

Part C
INDOOR COLLECTIONS

18. ON GLASSHOUSES



A view of Rockery IIa and Glasshouses 1-3 as seen from Rockery II

We now come to the botanical collections of Cacti and other Succulents housed in the glass houses. Along with the propagation glass houses the architects of HUDA were asked to plan glasshouses for indoor botanical collections. During discussions with architects I had made it clear that it was essential to have 25 to 30 percent humidity inside the glass houses during the extreme dry summer months and during hot summers we

should be able to control the indoor temperature at about 35° C. It was also advisable to cut out sunlight by about 20 percent during summers. During my visits to U.S.A., I had visited several glass houses. I told them that abroad practically all glass houses are rectangular in shape, with large water dripping screen at one end and large exhaust fans at the other. They are air tight with provisions of automatic exhaust fans in the roof in case the indoor temperature rose very high. Unfortunately my advice was unheeded by the architects who evidently had no experience about designing controlled atmosphere glass houses. They insisted on decorative designs and got those approved claiming control of humidity and temperature inside. First of all a nest of four rectangular glasshouses each 10 x 15 meter wide were designed. The roofs were decorative rectangular slopes. All the glasshouses have large glass windows on the sides. I had requested that the roofs should be of Crinkle Glass, an ultraviolet light resistant non-flaking material not likely to become dull over the years. The glass was to be of light blue or green tint so as to cut about 20 to 30 percent of the sunlight during summers. The glass houses were to have large water coolers.

But alas, the promised humidity and temperature control could not be achieved in these glass houses. There are wide gaps between the roofs and the side walls. The large glass windows have very poor quality construction.

Even after a mild windstorm one can expect a breakage of half a dozen glass panes. Very small cooler fans, hardly 45 centimetres in diameter, have been used, which cannot cool even a small room. The roof fibre glass material used was quite evidently “duplicate” crinkle glass. Over the years it has become very dull and practically opaque in some areas, each glasshouse has four ceiling fans as well. Needless to say, hardly 50 percent of fans or the tiny coolers are in working order at one time. But despite all these drawbacks, the large glass windows on the sides have proved to be a blessing in disguise. As several glass panes of each glass house are broken at one time; it allows free cross ventilation which controls the temperature to a great extent. Moreover the large glass panes on the sides allow plenty of light which compensates to some extent the light cut off by the opaque fibre glass roof. The lack of light mainly affects the Indian Species of *Carallumas*, the members of the *Mesembryanthemaceae* Family and the *Mammillaria* collections. Other collections are not badly effected. Now we are in the process of replacing some of the opaque fibre glass sheets on the roof with more transparent fibre glass sheets.

19. Glass House 1, ASCLEPIADACEAE

The first of these Botanical Collections, BCGH 1, is devoted to the *Asclepiadaceae* Family.



One large bench has collection of Indian Species of *Carallumas*. Over the years we have discovered that most of these species are very difficult to keep alive for a long time. These plants are mainly from South India--- Tamil Nadu and Karnataka---and from Maharashtra. These states have very mild winter and have long dry hot spells in the habitat areas of most of the *Carallumas*. While plants of *Caralluma umbellata* group tolerate local weather easily, most of the other species may suddenly die during severe

long winters. The glasshouse has no provision of heating during winters. In most of the species we lose the thinner tapering stems during winter and we have to restart the growth at the beginning of summer. During the past three years we have tried different strategies to keep these plants alive. This year we are trying to establish five to ten clones of each species outdoors in pots, with regular fertilisation. At the end of the rainy season most of these will develop into robust plants. It is hoped that these robustly growing plants when shifted indoor at the beginning of winter will have a better chance of survival indoor. Outdoor plants of delicate species will be provided adequate protection during winter. One has to be extremely careful in the watering schedule during winter. Excess water leads to maximum casualties during winter. As a result of this technique during the winter of 2003-2004 no casualties have occurred in the plants shifted indoors after a summer outdoors.

This garden has practically all the known species of the Indian sub-continent except a species from Western Nepal. Practically all the species flower here except *Caralluma diffusa*. We have three clones of this species but they have not flowered here so far. All other species flower during summer and are easy to identify. While describing Rockery II all the Indian *Carallumas* have already been comprehensively described.



There is a fairly large collection of several genera of *Stapeliades*.
Most of these are field collected plants from JOHN LAVRANOS, DARRD

PLOWES, GERALD BARAD and BILL KEEN. Several other growers have also made their contribution to this collection. Unfortunately hardly any succulent grower in India is interested in these plants. Very few growers have a few plants with them. Due to their lack of interest and some other factors our *Stapeliad* collection has rather stagnated. Now efforts are being made to extensively propagate the Indian species of *Carallumas*. Already there are healthy signs of success in this field and due to this fact more interest is now being also shown in the *Stapeliads* of African and of Arabic countries origins.

Some of the interesting *Stapeliads* being grown are *Trichocaulon officinarum*, *Hoodia juttae*, *Rhytidocaulon macrolobum*, 20 species of *Caralluma* including *Caralluma cocatrocarpa* from, Yemen, 11 species of *Duvalia*, several *Stapelias*, *Taveressia barkleyiii*, *Edithcolea grandis*, four species of *Echidnopsis*, *Ceropegia rupicola*, and several unidentified plants. Two hybrids created by DR G. BARAD, i.e. Cv. BEATRICE (*Frerea indica* Hybrid) and another *Frerea indica* x *Caralluma truncato-coronata* are also well established.

Apart from the potted plants on the benches in the glass house, there are two large beds. The one in the centre is devoted to Indian plants; the other raised bed has other species. *Caralluma procumbens*, which is

impossible to grow outside locally, has established here and flowers during the summer. Other Indian species tend to etiolate due to lack of sufficient light. So now these are grown outdoors during the summer and brought in at the beginning of winter. Other *Stapeliads* in the raised bed develop rampant growth and become difficult to keep in shape. Now efforts are being made to change the opaque filter glass on the roof with a more translucent material.

