous. Cacti do not like stagnant humidity, especially in pots, Lime mortar, limestone, or coarse sand, crushed oyster shells may be added to the mix. Even broken red bricks can be mixed with loam. Leaf mold or manure may be used. Manure should be well rotted and in a powdery condition. It is a good idea to leave the manure exposed to the atmosphere for at least one year. Spray it and turn it several times so that all traces of fermentation have disappeared. Chemical fertilizers should be avoided especially in pots. Small amounts of phosphates can be used. Bone meal (salts of ammonia) might be used sparingly and repeatedly. It should be remembered that humus or leaf mold or old rotted manure mixed with soil will fix small amounts of atmospheric nitrogen necessary for normal growth of the plant. Any attempt to force a quicker growth of the plant by excess nourishment is generally resented by cacti and often proves disastrous. It is an excellent plan to have soil mixed and watered and allowed to become mellow and matured for about 6 months before using.

Charcoal dust and brick dust sooner or later become like a sponge retaining much water and fixing atmospheric ammonia which gradually transforms into nitrates. This, of course, may mean an excessive storage of fertilizing material. Small amounts of charcoal (throw away the dust) help keep the soil porous and sweet and prevent acidity.

Plants kept in the greenhouse or in pots require a more open soil and a heavier proportion of leaf mold or rotted manure. The important characteristics of soil for growing cactus are that it should be perfectly porous and never be allowed to become water-logged or sour. It should be fairly rich in gravelly matter and not too nutritious. It is not rare to see a cactus thriving in a mixture of 2 parts sand or gravel and 1 part old leaf mold with just a little powdered old mortar--for a short time, required for plant growth and proper development of spines. It is always safe to keep cacti on the dry side. Do not let the roots dry out. On the other hand, a soil which keeps moist or forms a green coat or crust on the surface is badly drained and unsuitable. The plant should be repotted. A soil containing excessive alkali or chloride of sodium should be avoided. Cacti planted in these alkaline and saline soils will soon rot off at the roots and perish. There are a few species of cacti growing close to the sea which are able to tolerate these soils, but they receive most of their moisture from condensation of dew rather than from soil moisture.

#### Planting and Potting

Planting and potting should be done at the start of the growing season--in spring, with the temperature at about 60 degrees. Plant in a dry soil entirely free from fermenting material, especially if roots have been damaged in transplanting. Water should be withheld altogether, for a few days to allow time for wounded tissue to dry and heal. Water just enough to keep soil moist, not wet, in order to promote formation of new roots. Water may be given more freely later on when the temperature rises and new growth develops. Whenever possible, place north side of cactus plant to the north if you move or collect plants. If you receive a gift plant or buy one, you will note that the growing center will usually be leaning slightly to south. If you cannot detect this, watch your plant to make sure it is not burning from the sun. If so, shade it or turn it around. Imported cacti which have been matured or cured before packing for shipment, generally arrive in a shrivelled condition. On arrival, they should be unpacked at once, cleaned of all dead roots and dead parts and placed in a shaded area upside down. Spraying once or twice a day for 2-4 days is necessary. They may then be planted in a dry soil and watered at once. Or they may be treated like a cutting and placed in a bed of sand to re-root or to grow feeder roots before being planted in the open. Continue to shade these plants from 2-6 weeks and gradually accustom them to the sunshine by removing the shading for a few hours daily during morning or evening.

Do keep them covered during the heat of the day. Whatever care may be taken by the grower or the shipper, accidents will happen to cacti more than to any other class of plants. A certain percentage of failures is sure to occur, and plants are lost.

#### Watering and Spraying.

Rain water and water free from alkaline and other salts, whenever obtainable, should be used for watering and spraying cacti and other plants. Distilled water is good for cacti, especially your rare plants. When you defrost your refrigerator, you may melt this frost to water cacti. Allow the melted frost to warm to the temperature of air before watering. WARNING. Never use water treated by water softeners. Never use laundry water. If you do not want to collect rain water or buy distilled water, make ice cubes. Let them melt and settle for several days in a jug so that the salts will settle to the bottom. Use only the upper water. If you have a hose coming from your cooler, keep that water OFF your cactus. It is too alkaline and too cold. Watering is best done early in the morning before plants have time to be heated by the sun. Next best time is late in the afternoon after they have had time to cool. Plants having depressed tops should not be sprinkled in the evening. They will hold water like a cup, too long on the growing tip. This could cause rot and disease.

#### Landscaping with Cactus.

In favorable climates, cacti are very suitable for planting out in the open ground, particularly in rock gardens. Sites sloping more or less steeply to the south or to the east are best. A site well sheltered from cold winds is the most ideal. The soil should be gritty and sandy and porous. The laying out of walks and masses of rocks to form the garden is a matter of personal taste of the individual. Slope your rocks toward the plants so that water will penetrate deeper around the plants. Avoid rocks with many holes in them. Even though they may look attractive, they are hiding places for snails, slugs, and other insects. Tall trees without thick foliage are good to plant under. The stem or trunk should be high enough to allow free circulation of air and to permit light and some sun to fall under them. Evergreen trees offer winter protection by keeping cold air from settling under them. Again, the south and east sides are best planting areas. Avoid spots that are shady and too cold. Take advantage of warm spots in your garden. South and east sides of patio walls are best. If you have an enclosed patio, the west side of the walls is good. Use rocks around the base of cacti to protect them from freezing at the base. Paper bags placed over the tips of tender plants help to keep them from freezing. Rest your cacti in winter. Then they can take more cold.

If you are not sure of the warmer spots in your yard, the next time the weather is cold, make like you yourself are a cactus. Try different spots to see where you would like to spend the winter in your yard. Visit other cactus gardens. If you have lost a certain variety of cactus by frost and if someone else has one growing outdoors, figure out why and what different conditions may exist in his garden. You can profit greatly by these visits.

Winter weeds, African daisies, and winter bedding plants help to protect your cactus from freezing in your yard. Native grasses also help. Try to choose plants that require very little watering in winter. Also choose plants that can be removed before summer sun grows hot. Try to group your plants that have similar needs. Learn about your plants: where and how they grow. Then try to do the same for them in your garden. If you have potted plants that are tender, growing in clay pots, you can plant pot and all in the ground. Then in the fall, dig out the pot and put it in its winter quarters.

Louis Fodor, owner of the Green Hand Nursery, deals in plants of many varieties, including cactus and succulents. The latter have been his hobby through the years. He hopes that in time he will be able to specialize in them, full time. Louis is a self-educated nurseryman who has capitalized on his practical experience and observations in the world of plants.

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#### THOUSANDS AND THOUSANDS OF CACTI

TANQUE VERDE GREENHOUSES, owned by George Scannell, produce at present, 400,000 plants yearly from seeds--mostly cacti. Mr. Scannell studied for two years at the University of Arizona, majoring in horticulture. Always he has had a deep interest in growing plants. He has been in the nursery business for three years; in cactus business, one and one half years. He has learned the cactus growing business from many of Southern California's specialists. This area is the largest cactus growing one in our country, due to the climate which allows all growing to be done outdoors - except seedlings. He ships anywhere in the

United States, primarily on a wholesale basis. His best wholesale outlets are Phoenix and Tucson. He believes that cacti are the class of plants bought more spontaneously than any others. Think of the numerous cactus and succulent plants offered for sale in most super markets, as one example. He also believes that the Tucson Cactus & Botanical Society might well initiate an educational program to enlighten the public about the cactus family -- for information, appreciation, and enjoyment.

Tanque Verde Greenhouses orders cactus seed from Germany, Argentina, Mexico, California, and New Mexico. Since the Japanese people are extremely interested in cacti, Japanese importers send their buyers to the United States, especially to California, to buy cacti. The Tokyo Cactus & Succulent Society has over 1,000 members. One Japanese cactus grower alone ordered 1,000,000 golden barrel seeds per year, Mr. Scannell tells us. He says that small grafted cacti from Japan are especially in demand. The Japanese excel in these, due to their plentiful and economical labor supply, as well as their very special interest in plants.

Mr. Scannell's recommended growing medium for best results in cactus culture contains: 3 parts fine mortar sand; 1 part Grade #3 perlite; 1 part peat moss; 1 part well decomposed manure or leaf mold. (Caution: manure standards are not uniform). You will note that there is no earth in this mix. It is sold at the Greenhouses at 20 cents per gallon. Perlite has no food value; it offers good moisture retention; it never changes shape and never sours like vermiculite. It may be used in your flower beds, mixed with garden soil-- 1 shovel perlite to 3 shovels garden soil, says Mr. Scannell.

Cactus plants, like all others, prove that the better the care taken of them, the more successfully they grow. This care includes proper watering and feeding and protection against low temperatures. During periods of cold weather, it is best to reduce watering markedly. In using cacti in landscaping, utilize the brick walls around your gardens and also your house walls. Radiant warmth from these walls aids cactus growth greatly. Rocks among cactus plants also retain heat that will benefit your plants. Plant your cacti in an area of southern exposure for warmth. These rules are suggested by George Scannell.

Tanque Verde Greenhouses, 10810 Tanque Verde Road, are open every day, 8 A.M. - 6 P.M. George Scannell invites you to visit. Do, however, phone him first. He sells wholesale primarily but does deal in retail sales on a limited basis.

#### SPRINGS' ARRIVAL AT THE BOYCE THOMPSON SOUTHWESTERN ARBORETUM

Mr. Prior Thwaits, Resident Supervisor of Desert Biology Station in which the Arboretum is located, tell us:

In mid-March the prickly pears and hedgehog cacti were budding. Spiderworts and desert marigolds were in flower. There were few, very few, lupines along the highways this year. At this time also, many of the deciduous trees had begun to leaf, and a few of them were already in full leaf. The greenhouses had been cleaned; the soil renewed in them, and the plants rearranged. A few new species of both cacti and succulents had been added. In the picnic area, new tables had been put in, and charcoal grills had been added.

Director E. Lendell Cockrum tells us that during the year 1 March 1966 through 28 February 1967 there were 12,994 people signing the guest register at the Arboretum. During that time period, at least 6 garden clubs, 19 classes and 23 other groups visited the Arboretum. Studies made by Mrs. Taylor, receptionist at the Arboretum, show that approximately 50% of the visitors register. Thus the total number of visitors for last year is about 25,000.

## INTRIGUING CACTI

by

Harrison G. Yocum

When one thinks of a desert, an immediate thought is that of a barren wasteland; however, most deserts have a diverse flora. This is true for the deserts of the Western Hemisphere except for small areas in Chile and elsewhere. These desert areas are characterized by a high evaporation rate and an annual rainfall ranging from less than 3 inches to 15 inches per year. Semi-arid conditions are found in the great American Southwest, parts of Mexico, the leeward part of some of the islands of the West Indies, the "catangis" of northeastern Brazil, and sections of Argentina and the Andes. Certain plants became adapted to these harsh conditions. A unique example of this is to be found in the cacti. The ability of these plants to store water accounts for their survival over long periods of drought. Their distribution is limited almost entirely to the New World, ranging from Canada to Patagonia and Tierra del Fuego. They number close to 2000 species, of which Mexico has the greatest percentage. North of the border, Texas has more than any other state. In South America, Argentina, Chile and Peru are the leading cactus areas.

But cacti are not found strictly in deserts. Most of them occur in mountainous regions with rather dry climates, along with many other kinds of plants. Very many cacti are found in the mountains of southwestern United States, Mexico and in the Andes of South America. Amazingly, others are found in the jungles of the tropics; and indeed, the ancestral type still grows in the West Indies. It is Pereskia aculeata, a white-flowered woody vine with scattered spines. On account of its fragrance, it is called "Lemon-vine". Another is its pink-flowered close relative, Pereskia saccharosa, which has longer spines. Unlike other cacti, they have broad fleshy leaves. Cactus leaves are much reduced and soon drop off new growth of the prickly pears, and are totally absent in the are epiphytic. Some are commonly called "Mistletoe Cacti", Rhipsalis. It is the only genus not restricted to the Americas. Most of the species are found in the American tropics, but Rhipsalis cassutha occurs there as well as in Africa and Ceylon, and Rhipsalis prismatica is found in Brazil and Madagascar. This anomalous distribution may have been the result of introduction by birds. They are epiphytic because roots emerging from the much-branched stems become attached to trees and other plants. Aerial roots also grow from the stems of Hylocereus and Selenicereus, the tropical night blooming cacti. This is also true of the Christmas cactus (Zygocactus truncatus of Brazil).

The number of genera into which the cacti are grouped has been greatly increased as a result of discovery of new species and revisions. There will be no need to go into their classification here as such information is readily available in the many popular books on the subject. Suffice it to say, four general types may be recognized. First, there are the prickly pears (Opuntia) which are separated into two groups: those with flat, pancake-like stems either crawling or tree-like in habit, and others called "cholla" (Pronounced cho'-ya) with very spiny cylindrical stems. Next, there are the columnar types with fluted stems. These belong to the Cereus group, and they usually grow tall. They branch from the base as in the case of some Organ-pipe cacti (Lemair--eocereus and Pachycereus) or from above as in the case of the Saguaro (Cereus giganteus). After heavy rains, these fluted stems expand much like an

accordian and increase greatly in girth. Thirdly, globular types include very many kinds which may grow singly or form clusters. Common ones are the Barrel (Ferocactus), Hedgehog (Echinocereus), Easter-lily (Echinopsis), and Fish-hook or Nipple Cactus (Mammillaria). A fourth type may be called scandent or climbing species. Their slender stems need support and many of them climb on trees. Here belong the Orchid Cacti (Epiphyllum) with notched, flattened stems and those with rounded, angular, twining stems (Selenicereus, Hylocereus and Eriocereus). These are the popular tropical night-blooming cereus types.

Cacti with few or scarcely any spines come from regions of greater rainfall than those with many spines. The function of the spines is not only that of protection from animals, but also to shade the body of the plant. Since the structure of the plant is the key to its culture, the more spines a particular cactus has, the more sun it will tolerate. All cacti need a well-drained soil, and this is the most important of all factors. No leaf-mold should be added to the desert types as it may introduce harmful organisms. However, tropical ones mentioned above benefit with leaf-mold since they grow naturally in tropical forests.

Most cacti are to be found growing among other plants, particularly grasses and desert shrubs which create a lath effect. This is especially true with some hedgehogs, twining cerei and others. Nonetheless, some do grow in the open with no overhead protection, and often such are to be found in rocky areas. Rocks are important in providing niches that protect the tiny seedling.

Also they give sufficient shade and moisture among the crevices until the root system is sufficiently established so the plant can endure the full sun. Many kinds of cacti are to be found in such well-drained rocky places, especially in cliffs. Examples include Button Cactus (Epithelantha micromeris) which frequents limestone ledges, many of the hedgehogs, barrels, Echinocacti and Mammillarias.

As a group, the cacti have little economic use. Some people use young shoots of prickly pear as salad, and many cactus fruits are sold in markets. The latter are the source of cactus jelly. Cactus candy is made from the stems of barrel cacti. Spines are used as fish-hooks, combs, pins and needles. Occasionally, the wood of arborescent species is used in furniture-making, decorative items, props, shelter or firewood. Tough fibers yield basket and matting weaving materials. One of the prickly pears, Nopalea cochinellifera, is host to the cochineal insect. This is a type of mealy bug which produces a scarlet dye. However, this industry has been replaced by synthetic dyes.

More important uses are for decorative effects of their pleasing and often bizarre shapes and forms as well as their showy flowers. The growing of cacti as a hobby by collectors is undoubtedly the greatest use, with important commercial significance. In Mexico especially, columnar species are often planted as hedges; however, this was practiced with past cultures more than it is today.

In order to learn more of this unique group of plants, it is well to join such organizations as The Cactus and Succulent Society of America, Box 167, Reseda, California. Members benefit in receiving the valuable bi-monthly Cactus and Succulent Journal. Some might be interested in its Mexican counterpart- Organo de la Sociedad Mexicana de Cactologia, A.C. which issues a quarterly magazine, Cactaceas y Suculentas Mexicanas. Even those who do not read Spanish will find it worthwhile as there are many illustrations and an English summary. Information may be secured from Dudley B. Gold, Aniceto Ortega 1055, Mexico 12, D.F. Also, there are many local clubs where information, and even plants, may be exchanged.

Harrison G. Yocum recently joined the Tucson Cactus & Botanical Society. He is a graduate of Pennsylvania State University, B.D. Horticulture; he has a M.S. degree from Rutgers University. He is a member of the following professional groups: National Geographic Society, American Horticulture Society, National Cactus & Succulent Society, Sociedad Mexicana de Cactologia, and Pi Alpha Xi-honorary fraternity for achievement in floriculture.

## TUCSON'S WINNING CACTUS TEAM: MARVIN-BLACKBURN-CLARKE

Three of the outstanding and enthusiastic members of Tucson Cactus & Botanical Society, Lena Marvin, Alan Blackburn and Nancy Clarke, won many high honors in the recent Twentieth Annual Cactus Show sponsored by the Phoenix Gazette and the Desert Botanical Garden, Papago Park, Phoenix. Their awards are as follows:

LENA MARVIN:	Best Leaf Succulent.....	Tavaresia grandiflora
ALAN BLACKBURN:	First.....	Pediocactus payracanthus Lithop Neoporteria senilis (graft) Parodia maasil
	Second.....	Pediocactus knowltonii
	Third.....	Mammillaria herrerae (graft) Coryphantha muehlenpfordtii Pediocactus simpsonii
	Honorable Mention.....	Pseudespostoa melanosteale Mammillaria mainiae Neogomesia agavoides Mammillaria compressa
NANCY CLARKE:	First.....	Gymnocalycium schickendantzii Notocactus haselbergii Euphorbia lactea cristata

## ONE MEMBER'S CACTUS GARDEN

Mrs. Betty Capps, 959 West Valencia Road, is a member of Tucson Cactus & Botanical Society. She is a serious collector of cacti and enjoys experimenting with plants. She is very interested in cactus culture and has developed an extensive cactus garden in her home here. 1967 finds her compelled to return to her native Ohio--minus most of her cherished cacti, of necessity. She is offering her home for sale, with or without her cactus collection in garden, house, and lath house. Also, she will consider leasing her home to responsible persons who like and enjoy the Cactus Clan and who will be willing to seriously and properly care for her plants.

About one half of her cactus plants are imported from Argentina and other South American countries, Mexico, New Jersey, Oregon, Florida and California. Her two specializations are 1). mammillaria, and 2). grafting cacti. Many of these grafted plants she will sell. Experimenting with raising cactus from seed interested her, and she has many seedlings to sell.

Among the various kinds of cacti that Betty Capps is now offering to sell are: Blue barrel. Red-spined barrel (variety unknown, Mexico). Senita. The many varieties of Old Man cactus. Feather cactus. Rainbows. Devil's Pincushions (species almost extinct). Living rock. Peyotes. Several varieties of night-blooming cacti. Chin cactus. Fishhook barrels (purple flowers, a Mexican species). Several small golden barrels. Many varieties of Easter lily cactus. Echinocactus ingens. Pelecypora Aselliformis. Horse crippler. Star cactus. Old Lady. Sand Dollar. Powder Puff. Obregonia denegri. Mammillaria wilderii. Bishop's Cap. Rose Plaid. Tom Thumb. 3 varieties of Permanent Wave. Silver Ball. Split Rock. A number of crested cacti. Several varieties of Opuntias. Agave Victoriae Reginae. Many-headed barrels. Tiger Aloe. Joseph's Coat. Thimble cactus. Clumps of Aggregata Coryphanthae. Clumps and singles of grafted recurvatas and others.

If you would like to see Betty Capps' cacti and succulents, phone her at 294-8618. She will exchange cactus plants with you for S & H and Gold Bond Trading Stamps. Also, she will trade cactus plants with you for demi tasse sets to add to her collection, another of her hobbies.