

7. ROCKERY III

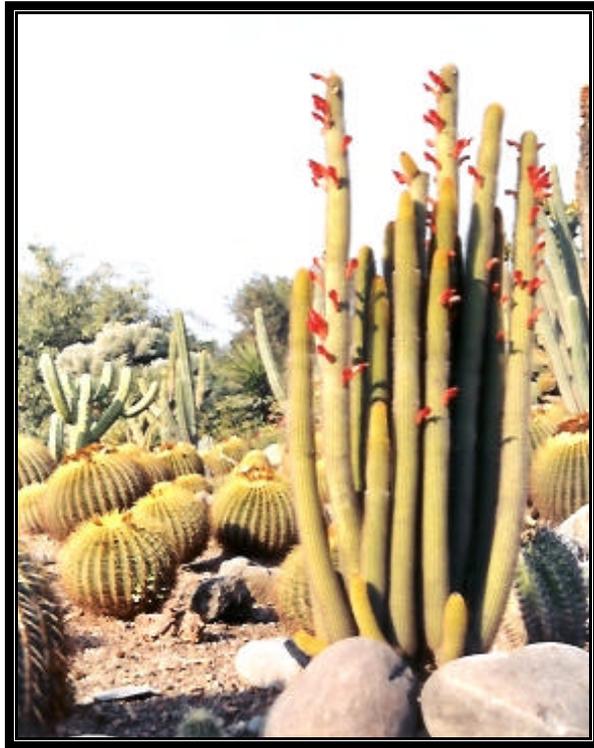


This was the first one to be built in this garden. It is a large feature about forty meters long with width varying from thirteen to twenty five meters. It extends in an Eastern direction with a mild Northern curve. The highlight of this feature is a botanical collection of Genus MAMMILARIA grown outdoors. Like in other rockeries, tall growing *cerei* and other succulents are grown in the background, with *Echinocactus grusonii* in midfield, and *Mammillaria* collection in front.



In the background one can see several groups of *Neobuxbaumia tetazo*, about four to five meter high and near the Eastern end a tall *Lemaireocereus marginatus* group. Three groups of *Ritterocereus pruinosus* along with two groups of other unidentified species of *Cerei* are also there. There are two plants of *Stenocereus beneckeii* near the middle. During active growth the tops of this relatively thin growing *cereus* are azure blue with white powdery farina near the top. There are several groups of *Trichocereus* species and *Cleistocactus jujeensis*. Several *Yuccas aloefolia*, *Pereskia grandifolia*, *Aloe arborescens*, and *Kalanchoe behariensis* and a large plant of *Euphorbia stenoclada* are in the background. Two plants of *Dracaena draco*, raised from seeds are near either end of this rockery. They are

already one and a half meter in height and the trunks are about eighteen cm. in diameter. Several groups of *Adenium obesum* are just in front of these. Two clones of this species are extremely floriferous, and are in flowers throughout the summer. Several plants of *Pachypodium lamieri* have also been planted just in front of the *cerei*. These plants are quite small now, but when fully grown will add to the attraction of the background. One plant of *Rhodocactus* species acquired from HUNTINGTON BOTANICAL GARDEN, Los Angeles, also grows in the background. There are three plants of *Aloe speciosa* near the Eastern end at the back. One of these nearest to the end is over two and a half meter tall and forms a magnificent sight when in flower during February and March. The tops of other two *Aloe speciosa* plants had been damaged and they are now low groups of six to seven heads each. One can imagine the sight they will present when these heads grow taller.



The mid field is landscaped with extensive plantation of over two hundred and fifty large *Echinocactus grusonii* plants. This massive plantation gives a magnificent effect to the landscape and after a shower their shiny golden spines are a wonderful sight. Most of the plants have grown very big, and are nearly seventy five centimetres in diameter. There are several off-setting groups which are already more than a meter in diameter. Near the Eastern end are groups of *Ferocactus herrerae*, *Ferocactus horrida* and *Ferocactus glaucens*. There is one, *Ferocactus acanthiodes* about forty centimetres high near the front Eastern corner. A small *Ferocactus stainsii* with red spines is in front near the middle.



Two outstanding landscaping *cerei* are near the Eastern end of this rockery. One is a *Coleocephalocereus* species grouping plant, about 2.5 meters high with long woolly cephalic on the sides of stems near the top. It

flowers during summer and small pinkish flowers are about three cm in diameter. The other species is a group of golden coloured *cerei* about three centimetres thick and one and half meter high. This came to us as a hybrid plant with *Akersia grandiflora*, and *Borzicactus aureispinus* as parents. It was procured from KALAPATRU BOTANICAL GARDENS in Gujarat, which has since been wound up. Apart from its golden colour the main attraction of this plant is its floriferous nature. During summer every three to four weeks, the entire plant is covered, with small (about three centimetre long) orange flowers. Each crop lasts two to three days. There is profuse flowering during rainy season. Now we are propagating this plant so that in the years to come there will be several profuse flowering groups. Near the beginning of this rockery, there is a thick robust plant of *Carnegia gigantea* (*Cereus giganteus*) about a meter in height. There are several small of groups of *Agaves*, and a couple of *Opuntia depressa* groups.



On the front of this extensive rockery is a three meter wide sloping strip where the *Mammillaria* species are grown. This collection looks very impressive in some areas while in others the growth of the plants is not so robust. This is due to the fact that this garden area has a heavy infestation of white ants. We destroy a colony whenever we see one. Certain areas and some specific species are their main attraction. *Mammillaria* groups and species having a hairy covering are their main targets. The white ant attacks were under good check when the use of ALDARIN was permitted. The present day termite control drugs are effective for a limited period only. Now, with regular intensive drenching of the termite-prone areas, this menace has been brought under control. During summer every morning, two members of the staff go around the entire garden and closely examine the plants for any termite attack. On spotting any such invasion, the area is

immediately drenched with termicide. Our *Mammillaria* collection is planted according to sub-genera and sections as given by JOHN PILBEAM in his book, “*Mammillaria, A Collectors Guide.*”



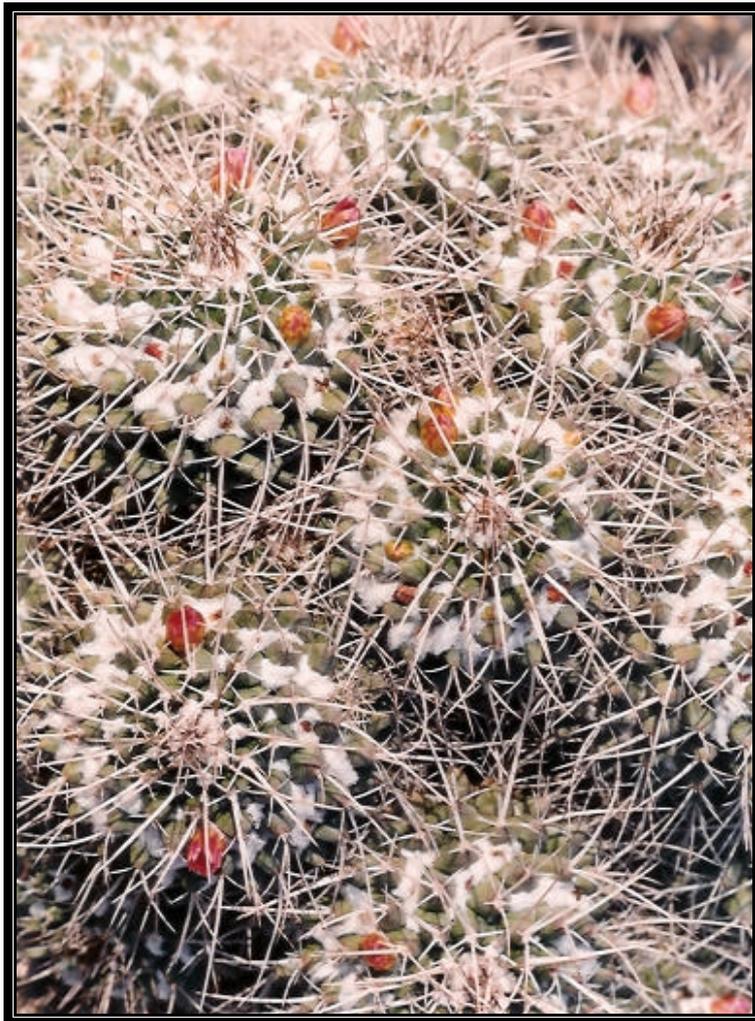
Genus *Mammillaria* is one of the largest single groups of plants in *Cactaceae*. The number of species and their varieties has been a matter of debate between various taxonomists and growers of this genus. This genus has a very wide distribution inhabiting the southern states of the U. S. A., Mexico and adjacent Caribbean islands. Due to their extensive distribution, this genus has a great variability in shape, size and floral characters. The common binding factor is that all the plants in this genus are hobbyists' delight because of their beauty, whether of its form, spines or floral

characters. All the texts, past and present dealing with this genus do not give a clear-cut four line definition of “*What is a Mammillaria?*” The best I could locate is by BRITTON AND ROSE. They state:

“Plants globosa, depressed-globose or short cylindrical, occasionally much elongated, some with milky others with watery juice: tubercles arranged in more or less spiral rows, never on vertical ribs, tereta, angled or sometimes flattened never grooved on upper surface, usually bearing wart or hairs and sometime bristles, but without glands in their axils and covered with spines on top of tubercles, sometimes all alike, sometimes very different from the radials – straight. Flower arises from the axils of the tubercles.”



The number of species accepted at present is in the range of about 240 to 250 with innumerable varieties. N. P. TAYLOR's classification as described by JOHN PILBEAM has been followed in this garden.



At the beginning of the *Mammillaria* collection is a section devoted to *Mammillaria candida*. This species is a delicacy for termites. As soon as

the plants start grouping, we suddenly find termite attack. One has to be a keen observer to spot an early attack. The termite creep into the plant under the thick cover of spines, and at times one comes to know of it when suddenly the lower one-third or half of the plant is bare of spines. Now this area gets regular fortnightly drench with termiticide, and during the last season we had a steady progress in the growth of the plants.



Before going on to other areas of the *Mammillaria* collection, I would like to mention that ALFRED LAU who has done extensive work on this species had supplied us a lot of *Mammillaria* seeds including the seeds of *Mammillaria laui* and *Mammillaria carminae*. Quite naturally when ALFRED LAU visited Chandigarh, we requested him to dedicate the *Mammillaria* collection to the Indian Nation. A commemorative stone at the

beginning of this rockery honours the great explorer. The *Mammillaria* collection was still in its infancy at the time of his visit in January 1990.

Subgenus *Oehmea*, i.e., *Mammillaria beneckeii* is grown in the next slot. Plants of three distinct clones, which came under names of *Mammillaria balsasensis* and *Mammillaria balsasoides* apart from plants raised from seeds supplied by ALFRED LAU, are here. One of the clones, with uniform spherical reddish-white heads is very beautiful. The clone from seeds sent by ALFRED LAU has larger heads with dark brown spines. There is a slight variation in the colour and size of flowers---with smaller more orange colours on the former two clones and larger yellow-orange flowers on the others.



Sub-genus *Dolichothele* plants grow alongside *Mammillaria beneckeii*. *Mammillaria baumi* has formed several groups, and they flower profusely in

two or three crops during the summer and rainy season. *Mammillaria longimamma* also groups easily. Larger groups are prone to rot during rainy season. Several smaller groups of *Mammillaria spherica* are also here. Other species of *dolichothele* do not last long outside. In Subgenus *Cochemea*, *Mammillaria poselgeri* and *Mammillaria setispina* have established outdoors. *Mammillaria poselgeri* flowers twice during the season and its deep red flowers are very attractive.



We have not tried Series *Longiflorae* plants outdoors as we find them difficult to survive even in our glasshouse collection. Series *Ancistrocanthae* plants are also quite difficult to establish outdoors. We have grown *Mammillaria guelzowiana* grafted plants outdoors as their large bright pink

flowers are great attraction. But we lose these plants if there is long overcast rainy spell during monsoons.

Now we have decided to bring grafted plants outdoors during the summer and then shift them indoors during the monsoons. We had limited success with *Mammillaria wrightii* earlier. On own roots it rots during rainy season. Two large groups of *Mammillaria wrightii* forma *wleolfii* are growing here on thick stock grafts. We will shift one of these indoors during the rains and watch the other outdoors. *Mammillaria microcarpa* Group had its troubles outdoors. While *Mammillaria microcarpa* and its form *Mammillaria microcarpa* var. *auricarpa* do well outdoors, most of the other species tend to rot during monsoons. At present we are growing *Mammillaria boolii*, *Mammillaria lousiae*, *Mammillaria mazatlanensis*, *Mammillaria schumannii* and *Mammillaria sheldoni* are grown outdoors. Of these *Mammillaria mazatlanensis* and its form *Mammillaria mazatlanensis* var. *patonii* have formed large groups and grow vigorously. In *Mammillaria Dioica* group we have *Mammillaria albicans* and *Mammillaria capensis* growing outdoors.

Series *Stylothelae* is equally difficult to grow outdoors. *Mammillaria boombycina* is being grown outside. A large *Mammillaria zeilmanniana* group also grows here.



Within Series *Proliferae*, *Mammillaria albicoma* has done quite well. Three clones of *Mammillaria prolifera* are also established here, and show good growth. *Mammillaria gracilis* group also grow well. *Mammillaria gracilis* has established a small colony. However its variety *pulchella* does not last long outdoors.

The Series *Lasiacanthae* is represented by *Mammillaria carminae*, *Mammillaria schiediana*, and *Mammillaria laui* var. *dasyantha* and *Mammillaria laui* var. *subducta* too have established and the yellow spine of var. *subducta* with red flowers is an attraction. These two species have been outdoors for two years now. In Series *Leptocladodae*, *Mammillaria elongata* group is represented by four forms of *Mammillaria elongata*. *Mammillaria mieheana* grows quite vigorously forming yellow spine

groups. Series *Decipiens* unfortunately does not do well outside. Whenever it starts grouping, rotting starts due to termite attacks.



Section *Subhydrochylus*:

Series *Heterochlorae* has a good representation. In *Mammillaria rhodantha* Group, *Mammillaria auriceps*, *Mammillaria prinjlei* and two forms of *Mammillaria rhodantha* grow quite well. *Mammillaria polythele*, described in literature as solitary in growth, has formed two large groups.

Series *Polyacanthae* plants are very much prone to termite attacks. In spite of this *Mammillaria backebergiana* and its var. *ernesti* are doing quite well. *Mammillaria matudae* is also easy to maintain. *Mammillaria spinosissima* plants are more difficult as they are prone to rot. Three large plants of *Mammillaria magnifica* also grow here.

Mammillaria nunezii Group is represented by *Mammillaria bella*, and a very big bed covered by *Mammillaria guerreronis*. This species forms quite large groups but is one of the delicacies of termites. If not kept under strict control, the termites can destroy a large group in a couple of days. Its flowers are not very showy and they come during summer months. *Mammillaria eriacantha* tends to elongate too much and requires frequent replacement by smaller plants.



Series Supertextae: *Mammillaria supertexta* Group plants flourish into healthy robust specimens. Groups of *Mammillaria albilanata*, *Mammillaria columbiana*, *Mammillaria haageana*, and *Mammillaria yucatanensis* grow quite well. *Mammillaria supertexta* true plants are quite elusive and only two plants are on this rockery. We have procured seeds of this species several times from different sources, but only once seeds from ALFRED LAU have come out true to form. Three plants of *Mammillaria crucigera* have been recently planted. During the coming years its behaviour outdoors will be closely watched.

Section *Mammillaria* (Syn. *Galactochylus*) Series *Leucocephalae*:

Plants of this series form the most attractive sight in this *Mammillaria* collection. There are several large plants of *Mammillaria brauneana*. Very large groups of *Mammillaria geminispina* grow here. *Mammillaria geminispina* is quite a variable species so far as the length of spines is concerned. In HIDALGO VALLEY, MEXICO, I have seen plants of this species with very small spines or spines up to five centimetres or more in length. Most of our plants have smaller spines but there are a few groups with three to four centimetre long spines. The latter look very attractive. *Mammillaria hahniana* and *Mammillaria klissingiana* are also present. *Mammillaria perbella* has four large groups with dichotomously branching heads. Plants of *Mammillaria pseudo-perbella* also form quite robust specimens but remain solitary. Plants of *Mammillaria parkinsonii* are also quite healthy and a couple have started dichotomous branching. There is one specimen of *Mammillaria parkinsonii* var. *brevispina*.

Mammillaria semipervivi Group is very well represented. There are two big dichotomously branching groups of *Mammillaria microthele* var. *superfine*. Though all grouping *Mammillarias* described earlier look very attractive, the groups of this species are the most beautiful of all. After flowering the berries make them very beautiful. A group of dichotomously

branching *Mammillaria formosa* also grows next to it. *Mammillaria semipervivi* and *Mammillaria chionocephala* are also nearby.



Series *Macrothelae*:

This series has a very comprehensive representation. *Mammillaria mammillaris* Group is represented by *Mammillaria mammillaris* and a very big bed of *Mammillaria nivosa*. Several large groups of *Mammillaria nivosa* grow there. Their golden spines are the main attraction. This species is a shy bloomer. Due to its golden spines it is a most desirable landscaping plant and is having groups on several other rockeries in this garden.

Mammillaria heyderi Group also has good representation. Very robust plants of *Mammillaria gaumeri*, *Mammillaria grusonii*, *Mammillaria heyderi* and *Mammillaria melanocentra* are grown here.

Mammillaria pettersoni Group is represented by a large plant of *Mammillaria gigantea* and another one of *Mammillaria rubrograndis*.

Mammillaria standleyi Group is represented by *Mammillaria miegeana*.

Mammillaria sonorensis Group is represented by *Mammillaria bocensis*.

Mammillaria compressa Group has several groups of *Mammillaria compressa* and a few of *Mammillaria compressa* var. *rosea*. The latter have more attractive spines.

Mammillaria magnimamma Group has a good representation. *Mammillaria magnimamma* is quite a variable species so far as the length and curving character of spines are concerned. Several groups with curbing spines are very attractive. Most of these plants have been propagated by me from seeds I collected near the Pyramids in Mexico.

Mammillaria glareosa represents *Mammillaria brandegei* Group.

A couple of plants of *Mammillaria johnstonii* represent the *Petrophila* Group.



Series *Polyedrae* has a very good presentation with several large healthy plants.

Mammillaria karwinskiana Group is represented by a couple of groups of *Mammillaria collinsii*, two large beautiful groups of *Mammillaria eichlamii* and several plants of *Mammillaria karwinskiana*. Some of the plants of *Mammillaria karwinskiana* have started dichotomous branching. There are three plants of *Mammillaria nejapensis*. The long white spines with woolly areoles make them attractive. *Mammillaria voburnensis* has two large groups.

Mammillaria polyedra Group: both *Mammillaria carnea* and *Mammillaria polyedra* have grouped into nice specimens.

Mammillaria mystax Group has a couple of plants of *Mammillaria mystax*. After flowering, red berries in a couple of rows make it an attractive plant.

From the above review, the reader will note the very comprehensive nature of this outdoor collection. One of the glasshouses in this garden has a very big collection of genus *Mammillaria*. Nearly seventy five percent of the species and their varieties or forms described by JOHN PILBEAM are there. Several other species which came into cultivation after PILBEAM's work are also in that collection. Some of the smaller growing species such as *Mammillaria longiflora* group or extremely woolly species such as *Mammillaria plumosa* have established there nicely. The indoor collection is grown in two lots, in pots as well as in a large indoor bed. Most of the delicate and difficult to grow plants are kept on grafts as well. Over the last two years we have imported the seeds of a large number of *Mammillaria* species previously not in our collection, and are growing them in another glass house.

It is planned to have an outdoor collection of Genus *Coryphantha* on the wide Eastern end of this feature. At present we have groups of

Coryphantha elephantidens and *Coryphantha bummama* only. Physically both the species resemble each other. *Coryphantha elephantidens* forms large group and the flowers are pink. *Coryphantha bummama* groups very slowly and the flowers are yellow.

Plants of several other species dot this large rockery.



1990 picture of MR S. P. BHANDARI on Rockery III