

# **Gaultonia**

Newsletter of the  
**Manchester Branch**  
of the  
British Cactus and Succulent Society

Autumn 2008.



**Mammillaria luethyi**

**MANCHESTER BRANCH PROGRAMME 2009**

<b>JANUARY 10<sup>TH</sup></b>	<b>Argentina to Bolivia Part 1</b>	<b>Geoff Bailey</b>
<b>FEBRUARY 14<sup>TH</sup></b>	<b>There is nothing an Orthodontist cannot do.</b>	<b>Ivor Crook</b>
<b>MARCH 6-8<sup>TH</sup></b>	<b>Northern Area Weekend. Talks by Milan Kurka, Bob Potter, George Thomson, and Ray Stephenson.</b>	
<b>MARCH 14<sup>TH</sup></b>	<b>Enjoying the Succulents in Steve Hammer's Collection</b>	<b>Andy Young</b>
<b>APRIL 18<sup>TH**</sup></b>	<b>Why my wife is jealous</b>	<b>Jon Watmough</b>
<b>APRIL 5<sup>th</sup></b>	<b>North West Cactus Mart: Woolston Leisure Centre, Warrington, WA1 4PN (Just off A57, only 1 mile, 5 minutes from Junction 21 M6). 10:00-15:00. Admission £1.50</b>	
<b>MAY 9<sup>TH</sup></b>	<b>Arizona Byways</b>	<b>Trevor Wray</b>
<b>JUNE 13<sup>TH</sup></b>	<b>The Country Diary of a Cactus Anorak</b>	<b>Rob Stevenson</b>
<b>JULY 11<sup>TH</sup></b>	<b>Beyond the Chiracahaus</b>	<b>Doug Donaldson</b>
<b>AUGUST 8<sup>TH</sup></b>	<b>A beginner's guide to Caudiciforms</b>	<b>Gillian Evison</b>
<b>SEPTEMBER 12<sup>TH</sup></b>	<b>Travels in New Mexico and Arizona.</b>	<b>Mike Ashworth</b>
<b>OCTOBER 10<sup>TH</sup></b>	<b>Daytime...NORTH WEST MESEMB SHOW. Talk at 2pm. 'Conophytum Highlights'</b>	<b>Andy Young</b>
	<b>Evening....Lithops and more.....</b>	<b>Ian Nartowicz</b>
<b>NOVEMBER 14<sup>TH</sup></b>	<b>If it's Tuesday, it must be Uruguay – cactus hunting in South America.</b>	<b>Dorothy Minors</b>
<b>DECEMBER 12<sup>TH</sup></b>	<b>AGM &amp; food fare + supporting programme.</b>	
<b>2010 JANUARY 9<sup>TH</sup></b>	<b>Argentina to Bolivia part 2</b>	<b>Geoff Bailey</b>

**\*\* APRIL 18<sup>TH</sup> is the third Saturday as April 11<sup>th</sup> is the day before Easter Sunday and the hall is unavailable**

## THE DARRAH COLLECTION

By Peter Bint

Volume 24 no. 2 June 2006 saw an article by John Hughes about the Darrah Collection. He had researched the collection following a visit to the Royal Horticultural Society's Lindley Library to see the Educational Hot Houses Collection. I quote his words, "I was enchanted by an old print of two schoolgirls looking up at 'A rare Agave flowering in the Cactus house at Alexandra Park'." This led to his research and the article bears reading again. If you were not a member at that time then you can be shown copies of the article by asking me at a meeting. He knew the greenhouses at Alexandra Park had been demolished. Further he asks, "Do any of our members remember visiting the collection or know what happened to the plants?"

He wished to be informed about the collection and his wish will be answered in the December edition of the Journal. You may or may not realise it but the Darrah Collection was highly instrumental in the formation of the Manchester Branch. In my history of the Branch's first 60 years I outlined how people with a love of succulent plants would often gather at the glasshouses at Alexandra Park and it was at one of these gatherings that the Branch materialised. Even today Manchester Branch is strongly linked with the Darrah Collection and I will outline how in the following paragraphs.

The collection was built up by Charles Darrah during his adult years which were brought to an untimely end in 1903, aged 59. He was a businessman and a horticulturist but what enabled him to amass the huge collection was his friendship with Karl Schumann, one of the giants of the cactus world in the later 1800's. He would have had every opportunity to grow all the newly discovered species that came into Europe from the Americas, Africa and the Canary Islands. The collection was carefully catalogued, containing as it did '918 cactuses and 432 other succulents', and available for the public to buy at the princely sum of 6d. Very few of these catalogues still exist but I am pleased to say two (at least) are in the Manchester area. In those days he must have owned a spacious estate in what is now part of Stockport, namely Heaton Mersey, which is adjacent to Burnage and Didsbury, which would have been in open countryside in the later 1800's. This would have allowed him the space to have sizeable glasshouses in which to grow those marvellous plants.

The family decided to preserve the collection by donating it to Manchester City Council and they, for their part, graciously accepted the gift, a gift that would have been one of the foremost collections in this country containing as it did a valuable and most comprehensive array of plants known to collectors at that time. The collection was formally opened to the public on December 14<sup>th</sup> 1906 and the plants were arranged in a specially built complex of greenhouses suitable for such a splendid display. In some places the height must have reached 30 feet to allow for the many tall cereoids that were present there. Mr Darrah's head gardener, Mr Cobbold, was retained by the Council as Curator to look after the plants. People would visit in their droves for no other purpose than to see this rare collection.

The collection was well maintained up to the 1950's, even through two world wars, and one very notable curator was Harry Hall who left Britain in 1947 to take up a similar position at Kirstenbosch Botanical Garden. Harry is commemorated in the Succulent world by the naming of several plants in his honour, *Lithops hallii*, *Euphorbia hallii*, *Huernia hallii*, *Argyroderma framesii* ssp. *hallii* to name but a few.

Once we passed through the 50's the Council forgot what a rare gem it had been given and they cut back on the spending, failed to repair broken glass and heating and generally neglected the collection. Vandalism became rife and over the 70's the collection plummeted into a state of disarray due to the apathy of those in charge. Finally in 1980 came the order to remove the collection from Alexandra Park to the more modest surroundings of Wythenshawe Park, whilst the erstwhile splendid glasshouses at Alexandra Park were dismantled and lost to the admiring public forever.

At Wythenshawe Park the collection took on a new lease of life. Everybody rallied round and the collection was laid out in a generally imaginative way, at least partly resembling a 'desert' homeland with large rocks dotted around and giving it the air of a rockery. The unfortunate thing was the lack of space compared with the original home. Only one of each species could be accommodated. What happened to the rest of the collection one dreads to think but a massive compost heap does spring to mind. For 10 to 15 years the collection flourished to a certain extent but never ever had the pulling effect of the original. By now the Council is little interested in its Horticultural Centres, the staff are being cut back viciously and little money is being set aside for these oases of beauty. Both Wythenshawe and Heaton Parks are suffering neglect on a grand scale. At Wythenshawe a new game has been brought into being. Bored youths gather outside the walls that surround the Horticultural Centre. They gather the plentiful ammunition that is lying around, be it bricks, stones, branches, old shoes, anything that will make a suitable object to hurl over the wall. The object of the game.....to see how big a smash they can create as the projectile crashes onto the buildings inside the walled area, hopefully, from their point of view, glass being smashed to smithereens. The cactus house is far too close to the boundary wall and suffers irreparable damage. The Council is totally unwilling to replace the glass that is being ravaged at will. Not only that but also the heating system breaks down and they refuse to throw good money after bad. What heat is around from the day's sunlight leaches out of the house through the broken panes and rain, snow and frost eagerly flood in day after day.

Thus it was that once again Manchester Branch appeared on the scene to be reunited with the Darrah Collection 50 years after it first made its acquaintance. It was 1997 and an urgent plea was received from John Steedman who was in charge of the Horticultural Centre at Wythenshawe Park. Please could we look at the cactus collection and advise on what could be done to save it? John was a keen horticulturist who would ultimately prove to be a valuable ally in the fight to keep the collection going. Three of us, Geoff Bailey, Brian Darnell and I, responded and visited the Park with all speed. We were taken to a once splendid greenhouse, of Hartley design, and it was obvious that here was a collection that had once been splendid. No matter where we looked plants were 'crying out in agony'. Unfortunately in among these were many corpses that were past resuscitation, victims of gross malpractice. Urgent steps were necessary with all speed. We advised John to remove all the plants from the greenhouse immediately, deposit all that were obviously dead or close to death on the compost heap and place all the rest in a secure greenhouse where the roots could recover from the damage they would suffer by being uprooted.

Next we were taken to the intended new home for the remnants of the collection, *the Safari Walk*, which was situated in the centre of the greenhouse complex, well away

from any perimeter wall. The area was a large lean to type of structure constructed against a brick wall on the other side of which was the shop, selling all manner of produce grown by the ten remaining gardeners employed by the Council at the Horticultural Centre. The front of the walk was joined to the rest of the greenhouses which ran at 90 degrees away from the walkway. It was light and airy, warm and dry but not, unfortunately, the best possible site for the plants, but beggars could not be choosers. At its highest point the glass was approximately 18 feet above floor level, sloping down to a point about 12 feet high. Still that seemed ample to house what tall plants were still left. The walkway was long and narrow with a path winding along between the two beds. We agreed to return as soon as possible and begin the momentous task of resiting all the plants that had survived the ravages inflicted upon them by man and nature. I did have one nagging doubt. The walkway would contain many cacti and succulents which needed a dry atmosphere, especially in winter. They would occupy half the length of the walkway. Their companions in the other half were plants of a more tropical nature that wanted a warm, humid atmosphere and there was a flowing stream helping to supply the humid surroundings. This was not the ideal situation but it could not be helped.

A few short weeks later all the planting had been completed, with tall plants, *Trichocereus*, *Euphorbia*, and *Cleistocactus*, settled at the back where the glass was highest and all the rest dotted around to provide the best effect for the public who visited the greenhouses all year round. The scene was impressive but a little sparse but being given free root run there was no doubt many of the plants would soon grow quite fast. Though there will be few of the original plants a reasonable number will be offspring and cuttings of those original plants. I think I can safely say that the *Trichocereus* (*Echinopsis* if you follow the present trend in naming), *Echinopsis* proper, *Opuntias*, *Euphorbias*, *Agaves*, *Aloes* and *Crassulas* will have originated from the original plants in the Darrah Collection. One plant that definitely has come from the original collection is a splendid specimen of the cycad *Encephalartos horridus*, a beautiful blue leaved plant that has had to be moved recently as it was planted where the heater had to be installed. We left all manner of instructions for the gardeners who would be charged with tending the collection and promised John we would keep in touch. He had only to phone if there were any pressing problems and we would be there to help immediately. I paid regular visits to his office and the collection. The plants flourished, they grew, they flowered profusely and all seemed well in spite of my misgivings about their cohabitants. In fact the *Trichocereus* species grew so well that they had reached the glass within four years and had to be pruned quite hard or they would have broken through the glass very easily.

Then the problems began again. John was moved to a more senior appointment which put him in charge of many parks in the south of the city and he was sited at Fletcher Moss Gardens several miles away from Wythenshawe Park. Manchester City Council, in its wisdom, decided it would be cheaper and more beneficial to reduce the number of gardeners working in its Horticultural Centre and subcontract the gardening work out to a firm of 'horticulturists'. I use the word loosely as the work they were capable of amounted to mowing, weeding and pruning. There was nobody with specialist knowledge required for tending the many different collections housed in the greenhouse complex. This was left to the few remaining gardeners and their band of volunteers (many of whom were people with learning difficulties for whom gardening was therapeutic). The Friends of Wythenshawe Park also did a lot of work

around the centre, tending the gardens and greenhouses, raising funds to facilitate different necessary projects and generally liaising with the new Manager of the Park.

One day in the autumn of 2005 I gathered together many surplus seedlings from my greenhouses and visited the Centre. What greeted me was heartbreaking. There were only two gardeners left, one to tend necessary outdoor work and one to tend the collections in the greenhouses. The latter was a very pleasant young lady who was doing her utmost to look after the cacti but she admitted having no specialist knowledge whatsoever. She gladly accepted the plants I had taken to the Centre but ruefully admitted that the shop was no longer open during autumn and winter as it was no longer run by the gardening staff. There was just too much to do so the shop had been franchised to the gentleman who ran the farm in the Park. No matter how many times I phoned to speak to him I could never elicit a reply. All seemed well in the walk so I promised to return the following spring to offer what help was necessary and gave her details of our Branch should she wish to attend. She seemed keen to come as it would not be too far to travel from home. She never materialised and the following spring would prove why.

April 2006, the car full of more seedlings, I set off to Wythenshawe yet again. The shop was closed still with no sign of any life whatsoever; I could not find either of the gardeners so I made my way to the office to enquire where they were. I was met by a young office worker who pointed me to a young man who turned out to be Ian McDougall, the head warden in the Park. He explained that the remaining gardeners had been removed from the gardens to do other work within the Council parks leaving the Horticultural Centre bereft of any knowledgeable employees. Ian was at his wit's end with a multitude of tasks and no one to do them. He gladly accepted my promise to return post haste with a small band of enthusiastic workers to put right the damage now evident in the cactus and succulent collection. Problems were indeed evident. There were broken and missing panes of glass wherever you looked. The dreaded oxalis was positively galloping through the collection, blooming profusely and threatening to spread its deadly load of seed wherever it could. Sadly proof of vandalism was evident wherever you looked. The greenhouses received regular visits from local yobs both day and night because there was nobody around to deter their activities.

I gathered Brian Darnell and Tony Hesketh to assist me in the mammoth task that lay ahead. The first and most urgent task was to remove the oxalis with all speed. On our first visit we piled three large wheelbarrows high with the weed, taking all day to complete the task. Further regular visits saw us tending the plants, watering, further weeding as new seedlings of oxalis reared their heads and providing Ian with information to help in his task to rejuvenate the whole complex. It quickly became evident that there was no money available to him to do any of the major work that was absolutely vital. Two areas needed urgent attention; the broken glazing needed to be repaired and the heating which had been broken for three years needed attention. He asked me to write to the Council to point out the state of affairs that existed, a task I gleefully took on. My first letter resulted in 'many butts being kicked'. I doubt there was a single Councillor who had the slightest idea of the legacy that had been donated to them back in 1903. I was quickly invited to meet the Head of Leisure and I invited Alisdair Glenn to accompany me so that the Society was directly involved. Much good came from that meeting, far more than I anticipated. It was several months, however, before any fruit was yielded. The collection was again looking cared for

after much work had been done by the three of us but winter was looming. It took another three letters to the Ward Councillor, the last with a clear threat to go to the Press if the promises were not fulfilled rapidly. Rain was steadily pouring in through the gaping holes in both roof and walls of all the greenhouses. At last a man appeared and bit by bit he started replacing glass with polycarbonate sheets. However, as quickly as he plugged one gap the local vandals provided him with another one or three. The vandalism reached its height in the winter of 2007. Ian had four mobile heaters that he placed judiciously around the greenhouses to fight off the cold as best he could. We arrived on one of our Tuesday visits in the depths of January to discover that the heaters had been stolen the night before and resultant damage meant the fish pond had been polluted with vast amounts of spilt fuel. So we now had rain still pouring into the collection unabated and freezing conditions adding to the woes. It was a heart rending situation but we had to overcome the difficulties. Our next visit found an even worse situation. Vandals could scale the perimeter wall with ease due to Council policy of leaving all felled tree trunks in situ to provide habitats for local fauna. They also provided the vandals with easy means of climbing the walls; just pile the logs up and it was easy to climb over. They were not bothered that they had disturbed a few grubs, beetles and worms from their winter rest. So we arrived to find masses of broken glass and many badly damaged plants. It appeared that mindless vandalism had been perpetrated by unwelcome visitors the night before. They had smashed every fluorescent tube along the walkway with a long metal pole after which they had used the same pole to slash the many tall plants in the beds. The small plants survived unscathed simply because the vandals could not see anything in the dark. The damage was random and gratuitous. Many plants succumbed as a result of this damage and others are scarred for years to come.

Spring saw the second sign of improvement. New heaters appeared and were installed ready to provide much necessary heat. Just in time for summer the work was completed but we were left wondering about the safety of the heaters as the engineers pointed out the ease with which a determined thief could remove them. Thankfully, after various representations, cages were fitted robustly over them to prevent theft. Another problem had to be tackled, one by which we are all afflicted, namely moss growing at the edges of the glass. The gutters that ran along the edges of all the greenhouses had, through the years of neglect, filled with moss so that rainwater was trapped there instead of running away. The result was huge leaks every time it rained. That, after lengthy negotiations, was removed and the glazier instructed to remove as much of the offending plant from between the panes of glass. Hopefully the winter of 2008/9 will be a warmer and drier affair inside the greenhouses.

In addition to *the Safari Walk* we were asked to take on the care of the South African plantings in the World Greenhouse. This is a large bed which contains Aloes, Haworthias, Gasterias, Euphorbias, Stapeliads, Mesembs and a few other species. In time it will look good again but it suffered badly last winter with many plant deaths and other plants being severely damaged by the damp cold. At the end of summer 2008 Ian showed us another plot at the side of the South African plot which he asked us to cultivate. It will become the Mexico and South West America section of the collection. We have been awarded a grant to purchase the plants necessary and have many hours of work in front of us. The plants are already at the Centre and we hope to start work very soon once we have added the necessary grit to the plot. I think it appropriate to thank all the people who have helped in any way through the years to

ensure the continuance of the Darrah Collection whether through donated plants or time given to tend them.

I hope this article inspires you to go and see the work that has been done and still remains to be accomplished. It is not the splendid collection it was over 100 years ago but it is a memorial to a man who had a great love of all plants succulent and who helped bring our Branch into existence even though he never envisaged such an occurrence all those years ago.

## **Controlling Pests on Cacti and Succulents**

**By Peter Bint**

An article from the Cactus File, volume 1 no. 2 August 1991 has inspired this article so nothing I have to say will be very new though some of the pesticides have changed. I may also refer to pesticides I have, as a result of stockpiling, but which may have disappeared from sale in recent years. However the core of the article is as true now as it was then.

“The intensive cultivation or propagation of any type of plant in an enclosed environment provides an ideal feeding and breeding ground for a whole range of harmful insects. Particular plant families attract particular pests, and the growers of cacti and other succulents have to protect their plants from a limited number of potentially serious and destructive insect pests, plus a few others which may cause problems from time to time.”

So read the opening paragraph in 1991 and I do not believe things have changed one jot in the intervening seventeen years. In fact in some areas things may have worsened perceptibly.

**Mealy Bug:** This is an ‘intelligent’ pest! How often do you notice it within 24 hours of its arrival on your plants? It is a sucking insect so it will attack any soft bodied plant of which there are many in the plants we grow. That does not mean you will never find it on any of the harder skinned plants in your collection but it may be found there less often. It does not distinguish between plants with poisonous and non poisonous sap, as I have found them on Euphorbia but not in the profusion that I have found them elsewhere. I called it ‘intelligent’. I have found that infestations appear more often in winter than in spring or summer and they are often on the side of the plant facing the windows where they remain invisible unless you actually pick up the plant to study it. This could of course be due to the regular checks my plants get in spring and summer as opposed to the paucity of the same in autumn and winter. If an infestation has got hold there is an accompanying black mould all over the plant where the insects have been breeding and feeding. If this has happened on a white, closely spined plant such as some Mammillarias, Epithelantha or Turbinicarpus (the plants previously known as Pelecyphora) it can be an absolute pain to remove but on more open spined species it can be successfully removed by blasting it with a jet of water from a hosepipe. Of course you do not ideally want to be doing this in the middle of winter. There are several places on plants where the insects like to gather. First is the crown of the plants where the skin is very soft and easy to pierce to be able



after much work had been done by the three of us but winter was looming. It took another three letters to the Ward Councillor, the last with a clear threat to go to the Press if the promises were not fulfilled rapidly. Rain was steadily pouring in through the gaping holes in both roof and walls of all the greenhouses. At last a man appeared and bit by bit he started replacing glass with polycarbonate sheets. However, as quickly as he plugged one gap the local vandals provided him with another one or three. The vandalism reached its height in the winter of 2007. Ian had four mobile heaters that he placed judiciously around the greenhouses to fight off the cold as best he could. We arrived on one of our Tuesday visits in the depths of January to discover that the heaters had been stolen the night before and resultant damage meant the fish pond had been polluted with vast amounts of spilt fuel. So we now had rain still pouring into the collection unabated and freezing conditions adding to the woes. It was a heart rending situation but we had to overcome the difficulties. Our next visit found an even worse situation. Vandals could scale the perimeter wall with ease due to Council policy of leaving all felled tree trunks in situ to provide habitats for local fauna. They also provided the vandals with easy means of climbing the walls; just pile the logs up and it was easy to climb over. They were not bothered that they had disturbed a few grubs, beetles and worms from their winter rest. So we arrived to find masses of broken glass and many badly damaged plants. It appeared that mindless vandalism had been perpetrated by unwelcome visitors the night before. They had smashed every fluorescent tube along the walkway with a long metal pole after which they had used the same pole to slash the many tall plants in the beds. The small plants survived unscathed simply because the vandals could not see anything in the dark. The damage was random and gratuitous. Many plants succumbed as a result of this damage and others are scarred for years to come.

Spring saw the second sign of improvement. New heaters appeared and were installed ready to provide much necessary heat. Just in time for summer the work was completed but we were left wondering about the safety of the heaters as the engineers pointed out the ease with which a determined thief could remove them. Thankfully, after various representations, cages were fitted robustly over them to prevent theft. Another problem had to be tackled, one by which we are all afflicted, namely moss growing at the edges of the glass. The gutters that ran along the edges of all the greenhouses had, through the years of neglect, filled with moss so that rainwater was trapped there instead of running away. The result was huge leaks every time it rained. That, after lengthy negotiations, was removed and the glazier instructed to remove as much of the offending plant from between the panes of glass. Hopefully the winter of 2008/9 will be a warmer and drier affair inside the greenhouses.

In addition to *the Safari Walk* we were asked to take on the care of the South African plantings in the World Greenhouse. This is a large bed which contains Aloes, Haworthias, Gasterias, Euphorbias, Stapeliads, Mesembs and a few other species. In time it will look good again but it suffered badly last winter with many plant deaths and other plants being severely damaged by the damp cold. At the end of summer 2008 Ian showed us another plot at the side of the South African plot which he asked us to cultivate. It will become the Mexico and South West America section of the collection. We have been awarded a grant to purchase the plants necessary and have many hours of work in front of us. The plants are already at the Centre and we hope to start work very soon once we have added the necessary grit to the plot. I think it appropriate to thank all the people who have helped in any way through the years to

to suck the sap. Next they will gather around the base of offsets on plants where they can breed and mature virtually unseen because of the clumping nature of the chosen host plant. A third point of setting up home is round the base of plants, just above or at soil level where they often receive ample hiding places due to the use of grit on top of the soil. They will also gather at mid stem level but here, especially during the growing season when plants are moved more often, they are much more noticeable. Amongst the other succulents they will gather on any plant that produces a sheath of skin used to protect the new growth as spring approaches or on plants that allow the lower leaves to dry up. They find a good hiding place between old and new bodies and are impervious to spraying at this point due to the non porosity of the old skin. The only way to prevent infestations is regular checking and the use of preventative pesticides or biological controls. If you have never had mealy bug you are close to unique.

They are woodlouse-like insects up to 4mm in length, covered by a white protective waxy meal. The adult females lay their eggs in a white woolly tuft where they will hatch after about 14 days. The resultant nymphs are extremely active and can be seen moving at a rate of knots across the plant bodies or leaves as they seek a feeding station. They reach maturity through several stages taking seven to eight weeks after which they will live as adults for a further five or six weeks, laying eggs thus producing the facility for further infestation in a surprisingly short period of time. Whilst adult males have the ability to fly this merely allows them to find females in other parts of the greenhouse where the life cycle can be perpetuated yet again. The damage is done by the wandering activity of the feeding nymphs.

Mealy bug is susceptible to many contact and systemic chemicals and the best way to keep your plants clear of infestation is the regular and varied use of these, especially the latter as the plant will hold the poison within its cells for between six and eight weeks thus providing the sucking pest with a fatal feed. It is also highly advisable to vary the formulas you use as mealy bug can become resistant to the poison in time if the same one is used continually. It is important to spray regularly and thoroughly once an infestation has been found. It does not kill eggs nor is it long lasting on the surface of the plant, so whilst you may kill nymphs and adults you still have further nymphs waiting to hatch. Also, if you do not get into every nook and cranny, nymphs and adults will still persist.

Look for the insects that will be eradicated on the label of the insecticide to be sure you have chosen one that will be successful.

**Root Mealy Bug:** A close relative of the mealy bug, this one is more insidious as it is only visible when you repot plants. It is immediately recognisable on repotting by the whitish-grey flecks on the root ball of the plant and by small woolly tufts found in the pot which house the eggs. It is only half the size of its above surface cousin and it feeds on the roots of the plants. Obviously as you are not likely to repot every plant every year the insect can cause havoc if unchecked. They can, in an infestation, move easily from one pot to another, usually via the drainage holes. However, on the plus side, they are far less common than the ordinary mealy bug. If you have plant that is doing very poorly then be advised to unpot it and see what is happening at root level. It might be one of a number of causes.

Eradication of an infestation is not the easiest of jobs and I would advise that the root ball be broken open to remove as much of the soil as possible. Obviously roots will be broken by this procedure so the infected plant needs to be isolated and left for a week to allow the roots to callous over. Then wash the roots in a systemic insecticide, thoroughly dampening them, and leave them to dry out before repotting. If you decide not to break the root ball then you must ensure it is thoroughly drenched or you will not completely wipe out the pest. Unfortunately, as root mealy bug is not as common a pest as most, you may not find manufacturers list it, as insects controlled, on the label. If mealy bug is listed than it will do the job on root mealy as well.

Controls for eradication of both these types of mealy bug, bearing in mind a systemic will be most successful against root mealy bug, are as follows:

Imidacloprid (Provado Ultimate Bug Killer Concentrate Systemic)

Thiacloprid (Provado Ultimate Bug Killer Ready to Use, and Provado aerosols)

Acetamiprid (Scotts Bug Clear Ultra Concentrate, Scotts Bug Clear Ultra Gun)

Thiamethoxam (Westland Bug Attack)

**Red Spider:** This is a horrendous and highly damaging pest which leaves unsightly scarring on plants at best and brings about the death of a plant at the worst. Easily recognisable by its orange brown coloration, the females turning red in late season as they prepare for winter dormancy, these creatures are not easy to spot before they have done the damage because they are so small. They love soft bodied cacti like Mammillaria, Rebutia and Sulcorebutia as well as succulents with soft, deciduous or perennial leaves, amongst which are a large number of caudex bearing plants. It also loves *Peleciphora asselliformis* always heading for the crown area. The female mites can lay up to 120 eggs over a period of three weeks. The eggs take about fourteen days to mature and hatch. Population explosions can occur in just a few weeks, the first signs of which are usually the yellowing or browning of the plant or leaf surfaces. The mites congregate in colonies which often form a fine mesh work of webbing upon which they are more easily seen. On leaved plants they have a tendency to congregate on the underside of the leaves where they are well protected from casual spraying.

As they are not choosy about which plants they will use as host, be it succulent or ornamental plants or even garden plants and weeds, they can be very hard to control. They also like conifers. Discovery of an infestation requires immediate attention. Remove the infected plant/s from the greenhouse, check all plants that were nearby to see if there are any signs of insect activity and then spray, paying particular attention to the underside of leaves. Again use systemic insecticide that can soak into the soil so that the roots can also absorb the poison taking it into the plant cells to deter future infestation. The use of insecticide should be made again a week to ten days later to catch any mites that might hatch out in the intervening period and be repeated once or twice more at further short intervals. They are very adept at forming immunity to insecticides so you need to ring the changes. On the label you need to check if that particular brand is effective in controlling the mite. Once you are happy you have eradicated the pest return the plants to their normal place in the greenhouse.

A word of caution is needed here. If you see a fast moving bright red mite on your plants DO NOT KILL IT. True red spider mites do not move rapidly and are far smaller than this creature I have just mentioned. This mite will actually feed on red spider mites and is your friend.

Insecticides that are useful in killing Red Spider:

Bifenthrin (Scotts Bug Clear Gun, Doff All in One Garden Pest Killer, Bayer Spray Day Greenfly Killer plus). If the mite shows signs of immunity to this insecticide, which it can achieve, then use a different chemical.

Thiamethoxam + abamectin (Westland Bug Attack Ready to Use)

Acetamiprid (Scotts Bug Clear Ultra Gun)

You have to be careful to check whether the insecticide you choose actually says it will kill red spider. Many insecticides do not have the ability to control this pest

**Western Flower Thrip:** This pest is one of the most recent arrivals in our greenhouses. It attacks a wide range of crops, causing direct damage to foliage, flowers and fruit transmitting any viruses present. The adult is 1mm in length, yellow and brown in colour with two sets of wings fringed with fine hairs. The female lays eggs in slits it cuts into the leaves or flowers and has the capability to lay between 130 and 230 eggs in its lifetime. The eggs hatch, in two to four days, into larvae that have distinctive bright red eyes. The larvae pass through two growth stages before forming a pupa. Adult thrips appear 47 days after the onset of pupation. However, in temperatures between 62 – 98F (16 and 36C) the time from egg to adult can be as low as 7 – 13 days. The thrips puncture leaves, stems and flower buds to feed on sap causing desiccation. With plants that have been affected flower and leaf buds may well abort and emerging leaves become distorted. If they feed on flowers the signs will be discoloration of the petals with streaks appearing along them. In greenhouses that keep a warm temperature the pest could be active for twelve months of the year otherwise they over winter in the soil.

They spread two viruses, namely, tomato spotted wilt virus and Impatiens necrotic wilt virus. These creatures are the most serious pest to floriculture in the whole world. These have appeared in cactus and succulent collections mainly due to plants imported from the States which have carried them originally but could now come on imports from Europe. Thankfully they are not too prevalent at the present time in Britain but I do know of southern collections that have been attacked by them.

Here I list some insecticides recommended by the RHS to attack thrips: Insecticide sprays containing:

Bifenthrin (Scotts Bug Clear Gun, Doff All in One Garden Pest Killer, Bayer Spray Day Greenfly Killer plus)

Imidacloprid + methiocarb (Bayer Ultimate Bug Killer aerosol)

Imidacloprid + sunflower oil (Bayer Ultimate Bug Killer concentrate)

Acetamiprid (Scotts Bug Clear Ultra)

Thiacloprid (Provado Ultimate Bug Killer ready to use)

Thiamethoxam (Westland Bug Attack)

Some alternative organic pesticides are:

Plant oils or extracts (Growing Success Fruit and Veg Bug Killer, Vitax Organic 2 in 1 Pest & Disease Control, Scott Bug Clear for Fruit and Veg)

Pyrethrum (Py Spray Garden Insect Killer, Doff All in One Insecticide Spray, Scotts Bug Clear Gun for Fruit & Veg).

It is important that you use more than one type of insecticide as they quickly become immune to a single type of spray.

**Nematodes (or eelworms):** In some countries these are reported as a serious pest to cacti. They develop on the root system, eventually destroying it. In Britain they are, fortunately, extremely rare and not likely to be encountered. Chemical control of nematodes is very difficult as the necessary chemicals are only available to commercial growers.

**Scale Insect:** In many of the older books these were described as a serious pest. Nowadays, thankfully, they are quite rare. This has been brought about by more effective insecticides which control this strange insect that lives under a hard brown limpet like scale on the body of a plant. There are many insecticides capable of dealing with this pest if you are unlucky enough to encounter one.

**Vine Weevil:** Although not a normal pest where cacti and succulents are concerned it can cause serious damage to plants if the eggs are laid in pots containing them. It can be a serious pest where *Echeveria* and *Graptopetalum* species are concerned. The adult is a hard shelled beetle that cannot fly and moves laboriously making it very easy to catch and kill. It is a matt black colour and has a distinctive pointed head with a short elephant's trunk proboscis. The beetles feed on leaves and leave a distinctive pattern round the edge of the leaf as they chew a patch and then move on a few millimetres before chewing the next indentation. They come out at dusk to feed.

However the larvae do pose a very serious threat. The adults wander round selecting suitable sites to deposit a few eggs before finding another spot. Plants that are given a good layer of grit on the soil are likely to be spared. The eggs hatch into large white maggot-like grubs with large red-brown heads which feed voraciously on the lower plant stem, hollowing it out from the inside. Once they have eaten enough they crawl down to the bottom of the pot where they pupate eventually releasing new adults through the drainage holes in the bottom of the pot.

Chemical control is available in the following:

Acetamiprid (Scotts Bug Clear Ultra Vine Weevil Killer)

Thiacloprid (Provado Vine Weevil Killer 2)

Both should be used as a drench applied to the compost. These insecticides give protection for 2 – 4 months; treatment in mid to late summer will control the young larvae and prevent damage occurring in the autumn to spring period.

**Sciara Fly:** Also known as the fungus gnat or mushroom fly this is a particularly annoying pest. It loves moist warm conditions especially a peat based compost. They deposit their eggs in the damp soil from which appear small maggot-like larvae which are voracious feeders. They love plant tissue especially fleshy roots which they devour avidly. By the time you discover the attack it is invariably too late for the plant. If you see a lot of flies arising from the compost when you touch the pot it is a sure sign of damage done as this is the new batch of flies which have matured from the larvae. The larvae are deadly where a batch of seedlings is concerned as they have the ideal conditions for growth and the seedlings will be decimated within days. The life cycle of the fly is less than a fortnight so leaving plants dry for this long will kill the larvae. Better, however, is to prevent the pest laying its eggs which can be achieved by having a good layer of grit over the soil. *Sciara* flies do not like the grit and will look elsewhere to lay their eggs. The yellow sticky fly papers are also an excellent way to trap the fly. I would suggest the various systemic insecticides

mentioned in this article would also kill the larvae. Provado, both aerosol and self mix varieties, will certainly kill the fly.

**Whitefly:** Whilst unlikely to attack cacti white fly can be troublesome amongst other succulents, especially those with deciduous leaves. These small, moth-like white insects lay their eggs on the underside of leaves. The eggs hatch a week or so later into a small scale like larvae which develop over a further period of three weeks into the adult flies. Both adults and larvae feed on the leaves and deposit a sticky substance which encourages an unsightly sooty, black mould to form on it. There are many spray products on the market for control of this pest. It is easier to kill the adult as the larvae have the protection of the scale. Systemic insecticides will also deal with the problem.

**Aphids:** It is rare for aphids to be a problem in the greenhouse as they prefer the soft stems of plants to act as host to their feeding requirements. If they are going to attack anything amongst your plants it is most likely to be the deciduous stems and leaves of some succulents. There are a host of proprietary pesticides available to overcome such attacks.

### **Guidelines for the safe use of pesticides:**

It is very important to read the product label before you buy or use a product. Check the label to ensure the product is specifically intended for the use or application required.

Follow the instructions for dilution and application carefully.

For safety's sake wear protective gloves when handling the pesticide, and also a mask if there is a chance of inhalation of the fine mist spray.

After use wash hands and face thoroughly.

Avoid spraying in direct sunlight in the middle of the day, if possible, to avoid possible scorching in this strong light.

MOST OF ALL, REMEMBER THAT THESE PESTS DO BECOME ACCUSTOMED TO THE CHEMICALS IN THESE PESTICIDES SO IT IS IMPORTANT TO HAVE A RANGE OF POSSIBILITIES IN YOUR ARMOURY.

**Biological Controls:** Although these are not something I like to use myself, there are useful predatory controls available in Britain. Biological control seeks to establish natural predators or parasites, each specific to a particular pest, in the growing environment to control pest infestations. These are available from a number of companies in this country but a check on the internet would be advisable to determine which companies actually supply them. The following are three useful sites I have discovered but you need to research thoroughly for yourself if you wish to pursue this subject:

Green Gardener Web Site [www.greengardener.co.uk](http://www.greengardener.co.uk)

Organic Pest Control [www.aboutorganics.co.uk](http://www.aboutorganics.co.uk)

Safe Effective Natural Biologist Pest Control [www.defender.co.uk](http://www.defender.co.uk)

Many pest control chemicals are as harmful to predator as to prey so you cannot use the two together. Most predatory insects need a temperature of at least 18C to be fully active. This means they are only going to be useful during summer. This though coincides with the most active period for most pests. It does also depend on getting a reliable summer, something we haven't experienced recently.

## **Pest Prevention Blueprint:**

By following these simple guidelines it should be possible to prevent serious infestations of any insect pests among a collection of cacti and other succulent plants. Do bear in mind these are only suggestions not essentials.

1. Grow a few insectivorous plants in the greenhouse, or hang up some yellow, sticky insect traps to help reduce the number of small flying insects in the greenhouse. The latter are especially effective against sciara fly, white fly, aphids and they successfully trap most other flies and even wasps. I have never had a bee trapped by them though hover flies are sometimes caught. The flies are particularly attracted to the bright yellow coloration.
2. Any new plants that are acquired should be thoroughly checked upon getting them home after purchase before introducing them to your collection. If they are clean above soil level they will almost certainly be so below soil level. If you want to be 100% sure re-pot the plant/s. Any pests found should be dealt with in the ways suggested earlier in this article. If you have the space, and many of us do not, you can keep them in quarantine for a further three weeks to a month for safety's sake.
3. Check your plants regularly for any signs of infestation. Be especially vigilant with plants at the back of the staging or in hard to reach corners of the greenhouse. Deal with any infestation found immediately and treat neighbouring plants as a precaution.
4. When re-potting check the roots carefully for any sign of root mealy. Should it be found follow the instructions offered earlier. If roots show signs of being dead break them away and leave the plant to callous over for at least a week before attempting to re-root it. Dead roots provide the conditions for rot and rot invites unwanted pests.
5. A routine application of one form of pesticide, probably a systemic one, in spring once the plants are in active growth followed by another using a different systemic pesticide in late summer should be effective in preventing serious outbreaks. This does not remove the need for vigilance. Active plant inspection is required right through the summer months. A couple of inspections in winter will not be a waste of time either, especially if the greenhouse is being kept warm for tender plants.
6. This is the hardest and most time consuming suggestion. If possible remove all plants from the greenhouse in summer and thoroughly scrub the benches, shelves, floors and greenhouse frames and glass with a suitable garden disinfectant such as Jeyes Fluid. This will eradicate those insects that are lurking under the staging and in greenhouse corners but it is a very time consuming occupation that is nigh on impossible in large collections like mine.

I hope this article has proved enlightening and will be of use in the pursuit of your hobby. Chemicals change as the years pass and the Government regularly removes effective pest control chemicals based on the guidance offered by the Advisory Committee on Pesticides. Dimethoate was particularly effective against all the regular pests in the greenhouse but it has been deemed unsuitable for the amateur grower. Another one to bite the dust was malathion. This is invariably due to the fact that these chemicals have been found harmful to both human and animal life forms.

**Bibliography:**

*The Cactus File Volume 1 number 2, August 1991*

*Royal Horticultural Society's web site for various chemicals*

**NORTH WEST MESEMB SHOW**

**Hosted by Manchester Branch of BCSS**

By Peter Bint

9.30pm on Friday 10<sup>th</sup> October saw several hard workers from Manchester Branch arrive at the show venue ready to prepare for the show as soon as the Brownies had vacated the hall. Tables were set in position and covered, the area for the talk by Dorothy Minors was prepared but the weather forecast was not promising so arrangements for indoor sales had to be made. An hour and a half later and all was in place, as were some plants, so we departed ready to return in 10 hours time.

Saturday morning, 8.30am, and we had only been open for a matter of minutes when the first two entrants appeared. How's that for enthusiasm? It was not long before show plants and sales plants began to arrive in profusion and the tables began to fill. 171 entries were soon in place. Though this was two entries short of last year's tally we were also deprived of two major entrants this year due to family commitments and work schedules so well done to all who did participate. There were also two new names among the entrants and we thank them for joining the throng.

By 10.30am there were plenty of people in the hall so much tea, coffee and scones were downed. There was some very brisk trade occurring at the sales pitches with many choice and unusual plants being purchased. Old friends caught up with one another and new friends were made. 11am arrived and Ian Thwaites, accompanied by Alan Hart, began the task of sorting out the prize winners. Sometimes the first placed plant made itself very evident but more often several plants were in the running for honours. While judging was commencing Ivor Crook was busy electronically producing the prize cards which were swiftly put in place a matter of minutes after the decisions had been made. It was about an hour and a half later when Ian and Alan finally reached class 36 and completed his task and as there were no complaints they had obviously done a very good job. Even class 37 where plants were shown just to be identified was successful with most entries being awarded a name label. I would like to thank everybody who entered the show, whether they had one entry or dozens, for helping to make this show so successful following last year's inaugural effort.

Ian and Alan's last task was to award the various prizes and they came up with the following results:

Best plant in the show went to David Porter for his entry of *Cheiridopsis crassa* in a 7" square pot, a truly magnificent plant. He was the recipient of the award of a year's free subscription to the MSG (our grateful thanks to Suzanne Mace who offered this prize from the group).

Most points in the show went to David Porter, who had an entry in almost every class. He was awarded the Jumanery Mesemb Trophy for this achievement. He must have an impressive Mesemb collection at home.



The Oakdene Trophy was awarded (yet again) to John Collins for his entry in Class 36 of a single genus in a 21" square. It was a splendid entry of Conophytums all in 2.75" pots, many flowering prolifically, and all looking in their prime, a truly worthy award.

The entry for best Conophytum went to Alex Martin for a plant of Conophytum bolusiae that was part of his entry in class 9 for 4 Conophytums in pots not exceeding 4.5". For this he was awarded the Abbey Brook Conophytum Trophy.

The final trophy was at the judges' discretion. Ian and Alan singled out John Collin's exhibit, which was a splendid entry of four Conophytums, for which he was awarded the Sydney Theaker Plate.

The Conophytum entries really drew attention to themselves time and again.

2pm and it was time to douse the lights, stop the refreshments, close the doors and settle down for Dorothy's talk, "Mesmerising Mesembs". The opening slide was indeed mesmerising as we were treated to the vision of a stunning specimen of Muiria hortenseae in habitat. There followed 5 minutes of discussion about the joys, trials, and tribulations of growing this plant. So it continued as we viewed a succession of plants in habitat, in greenhouses and on show benches, enhanced by interesting commentary from a speaker who is well versed in the topic. All too soon the talk came to a close but not before we were again treated to a final look at the Muiria.

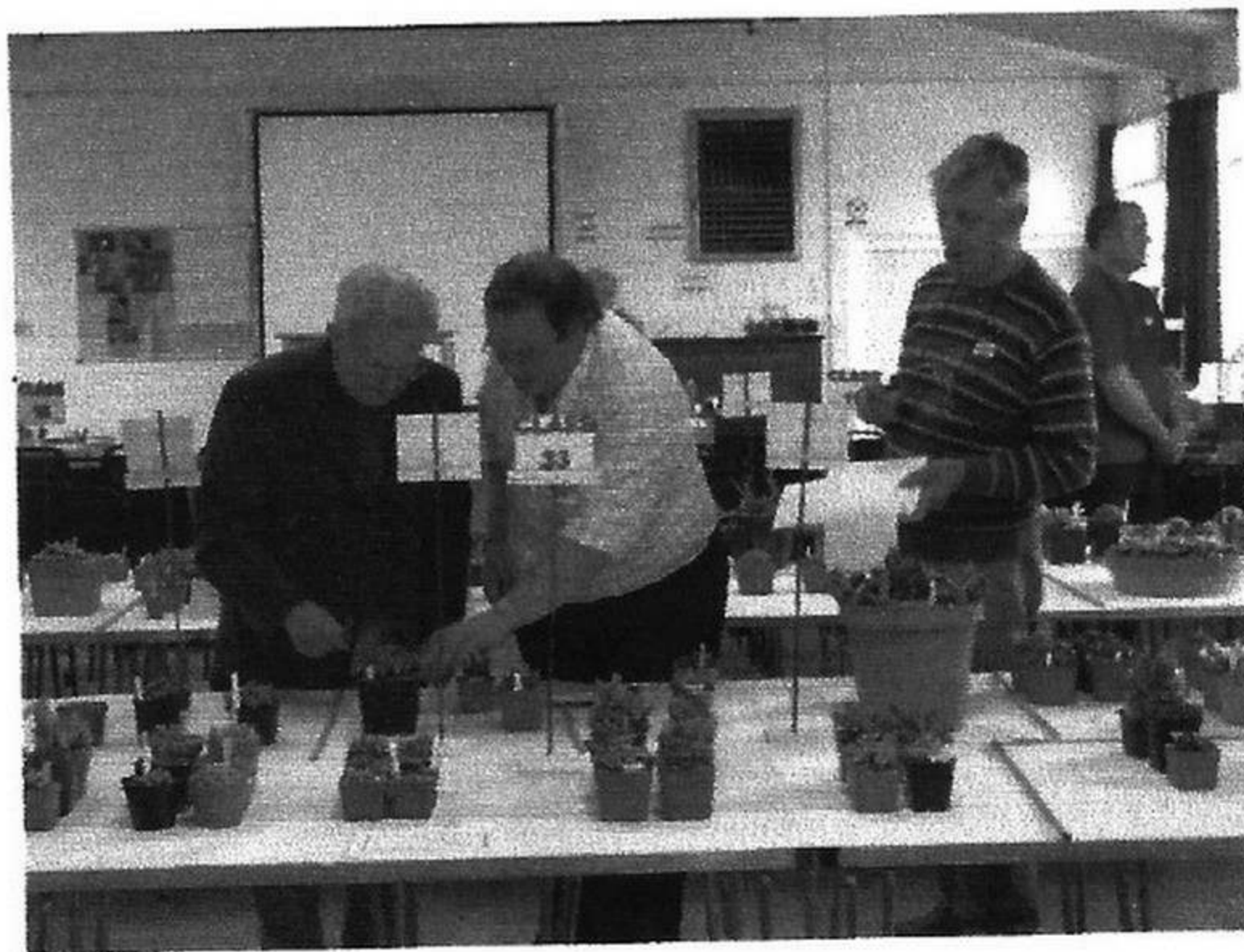
After the talk there was just time for a last look at plants, whether on the show tables or the sales tables, before everybody gathered up their belongings and purchases. The willing band of helpers ensured that the hall was back to its former condition by 4.45pm and everyone went home well content. Plans for 2009 are already made so place the date, Saturday 10<sup>th</sup> October, at the same venue, in your diaries. We are assured of an excellent talk as Andy Young will be treating us to a feast of Conophytums from his travels in South Africa as well as showing us the same plants in cultivation. His talk is entitled "Conophytum Highlights". The show coincides with our regular meeting on the Saturday evening so anybody who wants to come to the show and also stay on to hear Ian Nartowicz expound on the subject of "Lithops and more..." is very welcome to do so. You can be assured of a very interesting Mesemb day, from beginning to end.

North West Mesemb Show

11<sup>th</sup> October 2008.



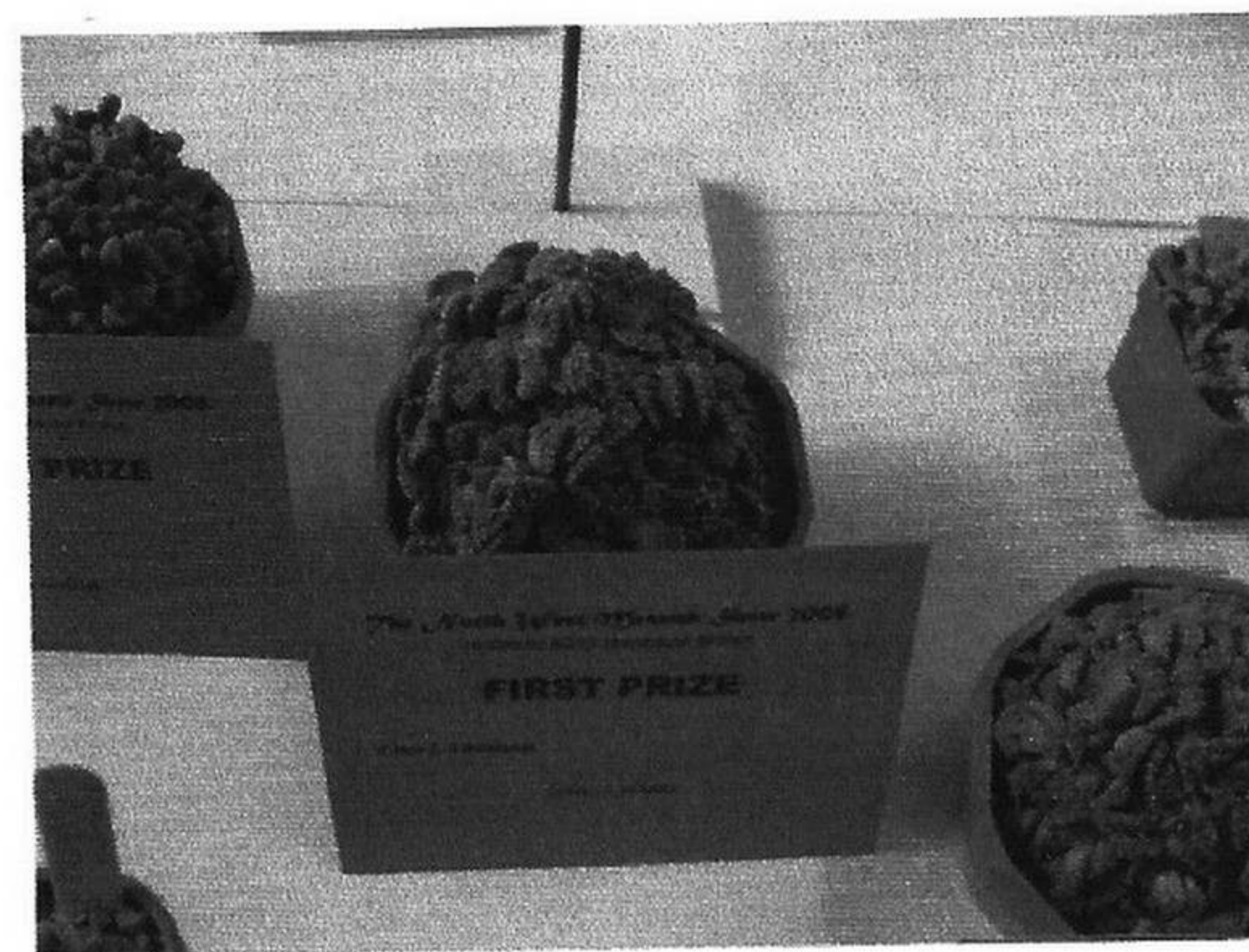
The Oak Dene Nursery team, Gordon and Joan Foster



Peter looks on at judges Alan Hart (left) and Ian Thwaites (centre)



Alex Martin receives his trophy



This article originally appeared in the March 2000 Newsletter of the Liverpool Branch and is reproduced here with permission of the author.

## Of cactaceous calamities, chemiculture, coir and calcium

by Ray Allcock

I have always found a great fascination in raising cacti and succulents from seed, and watching the embryonic plants gradually develop through various intermediate stages until finally they assume the adult form. Many years ago I habitually used a mix of finely sieved loam, crumbly leaf mould and coarse sand, usually in more or less equal parts by volume, and with very small amounts of bone meal and potash thrown in. Growth was rather slow, but the only real problem evident was that the emergent seedlings were liable to damp off.

Later, and spurred on by the increasing acceptance of lightweight composts such as U. C. Soilless and Levington, I concluded that the damping off problem indicated a need for some mix lighter and more 'fluffy' than that which I had been using (i.e. a mix with a higher air-filled porosity). To this end I tried a mix of equal parts of finely sieved loam, fine but winnowed peat, seed-grade vermiculite and coarse sand; to be followed, after the first spines were well formed, by liquid feeding. This compost proved indeed to be a good one, giving virtually no damping off and a growth substantially faster than that which had attended any of my previous efforts. But, as alas is so often the case when we try to improve upon Nature's own methods, a number of unexpected and extremely puzzling troubles later ensued.

Contributory to these troubles, or at least to the particular forms which they took, was the fact that my earlier experiences had taught me to wait for two or three years or more before potting up my seedlings. By that time I would in the old days have potfuls of robust and well-hardened and easy-to-handle little plants. But with the new compost growth in many cases slowed down and stopped in the second or third year, and ugly scarring developed at or near the apex of the plants, with most subsequently dying. I had never seen anything like this before, and it had me completely mystified. Eventually the problem was traced to a catastrophic rise in the pH. The batch of vermiculite which I had used proved to be the villain of the piece, and should never have found its way onto the horticultural market. Straight from the bag it gave a pH of 9 whereas the sorts used for horticulture should not register above 8. By the time all this got sorted out I had in desperation gone back to some of the old books and to an important article by Dr. Buxbaum in NCSJ9(1954)36, wherein the use of crushed brick is recommended, but without any indication of the variability of its properties in-regard to the pH and the powerfully adverse or powerfully beneficial chemical effects that may thus be encountered. Well, it is often said that a little knowledge is a dangerous thing, and so it proved for me in that connection also!

But let us move on to the next disasters! One is always advised never to let the seed compost dry out, and during the first season it is of course wise to follow this advice rather carefully indeed. But one can be careless or forgetful, and can thus come to realise that once a cactus seedling has put down a proper root it can survive drought quite well provided it is shaded from the direct light of the sun, and provided one hasn't used too much fertilizer. But in the latter respect I naively followed the makers' instructions, and thereby used far far too much! Whole potfuls of two- or three-year seedlings would either dry up all at once from below and then die, or would all at once go brown all over and then dry up. At the time I had never heard of or read of such a phenomenon and I misinterpreted it as a manifestation of some sort of bacterial infection. So I kept the plants drier and devised drier mixes, and so made the problem even worse!

After several more years, when all this seemed at length to have been painfully sorted out, there arose yet a third sort of problem equally vexatious, and doubtless contributory in some measure to those already described. It arose from the peat. This commodity, when allowed to dry out, has a propensity to become unwettable. It is thought that this property arises from a mono-molecular layer of grease. Not all peats are equally greasy. Some are far worse than others. Moreover the loam which I was using at the time was an organically rich topsoil and thereby also greasy. It is better to go deeper. The late Geoff. Williams, a professional gardener and a great stalwart of our Branch prior to his premature death in the year 1975, used to recommend that one take one's loam from that depth where the dark colour of the topmost layers is just beginning to fade towards the lighter colour of the subsoil. I have never had any wettability problems with loam dug out according to this advice. But that was a long time ago, and they say that novelty is the spice of life. It thus happened that in spite of due attention to watering (most of the time!) I started to find pots of two- or three-year seedlings that always looked thirsty and unhappy. Eventually I discovered, on depotting to try to find out whether the plants had lost their roots, that even under my regime of alternating bottom soaks and generous top waterings there had developed in the pots a curious sandwich effect, with the top 3mm and the bottom cm sopping wet, and in between these two wet layers a dry and unwettable 3cm of compost. I was unable to satisfactorily deal with this situation even with the help of detergents. There were not many survivors from that sowing!

It was therefore with more than a mere disinterested curiosity that at this juncture I decided to try coir as a peat substitute. It is indeed a remarkable material - it loves water, and accepts it with enthusiasm even when completely dry. Also it gives an acid reaction, about pH 5.5 - 6.0.

Just for fun and to make a first acquaintance, so to speak, I tried a few spare seeds in unfertilized coir taken neat, i.e. with no additives of any sort, other than dissolved salts carried in by the fertilizer-enriched irrigation water. As it turned out, it so happened that the seeds of two of the four species which I tried were duds. Those of the other two (*Gasteria armstrongii* and *Gymnocalycium friedrichii*) germinated well and grew on rapidly. But their development has shown up yet another problem,

suggesting a warning to any grower relying solely on soluble fertilizers for plant nutrition.

The soluble fertilizers most often recommended by cactus addicts appear to be various of the Chempak range and Phostrogen. In the case of Chempak the packets make no mention whatever of the element calcium, and it was Chempak alone that I had in use during the three seasons of growth pertinent to the mentioned two species. I did employ tap water for some of the waterings however (a hot tap is rather useful when warm water is needed), and of course our tap water here in Liverpool is laced with a small amount of calcium hydroxide, to prevent contamination from lead pipes. Nevertheless the three-year *Gasterias*, although at first sight appearing to be very nice little plants, have now developed the classic symptoms of calcium deficiency - most of the roots have now died and those which are still alive have now gone to a rich brown colour instead of the normal healthy white. With the *Gymnocalyciums* it is not so clear-cut - they grew so vigorously that some were eventually pushed upward till their roots were quite clear of the compost, necessitating that all be potted up. Those which had not suffered this premature and drastic uprooting have now established themselves in their new and more conventional compost, but most of the others have just shrivelled away, suggesting that their roots were irretrievably damaged by their earlier unfortunate experience. But we cannot legitimately trace a connection to any surmised calcium deficiency, because the root system of this species is already known to be very vulnerable and easy to damage.

The Phostrogen company supply better information. In its original 10-10-27 formulation their product contained 3.6% by weight of the element calcium, which made it suitable for most hydroponic applications. In the current 14-10-27 formulation the calcium content is however only 0.71%, and although this is probably capable to support cactus life unassisted it is undoubtedly much below optimal, except perhaps for the epiphytes and certain saxicoles.

It is however easier to add than to subtract, and one simple way to provide more calcium without upsetting the pH or other chemical properties is to add a little gypsum (hydrated calcium sulphate) powder to the irrigation water at the same time that one adds fertilizer. The horticultural grade of gypsum should be used because although it does contain some impurity in the form of insoluble grains of sand it is free of alkali, whereas builders' plaster is not. For many desert cacti a feed containing equal amounts by weight of calcium and nitrogen might perhaps be judged to be suitable. Such a feed may be approximated by using 1 volume of gypsum powder to every 2 volumes of Phostrogen powder. There do not appear to be any counter-indications.

Most of my own plants are potted in media containing neutralized brick fragments (see Newsletter 2.2). These fragments already contain far more gypsum than can dissolve into the soil solution (the solubility of calcium sulphate increases with temperature but even at 20°C it amounts only to 2.4g per litre of water). The plants appear to show considerable benefit

from this ready supply of assimilable calcium, both in general robustness of their tissues and in the quality of the spination. Chempak, from whom the horticultural grade of gypsum may be obtained, give a blanket recommendation of 8oz/bushel (6.24g/l) for its use as a calcium supplement in the mixing of soil-based composts, which is somewhat more even than I estimate as the content of my own potting mixes.

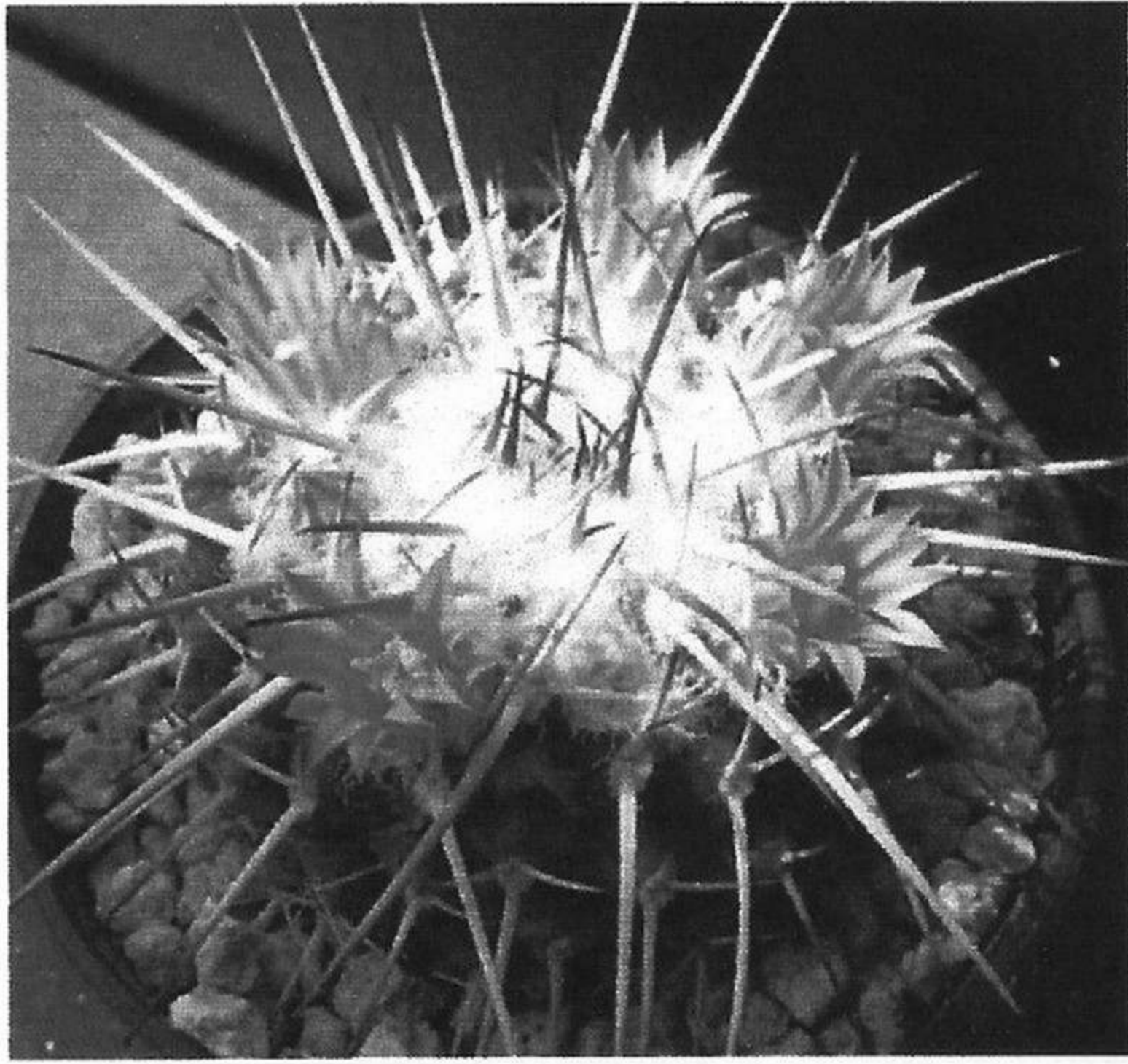
In February 1999 I started a serious trial run with coir, sowing in a mix composed of 6 parts of unfertilized coir and one part each of seed-grade low-alkali vermiculite, seed-grade perlite, fine-grade Biosorb/Ultrisorb, and winnowed siftings from the previously mentioned neutralized gypsum-rich brick. I thus used a bit of everything that happened to be at hand at the time and suitable, other than loam. The latter I purposely missed out, partly because of the wettability problem and partly just to see what would happen in a medium completely devoid of dust-sized components.

The water acceptance of this mix has remained at all times excellent, and the pH has stayed steady at 6.5 over the whole twelve months. This I find quite remarkable, for it represents the maintenance of a pH balance between a mineral-based alkali (namely the vermiculite) and an organically produced acidity dependent presumably upon some sort of bacterial action. It clearly suggests that in the context of coir, with its very mild natural acidity (pH 5.5 - 6.0), gypsum should be chosen as the principal source of calcium, whereas of course in most peat composts chalk is used.

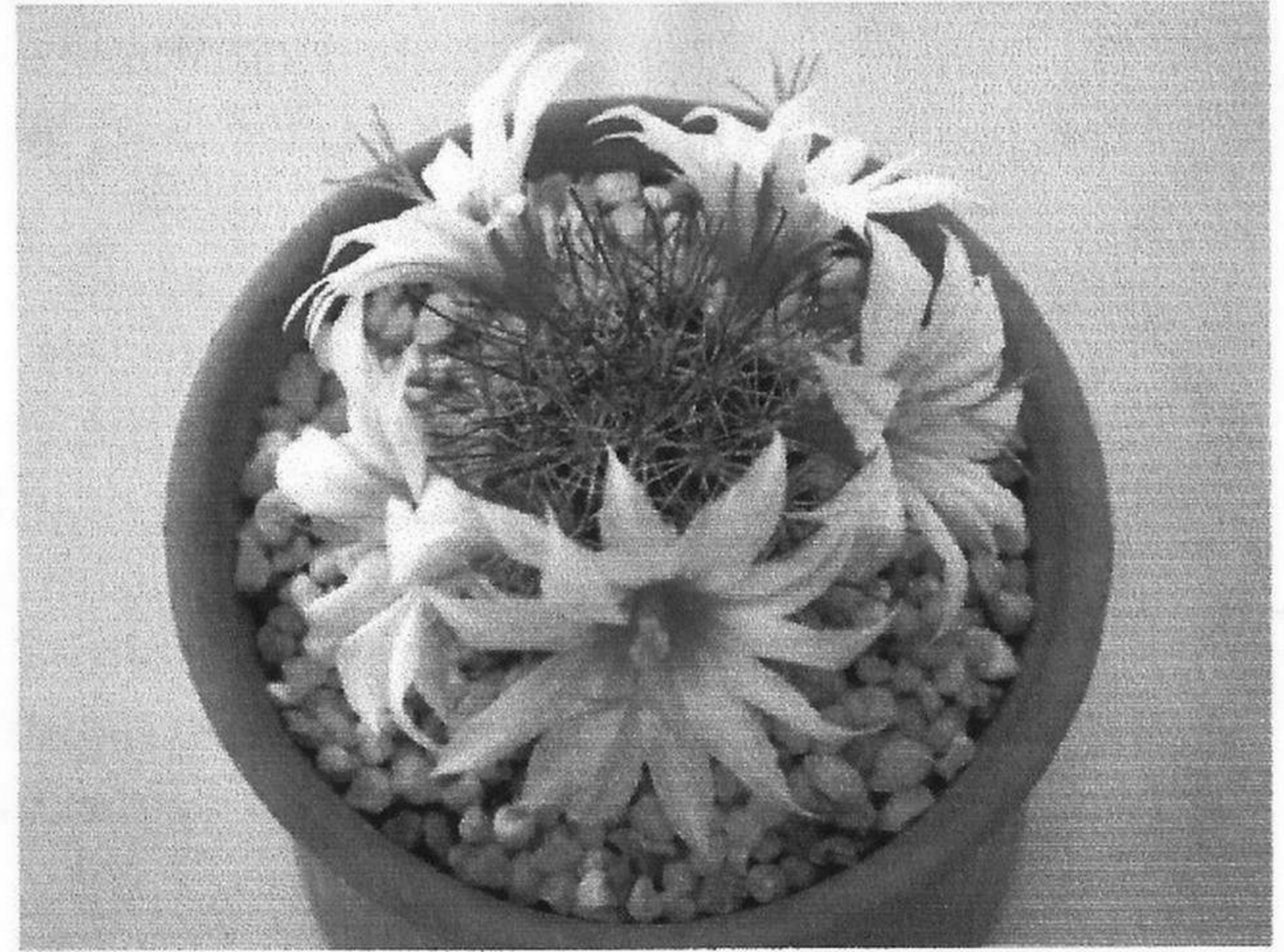
The seedlings have for the most part done rather well so far, but from memories of previous years I have a distinct and indelible impression that a greater uniformity as between prompt and delayed germinators and a higher quality and amount of growth overall could have ensued if some loam had also been incorporated. As it actually was, such seed as germinated late made surprisingly little progress. Also, and again presumably because of the absence of loam, certain small-seeded and delicate sorts (Aztekium and Strombocactus) failed to establish after germination, and faded out after a few weeks, and Ancistrocacti also just faded away. Curiously, the small-seeded Parodias (subgenus *Microspermia* Fric) established well, reflecting I suppose the mineralogical and environmental disparities as between their Argentinian habitats and those in Mexico and Texas. So, for my millenium year trial, I shall put in some loam harvested with Geoff's precepts in mind, and see what change that brings about. I am always looking for one mixture that will suit everything - maybe the goal is now in sight?!?!

As base fertilizer I used Vitax Q4 at the very low rate of 0.4ml/l of compost (approximately ½ oz/bushel: equivalent JI No. 0.2), and the first watering was done with Chempak No. 3 at the standard rate of 0.5ml/l of water. From then on no more fertilizer was applied until the first baby spines were widely in evidence, which was about 14 days into May. At that stage I judged it to be appropriate to start to feed, and so from then until early October I did all the irrigation with the new Phostrogen at quarter strength (0.125ml/l), but with crystal tops to cut down evaporation until well on in the season for most sorts, and for some sorts still even now. This sparing feed has proved to be quite enough even for the most vigorous sorts, such as

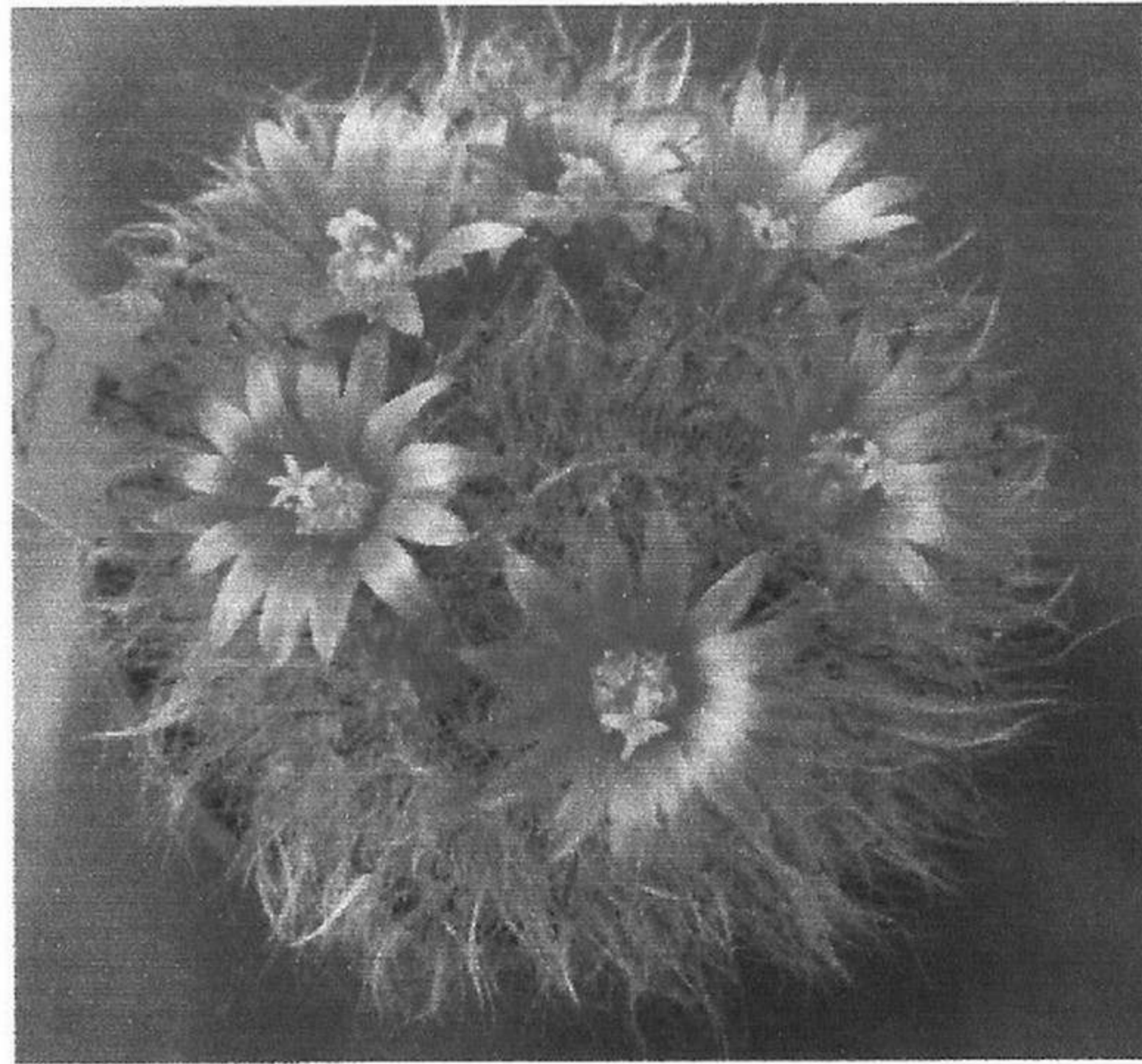
## Mammillaria Gallery



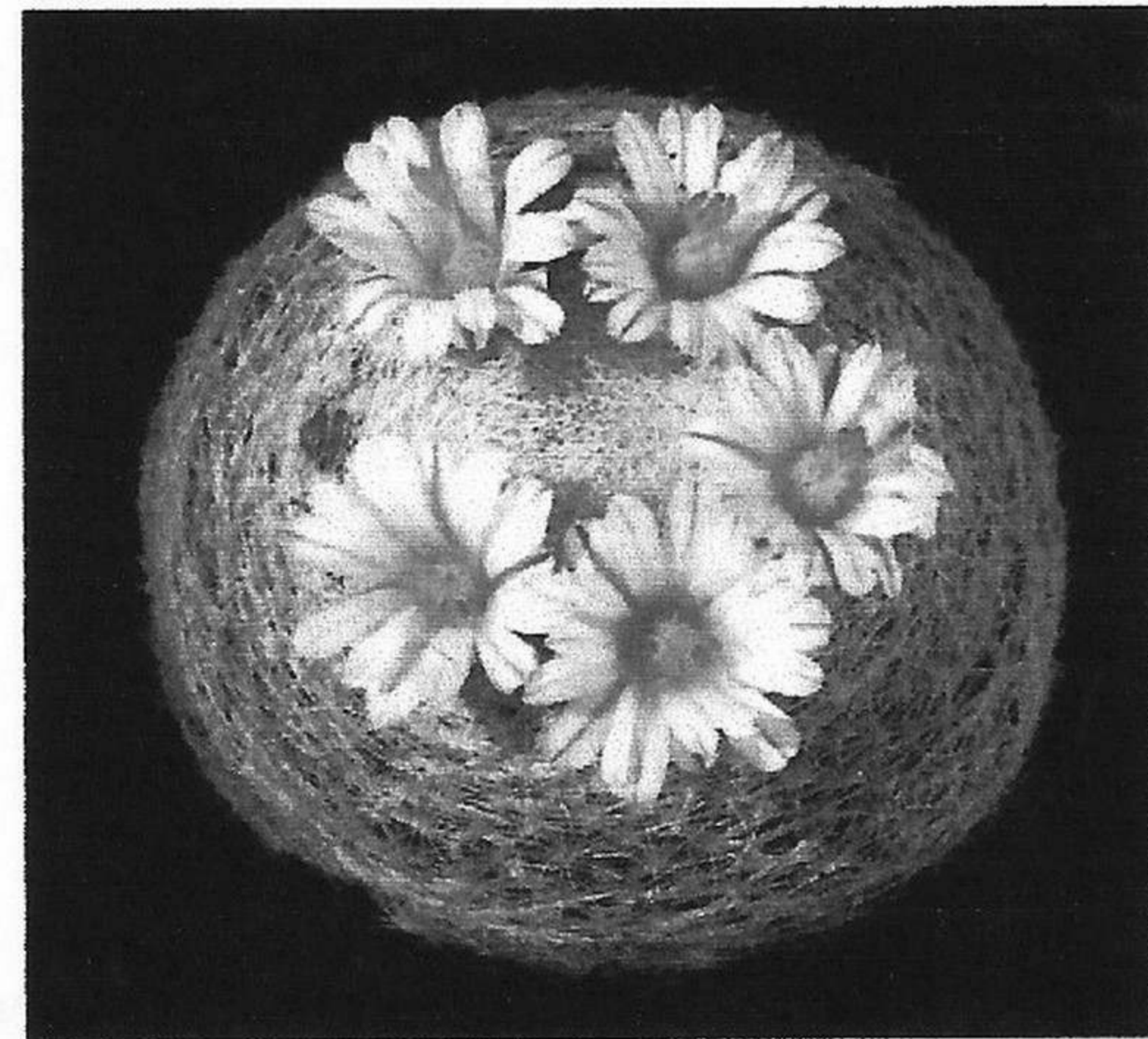
*M amajacensis*



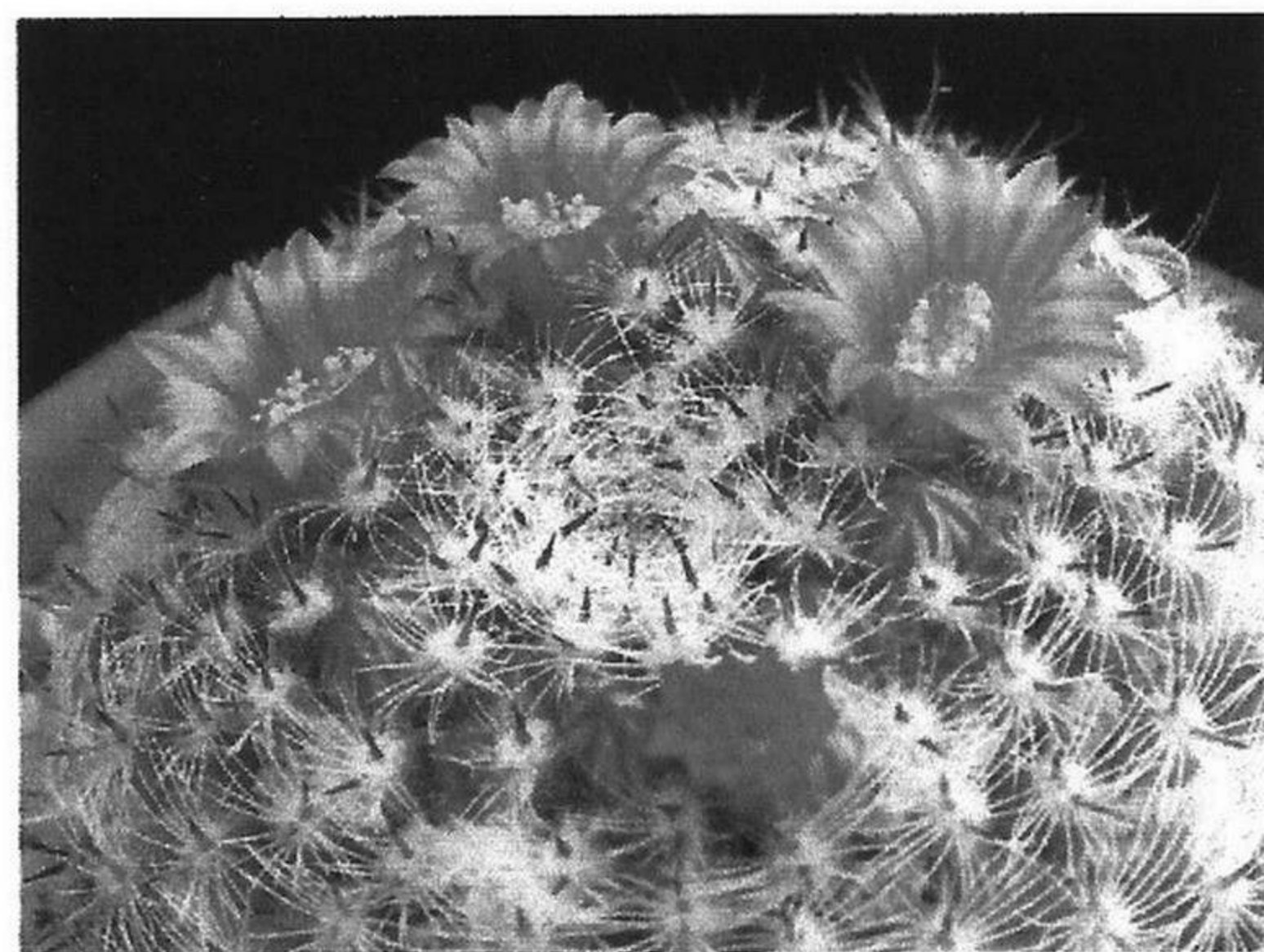
*M frailiana*



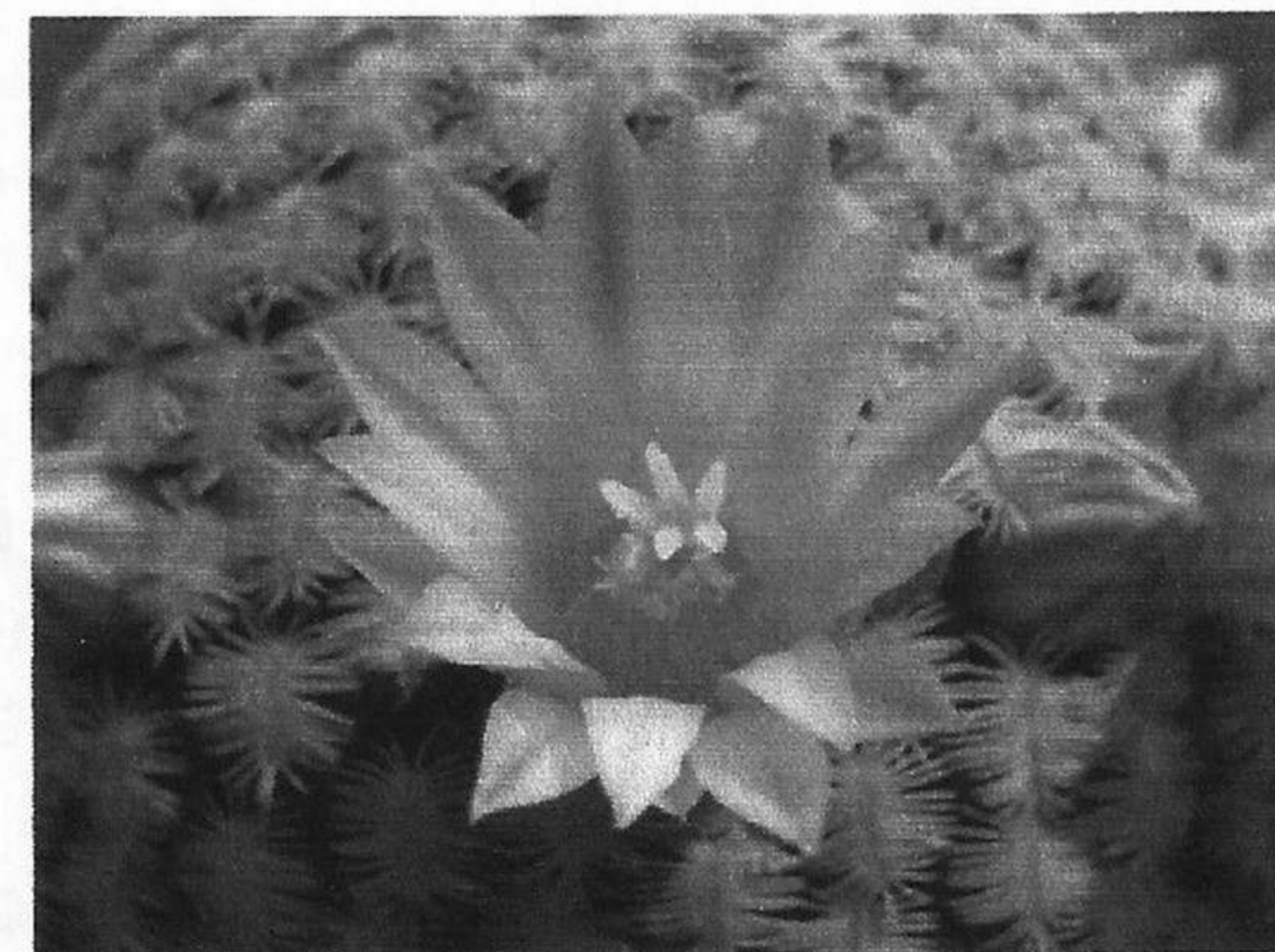
*M bocasana*



*M lenta*



*M klisingiana*



*M pectinifera*

Trichocereus. Maybe it is more than enough. The danger, as already mentioned, is that the seedlings are easily slowed down or killed by fertilizer in excess, but so far all seems to be in good order.

A feeding programme cannot be meaningfully assessed in the absence of any reference to the amount of leaching. Recommendations given on packets of fertilizer are therefore for our purposes misleading and inappropriate, for we deal with very long periods of time and small or more often zero leaching losses. The danger of accumulation to excess is therefore to be taken very seriously indeed. In the present instance I judge the leaching losses to be negligible and I reckon that each watering conveys to a pot the fertilizer content of water of amount equal to 1/5 of the pot volume. I reckon also that the amount of fertilizer so far incorporated into the bodies of these tiny plants must be negligible. On this calculational basis I reckon that the present fertilizer content of the seed compost may in a rough measure equate to that of a compost base-fertilized by Phostrogen to the amount 0.5ml/l, which corresponds approximately to JI No. 0.5. This value may be quite high enough, bearing in mind that we wish them to emerge undamaged from possible droughts, and bearing in mind also that the move out of the sowing pots will be done into JI No. 1. Therefore it seems to me that I should now carry on just with water, until some slow-down of growth or some deficiency symptom indicates otherwise.

Some readers not aware of the present state of horticultural and agricultural glasshouse technology may think that all this is getting a bit too complicated for comfort. I would like to be able to agree with them. After all, we grow our plants for pleasure and relaxation, not complication. I know of at least two proven ways to minimize complication. One way is to revert to quasi-organic methods, as exemplified in my first paragraph. Another way, now by far the more popular, is to prick out early and repot often, and thus to dispose of all problems of physical structure and chemical imbalance along with the discarded compost. Some very magnificent plants are produced in this way, but it is labour and materials intensive. Everyone to their own taste!

Maybe there are significant variations of practice to consider. Our Branch has several very capable seedling growers among its membership - it could be interesting and helpful to hear more about their various and in some instances very different methods and preferences.



Trichocereus. Maybe it is more than enough. The danger, as already mentioned, is that the seedlings are easily slowed down or killed by fertilizer in excess, but so far all seems to be in good order.

A feeding programme cannot be meaningfully assessed in the absence of any reference to the amount of leaching. Recommendations given on packets of fertilizer are therefore for our purposes misleading and inappropriate, for we deal with very long periods of time and small or more often zero leaching losses. The danger of accumulation to excess is therefore to be taken very seriously indeed. In the present instance I judge the leaching losses to be negligible and I reckon that each watering conveys to a pot the fertilizer content of water of amount equal to 1/5 of the pot volume. I reckon also that the amount of fertilizer so far incorporated into the bodies of these tiny plants must be negligible. On this calculational basis I reckon that the present fertilizer content of the seed compost may in a rough measure equate to that of a compost base-fertilized by Phostrogen to the amount 0.5ml/l, which corresponds approximately to JI No. 0.5. This value may be quite high enough, bearing in mind that we wish them to emerge undamaged from possible droughts, and bearing in mind also that the move out of the sowing pots will be done into JI No. 1. Therefore it seems to me that I should now carry on just with water, until some slow-down of growth or some deficiency symptom indicates otherwise.

Some readers not aware of the present state of horticultural and agricultural glasshouse technology may think that all this is getting a bit too complicated for comfort. I would like to be able to agree with them. After all, we grow our plants for pleasure and relaxation, not complication. I know of at least two proven ways to minimize complication. One way is to revert to quasi-organic methods, as exemplified in my first paragraph. Another way, now by far the more popular, is to prick out early and repot often, and thus to dispose of all problems of physical structure and chemical imbalance along with the discarded compost. Some very magnificent plants are produced in this way, but it is labour and materials intensive. Everyone to their own taste!

Maybe there are significant variations of practice to consider. Our Branch has several very capable seedling growers among its membership - it could be interesting and helpful to hear more about their various and in some instances very different methods and preferences.

# Manchester Branch 60<sup>th</sup> Anniversary

