

Effects of Environment on Sulcorebutias

by Ralph Martin

Photos by the author

Most photographs presented in articles in this journal show attractive, well grown plants. This article shows some rather ugly specimens for a change ! The reasons they are so ugly are about to be described . . .

Most of us are familiar with the effects of moving cacti to positions with too little light. They become etiolated, which is to say that they grow tall and thin, and often rather pale in colour. In part, this reaction may be understood as an attempt to grow upwards to reach the light. Unfortunately, cacti offered for sale in garden centres often show such effects. They may have been propagated by a specialist grower, and then purchased wholesale by the garden centre for retail sale. It is not uncommon to see such plants placed in quite inappropriate lighting conditions, and if they remain unsold for any length of time, etiolation is the sad result.

However, in this article I want to show (in photographs) and describe my experiences with what might be described as another type of "culture shock" ! For some years, I had been growing a small collection of cacti and succulents in Cardiff without the aid of a greenhouse or cold frame. In summer, the plants would be placed out of doors, on a concrete slab, under a high glass canopy on the side of the house. Thus, the plants were essentially in the open air, although not exposed to rain (it rains a lot in Cardiff !). They were watered only when I chose, which was basically when they had dried out. At about the middle of September, the plants were allowed to dry off, and were then taken indoors well before the chance of any frost. Once indoors they were kept in a west facing room, on the floor under a window. Although this was rather dark, the plants were resting by this stage, and

they were not watered again until spring. As they were resting, etiolation did not occur. The room itself was in an unheated part of the house, and although it certainly did not freeze in there, it also was not warm enough for human comfort. I would guess a temperature of perhaps 5 to 10 degrees Centigrade was maintained. Finally, in spring, after the danger of frosts was deemed to have passed, the plants were put outside again.

In 1992, I was able to build a conservatory on the back of my house. Building work as completed rather later than originally hoped, at about the end of May. The cacti and succulents were not watered until this time, but were then moved straight into the conservatory after repotting, and then were grown until the photographs shown here were taken in October of that year. Again, water was given on an "as necessary" basis, i.e. when the plants had more or less dried out from the previous watering. Obviously, the temperature reached inside the conservatory were much higher than those reached outdoors, and so watering was more frequent than it had been in past years. Perhaps I should say at this stage that the plants had also been repotted on a regular basis before their change of home. Before and afterwards, the compost used was equal parts of John Innes compost, sand and grit, mud plastic pots were used. The plants were fed at each watering.

Now, the conservatory was built in the same place that the plants had been kept before its existence, and the compost used was also pretty much the same (given the difficulty of obtaining consistent supplies locally) before and afterwards. Thus, apart from a certain amount of light cut out by the (double glazed)

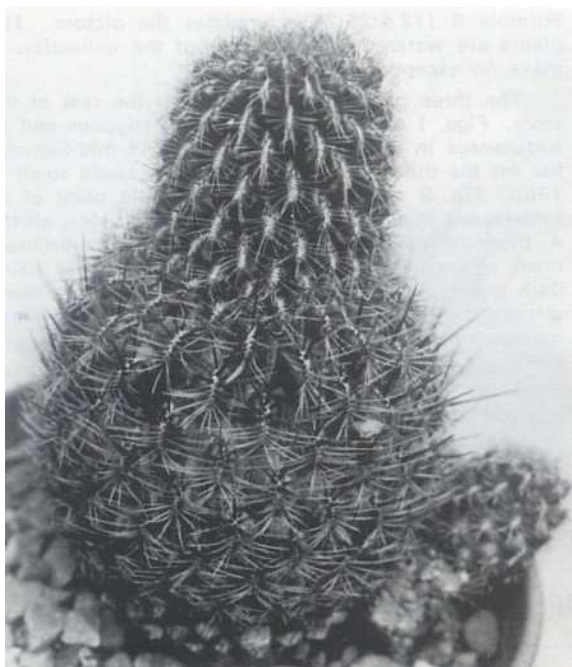


Fig. 1 SULCOREBUTIA VANBAELII

glass, the major differences in growing conditions appear to be those in temperature, watering, and perhaps air currents.

The following differences were noted in October, at the end of the first year's growing season in the new conservatory. Most of the plants seem not to have been greatly affected by the changes in growing conditions. Several Mammillarias and Echeverias, for example, grew consistently before and after the change, and showed no adverse effects. Other plants such as some Echinocerei and a Matucana, have produced slightly different growth: the former seem to have provided more colourful spines, although old spines do tend to fade with age anyway. The Matucana responded in more or less the same way as the Sulcorebutias (to be described next), but to a less noticeable degree.

The Sulcorebutias have responded to their new conditions with surprisingly large changes in appearances. As can be seen, the new growth is more compact, and the spination is different too.

The plant most affected was probably a specimen of *Sulcorebutia vanbaelii*, shown in Figure 1. Its diameter has reduced to maybe half of its former size. It has also started to offset. Previously, the plant had a long single central spine from most, if not all, areoles. Now, the central spine is still present, although it hardly differs in length from the other spines, and the length of all spines is considerably reduced, perhaps by a factor of two. A further noticeable change is that previously the body of the plant was dull, whereas the new growth is quite shiny. (Some corkiness which can be seen on the lower portion of all of these plants is unfortunately due to a past attack of red spider mites.)

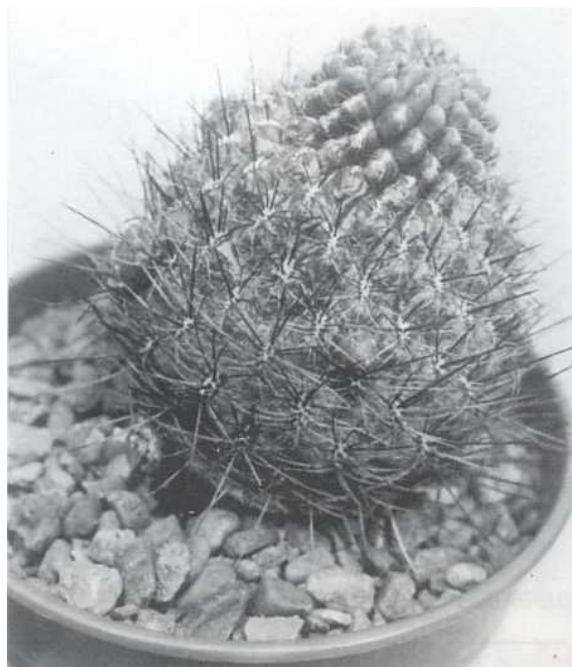


Fig 2 SULCOREBUTIA STEINBACHII v. HORRIDA

Figure 2 shows a plant of *Sulcorebutia steinbachii* v. *horrida*. The change in shape is not quite so abrupt in this case, although it would seem that in time, it too will develop a top growth of about half the previous diameter. The change in spination is even more marked in this case. Originally, the plant had very strong spination, with each areole bearing several central spines up to 1 cm long. The new growth is very weakly spined indeed, and many areoles show no signs of central spines at all. The spines that are there are very fine, bordering on the hair-like, quite unlike the stout spines produced previously. This plant too has started to offset.

Similar but less pronounced effects can again be seen in Figure 3, which shows a plant of *Sulcorebutia albida*. This time, the new growth is perhaps more like two-thirds of the original diameter. The spines have approximately the same general appearance on the new and old growth, although they are noticeably finer and shorter again after the environmental changes. The plant itself has not started to offset in this case, although the new growth seems to be of a slightly lighter shade of green than before.

A previous article, in the Journal [1] described another experiment on the effects of cultural conditions on Sulcorebutias. In particular that author decided to try to provide their natural growing conditions as far as possible. However, his methods seemed to be more along the lines of giving no winter heat than placing the plants out into the fresh air in summer. He also recommended limited watering and feeding. The main results he noted from his approach were rather slower growth and smaller plants than previously obtained, although unfortunately he does not say exactly what his previous method were. Briefly, it is difficult to

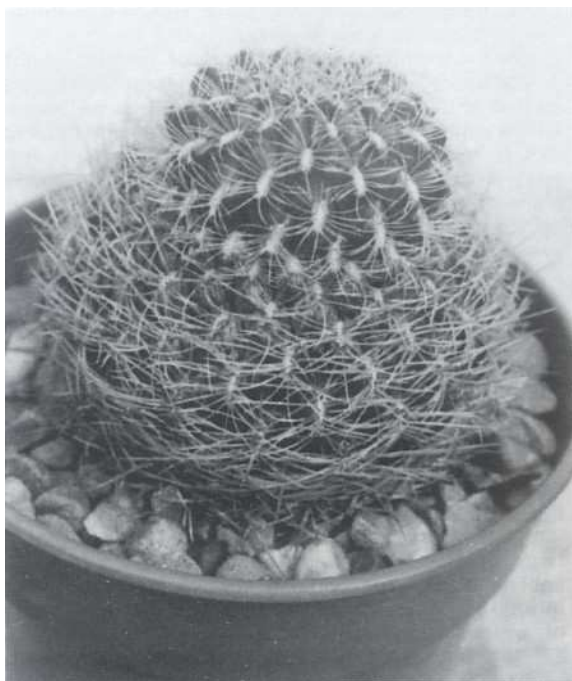


Fig. 3 SULCOREBUTIA ALBIDA

compare his results directly with mine, as the environmental changes made were of a somewhat different type

What can be learnt from all this ? Well, perhaps several things.

- Sulcorebutias seem to be more susceptible to changes in their environment than at least some other succulent plants and genera of cacti.
- If one has, valuable specimens suitable for the show bench, it is probably not a good idea to make

large changes to their growing conditions, otherwise one is likely to end up with plants more suitable for the propagating bench.

- If you want large Sulcorebutias with strong spines, you might try putting them outdoors in the fresh air in the summer. However, I can not guarantee that making the reverse change in environmental conditions to the one I made will produce the opposite effect on the plants!

- Attempting to name plants grown in a greenhouse when the original species description is based on material from the wild, growing in very different environmental conditions, is quite likely to lead to wrong conclusions. These differences can affect plant body diameter, shininess or dullness of the plant body, spine length, spine strength, presence or absence of central spines, and propensity to offset.

- Attempting to ascribe the effects on the plants to any single one of the changes in environment mention above is misleading. It may sound a nice hypothesis to suggest the following. Sulcorebutias come from higher altitudes than many other cacti, and so are used to high levels of ultraviolet light. The glass may have cut out a lot of the ultraviolet light, essentially leading to etiolation. This, however, would be a pure guess, and I am sure that readers can come up with other plausible sounding explanations.

Many of the articles in the Journal are full of advice on how best to grow cacti and succulents. Much of it seems to rely on personal experience, and probably most members develop methods which work for them by a process of trial and error. Perhaps this article will encourage a few other members to describe some of the things they have tried along the way which did not turn out as desired, instead of only describing the positive results they obtained. Discussing failures as well as successes should lead to better understanding in the long run.

Literature cited.

- [1] POWELL, A. A *Radical Approach* to Growing Sulcorebutias, British Cactus and Succulent Journal 9 (1), 13 15, March 1991.

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