



THE NATIONAL CACTUS AND SUCCULENT SOCIETY  
MANCHESTER BRANCH

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EDITORIAL

The calendar indicates that we are on the verge of spring, and whether the calendar is right or not this is the period that we have been awaiting during those long drawn out winter months, and now at last the shrouds can come off as it were.

This is the season of feverish activity in our greenhouses, there is repotting to be done, plants to be checked, and examined, seeds to be sown. We can now also move those tender plants which we have wintered on our window ledges back to their rightful place in the greenhouse.

The sun is shining (metaphorically speaking of course) and all in the world is right, but beware, this is also a dangerous period, many losses occur because of careless watering. Extra special care should be taken, and examination of our plants should be carried out methodically, and thereby minimise possible losses.

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FORTHCOMING PROGRAMME

- May 7th Dr. Herman Jacobsen. The world famous authority on succulent plants. 7.30 p.m. at the Manchester Geographical Hall. 16, St. Marys Parsonage.
- June 11th Branch Show.
- June 18th Mr. R. Tyrrell, Welford, Rugby. Reminiscences.
- July 9th Mr. H. Rhodes, Ilkley. Cactus Care & Succulent Safari.

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AN ALTERATION TO YOUR SYLLABUS & AN ADDED ATTRACTION

Will members please note that the date of our October meeting has, of necessity, been changed. Dr. Mortimer (Chairman of the N.C. & S.S.) will now be visiting us on Saturday evening Oct. 22nd 1966 and not on Oct. 8th as printed in the Syllabus. On that same afternoon (Oct 22nd, 1966) members of the Manchester Branch have the honour to be hosts for the next half-yearly 'get-together' of the Northern Area Branches which is to be held in the Milton Hall commencing at 2-30 p.m.

Although these meetings are primarily business meetings, they have proved in the past to be most enjoyable, and provide members of the host branch with the opportunity to meet and chat with other keen cactophile delegates from the Trent to the Scottish Border.

We hope to prevail upon sufficient of our lady members to provide a buffet-tea for delegates (as has been the case at previous Northern Area meetings). Having thus fed our guests, we hope that many of the delegates will then be able to stay a little longer in Manchester and join us for our Branch meeting in the evening and avail themselves of the opportunity to hear Dr. Mortimer's talk.

I do urge all members to note these arrangements and to endeavour to attend the Northern Area Meeting.

Our Secretary will be particularly pleased to receive offers of help from ladies who are prepared to assist in providing and serving the buffet refreshments.

C. Partington.  
(Hon. Chairman)

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DR. HERMAN JACOBSEN

We in Manchester are indeed fortunate in having such a legendary figure to come and address us. His monumental work in three volumes on succulent plants is the bible on the OTHER SUCCULENTS (which we have recently acquired for our library). He is the curator of one of the great collections of the world, at Kiel Botanical Gardens.

This is a great opportunity to listen to the master preach to us the humble deciples here in Manchester. The attendance of members to this meeting should be 100%, (your friends too would be welcome, as are our friends from other branches) for who among you would like to remember in later years that Dr. Herman Jacobsen was in Manchester, and, 'I didn't make the extra special effort to come and see the great man', for this could be a once in a lifetime opportunity.

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## REPOTTING YOUR PLANTS

by C. Williams.

Repotting your plants is an art. The skill required during the repotting procedure is quickly developed. The most frequently asked question is "when shall I repot my ....?" There is no easy answer to this, for much depends on the reason for repotting. Many factors control the need for repotting, a plant having grown too big for its container, a plant growing in an exhausted compost, a plant which is in a too water retentive mixture, a plant having lost most of its roots, a plant in a too acid/alkali compost, and many other reasons. The best advice which can be given is to repot when necessary. If this entails repotting in the winter a little more care and attention is required, but there is no need to be apprehensive about moving the plant into a new pot. Probably the best time to repot is during the early spring when plants are just beginning to grow. Damage caused to the roots is more easily overcome at this time than at any other time of the year. As usual there are exceptions. Plants which flower early in the year should not be repotted until after flowering has finished otherwise the flowers may be re-absorbed into the plant body. This may necessitate the plants being repotted in the autumn along with the winter growers.

Having decided that the plants are to be repotted, the first step is to prepare the compost. Every grower has his own successful all-round compost. I think the best general purpose compost is one based on the John Innes composts. Possibly the No 2. with added sharp sand or crushed coke breeze to open it up. Only sufficient should be mixed at one time to complete the job in hand, since compost which is left standing around for any length of time goes sour, chemical changes taking place in the compost and nutrients becoming fixed so that they are not available to the plant. Sufficient clean (if necessary, sterilized) pots should be on hand. It is best to start repotting a collection with the largest plants so that as you repot, larger size pots are available for potting-on those plants which require larger pots. A check beforehand will determine which order the plants are to be repotted in. A supply of crocks (broken plant pots) is required.

A small piece of crock, somewhat larger than the hole in the plant pot base should be put over the hole, concave side down. This is more for help in removing the plant next time than for any drainage purposes. If you feel it is necessary to put drainage material in the pot, it should consist of small chippings, or pebbles, and should form a layer about  $\frac{1}{2}$ " thick. Some coarse peat should be spread over the pebbles in order to prevent the soil washing down into the drainage layer. I have never found any necessity for this drainage layer if, when the crock is inserted, you make certain that the crock does not seal the hole, and large coarse pieces of peat or compost is placed around the crock.

Compost should now be put into the pot, sufficient to make a layer about  $\frac{1}{2}$ " thick. One often hears of the necessity for using "just moist compost when repotting. I will go on record as saying that this is just another of the myths perpetuated by gardeners and people who do not have any practical experience of repotting. Use the compost in what ever form you find best. Dust dry compost runs easily amongst the roots and prevents air pockets forming where they can do most damage. Also, it is impossible to firm the compost to the extent of forming a solid mass which is lethal to a root system. Some people say you have difficulty in watering a really dry compost, but don't we experience this every February or March when we reinitiate the summer watering of the plants? A teaspoonful of "Stergene" in a gallon of water acts as a very effective wetting agent.

The plant should now be removed from its pot. This is most conveniently done by inserting a pencil, wooden skewer, small driver etc. into the drainage hole and pushing the plant out (the reason for having the crock present is to give you a firm surface to push on and prevent the push/rod piercing the underside of the plant). Alternatively, the plant can be removed by tapping the rim of the plant pot on the edge of a table and dextrously catching the plant before it crashed to the floor. Having removed the plant, a thorough inspection of the roots should be carried out, all insect pests removed along with dead and matted roots. If there is a severe attack of root mealy bug a stiff brushing of the roots under running water will get rid of the pest along with the old compost and most of the fibrous roots, leaving you with only the main roots. A plant treated in this way should be laid on one side for a day or so in order to allow the wounds to callous over. No prolonged drying out is required.

A plant pot which leaves about  $\frac{1}{2}$ " -  $\frac{3}{4}$ " all round the base of the plant between the rim of the pot and the plant should be chosen. This may mean that the plant is resting on its lower spines if it is say, a *Ferocactus*, but it does help in the repotting since the plant is already supported in position. Next, the compost should be dribbled into the pot, making sure that the roots are free, and compost is worked between the roots. Tapping the base of the pot on the potting bench helps to settle the compost without forming a solid mass in the pot. Compost should be filled up to the neck of the plant. Small pebbles or other top dressing should be put on top of the compost especially around the collar of the plant since this is the most vulnerable place for root to attack. Free drainage at this point will prevent a lot of losses from rot.

The plant is now ready for watering. Some people recommend that no watering should be carried out for three or four days but I prefer to stand the plant in water up to the rim of the pot for 15 minutes or so, and then allow the pot to drain. No further water is then required until the remainder of the collection is watered. If the plant is repotted at the commencement of the growing season, the roots quickly recover and new roots form. If the operation is carried out in the dormant period, no water should be given to the plant. In all cases a frequent inspection should be made so that if anything should have gone amiss it can be quickly remedied.

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Please where are we ? The following experts are all convinced that their composts give the best results.

Clive Innes Leaf mould (preferably Beech) with coarse sand.

Lamb Leaf mould and coarse sand.

Kenne Sedge peat and sharp sand plus fertilisers, lime or chalk.

"Hugh Muss" John Innes No. 3 plus certain fertilisers, crushed brick or grit, lime-stone chips or oyster-shell.

Borg Different composts to suit each species.

Acid versus Lime.

Watering When it comes to watering the position becomes worse, particularly when dealing with succulents, and worse still in trying to grow the rare species. Even Jacobsen is no help.

May I plead for a talk at one of our monthly meetings by somebody with wide experience to deal with the culture of these rarer succulents in view of the number now available, such as:- Adenia, Idris, Fockea, Monadenium, Pachypodium and the like.

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### MONTHLY CULTURAL NOTES

by The Editor

April Continue to re-pot plants. After re-potting, do not water the plants again for a few days. It is usual to re-pot small plants annually and larger ones every two or three years. A suitable compost is two parts loam, one part peat, and one part sharp sand, to which has been added a little old mortar and a sprinkling of bone meal. The John Innes potting Soil, with extra grit added, is also very suitable. Tail stemmed Echeverias can be beheaded now and rooted to make neat short stemmed plants. Dry the tops after cutting them off for a week or longer to ensure a good callous, and plant in dry sand or Vermiculite in pots, when rooted, remove and pot on, in a suitable compost and water in the usual way.

At the beginning of the month withhold further supplies of water from Ceanothus. These should now remain dry until August.

May The majority of the Succulent Plants should now be growing well, and many will be in flower. Watering may be done once a week. The frequency, however, depends on weather conditions, and to a large extent, upon your soil, as some soils retain moisture longer than others. When watering, water well, and allow the soil to dry out before watering again.

Towards the end of the month, Lithops may receive their first watering of the year, provided most of last year's leaf pair has dried away, but water should be sparingly given at first.

By the end of the month, give plenty of fresh air to the plants, when the weather is favourable, but avoid draughts.

Keep a sharp look-out for pests, particularly Mealy Bugs and Red Spiders. The former can be picked off with a pair of tweezers or destroyed by touching them with a small brush dipped in Methylated Spirits and to which has been added a little nicotine or nicotine sulphate. If Red Spider attacks the plants in the Greenhouse use Chlorocife or fumigate with Azobenzene; for plants attacked in the home spray with Volck-dusting with Derris is also effective.

Take cuttings or off-sets during the month. These will root well in a mixture of sand and peat in pots and stood on the Greenhouse staging or window-sill. Slight shade is advisable.

June Cactus and other Succulent Plants can now be watered once or twice a week. An occasional light spraying will be beneficial but avoid flower buds or flowers, for water may cause damage to them. Air must be admitted freely to the collection. Throughout this month, and until the end of August, continue to take cuttings of Succulent Plants. Select the piece to be rooted and make a clean cut through with a razor blade. The cutting should not be planted immediately but kept in a shady dry place until the cut surface has thoroughly calloused.

Although most Succulent Plants are now being regularly watered, such plants as Conophytums should not receive any water until the middle of August and Pleiospilos should also be kept dry until the end of July.

Succulent Plants love sun and light, but there are few exceptions, and of these, Epiphyllums, Ripsails, Ceropegias, Gasterias and Haworthias respond better in shade.

Epiphyllums should now be in bloom. As these plants go out of bloom withhold water gradually to give a short period of rest, but continue to spray them.

Late Spring and Summer Months are best for sowing seeds. If sown this month, no heat should be required to germinate them.

Many Succulent plants like to grow out of doors during the summer months. Choose the sunniest part of the garden and sink the plants in their pots in the soil. Such work can be carried out this month.

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#### NORTHERN AREA SHOW

On the 4th June the first Northern Area show of the N.C.&S.S. takes place in Leeds. As one of the largest branches in the area we must be out in force on that day. It is a one day affair, and if there is sufficient interest transport to Leeds will be organised.

As well as members classes there will also be an inter-branch competition. Schedules will be available shortly and will give further information. This is an opportunity for us in Manchester to let it be known that we are going to be a force to be reckoned with in these annual area shows. Lets be taking a fair share of those prizes, and trophies back with us across the Pennines.

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## CRITICAL COMMENTS

by Ron Ginns.

I must again cross words with Mr. Muss on the subject of soil sterilization, or pasteurisation, if he likes that better. He repeats that 200° F will kill all harmful bacteria but not the beneficial ones. In view of the multiplicity of kinds of bacteria it seems strange that it is easier to kill all the harmful ones than the beneficial ones, so strange in fact that I don't believe it. If I were growing a commercial crop like tomatoes where the same soil is used over and over again with bacteria harmful to the plants building up, then it would pay to sterilize. With cacti, continually bringing in new compost, it is a waste of time and money. The hoof and horn meal and old cow manure advocated for use in composts are useless without bacteria to break them down into soluble salts that can be absorbed by the plants.

Now for the question of P.V.C. versus glass. I have no data as to the optical properties of P.V.C: so will accept Mr. Allsagers statements. Infra-Red, or heat rays have a long wave length; ultra-violet, responsible for scorching, have short wave lengths. Glass allows the passage of short waves but not long waves. The shorter waves in sunlight can enter a glass-house, fall on the soil inside where they are absorbed, raising its temperature. The heated soil emits infra red rays which cannot escape through the glass, and so the temperature inside the house remains higher than outside. This is a scientific fact which can be verified from any elementary text book of optics. If P.V.C. allows the infra red rays from the sun to enter it will also allow those from the soil to escape, likewise those from the heating system, and so will fail to keep the inside of the house warm.

I am glad to learn that Mr. Kennewell is now using a method that does not "blow up" his plants. Are we to take it that his Mammillaria herreae is no longer as green as it was at the time of the Darlington get-together?

I must query Mr. Tyrrell's statement that most Aloes appreciate shade. Some do, as I have seen them flowering in thick forest at the foot of mt. Kilimanjaro in East Africa. It is a different story with many South African species. In the mountains north of Cape Town they grow on exposed slopes in full sun whilst further north in the Karroo they overtop the surrounding vegetation. In shade they will doubtless grow faster, which I know is one of Mr. Tyrrell's main objectives, but they lose the leaf colours which are characteristic of them when grown naturally, and become a uniform sappy green. For those of us who haven't as much space as Mr. Tyrrell, the chief recommendation of Aloe thompsoniae is that it will flower in a 3" pot, so no one need be scared off it by talk of 7" pots.

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by D. Bunyan

These plants were amongst some of the first I purchased when I started to collect Cacti. It may be my method of cultivation, but they do not seem to be very fast in growing, but perhaps I am impatient. The majority have some very nice large flowers for the size of the plant, and this was one of the things that first attracted me to them. Most of the plants of this genus flower when they are three to four year old seedlings. Some of the choicer ones however do not flower until much older.

I think my favourite plant is *Notocactus scopa* var. *ruberrima*. My plant is only about 2" tall and an 1½" in diameter. This has flowered the last two years, but unfortunately when this plant flowers, like others in the genus the base of the flower leaves a scar on the stem of the plant, and to my mind spoils the appearance of it. I have yet to flower *Notocactus leninghausii*, although I should think by the size and age of my plant it may do so this coming season.

Far better for flowering in my experience are *Notocactus apricus* and *Notocactus mammulosus* and its varieties. These have now been flowering regularly for several years. One thing that always attracts me is the texture of the petals of the flower which seem to be like silk.

*Notocactus haselbergii* has very distinctive flowers which are orange/red in colour, whilst *Notocactus graessneri* has green flowers. These two species have a smaller flower than the preceding varieties.

These plants always look attractive even when not in flower, and when grouped together the variety and difference in colour always look very striking. *Notocactus scopa* with its white radials and its variety *ruberrima* with red centrals, *leninghausii* and *schumannianus* with their yellow spines, the *mammulosus* type and varieties, with their shiny green bodies and biscuit colour spines, the brown spines of *apricus* and white of *haselbergii*.

So far I do not have many of the varieties of *Notocactus ottonis*, but the few I have must be either incorrectly named or there is very little difference in the varieties. It could of course be that the difference is not so noticeable in smaller plants, as all of these have been purchased as seedlings during the past year or two.

This last year I managed to obtain cristate forms of some of this genus. The most interesting of these is *Notocactus scopa* var. *ruberrima*. Although very small, this seems to have the makings of a very good specimen later on.

Having seen the illustration of *Notocactus herteri*, in Haage's publication 'Cacti' I was very anxious to obtain one. This I was fortunate enough to do last year, and although this is only about the size of a sixpence, I hope this will soon grow much larger as it is grafted. This I believe is the only *Notocactus* with really pink flowers. *Notocactus rutilans* has pink flowers tinged pink, but according to Haage, *Notocactus herteri* has deep pink flowers. Unfortunately I am likely to have to wait some years to see any as this type only flowers on an amateur plant.

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## DESIRABLE PLANTS

by C. Williams

After a cactus grower has had some experience in the care of cacti and succulents he begins to look around, and sees, and tries to obtain some of the more desirable plants. In this article I will try to deal with some of these plants, in particular, cacti. In future articles, plants other than cacti will be dealt with.

In general, the more desirable plant, the harder it is to obtain. This of course is what makes it what it is. In many instances, once the plant is obtained, its cultivation presents no problems. There are exceptions to this, however; some of the plants are rare not only in cultivation but also in habitat, some are rare in cultivation because of various difficulties, but are quite common in habitat. Nevertheless, once you start searching for these plants it is amazing how many can be obtained, either as seedlings or imported plants.

Every grower has his own ideas about what constitutes desirable plants. One grower will go for plants having very striking floral characteristics, another will go for plants having long spines, another for colour in the spines, and so on. I will try to give a varied selection of plants and leave it to the reader to accept or reject the selection.

Floral characteristics are probably more pronounced in the hybrid epiphytes. These have been bred particularly in America but also in this country and on the continent. Virtually any of the modern hybrids will give outstanding flowers, some of them over a long period. They can be obtained from any specialist nursery, a perusal of their list will provide hundreds of names to choose from, so I will not add any here.

Amongst the other genera are plants which have beautiful flowers. *Gymnocalycium multiflorum* has a cream/white flower about 2" in diameter, *G. andreae* a white flower with a red throat, *G. ballinum* a red flower. *Parodias*, too, are free flowering plants, recommended species are *mutabilis* yellow flowered, and *sanguinea* red flowered. Such plants as *Echinopsis* species, *Hyllocereus*, *Nyctocereus* etc. have very large flowers but the plants themselves are uninteresting. *Echinocereus* contains many multi-coloured flowers, however, most are either shy flowerers or look much like any other plant in the genus. *Echinocereus regilissimus* is probably the best looking plant in this group with its bands of different coloured spines.

Going on, now, to plants having interesting spines, we have *Solisia pectinata* with its comb-like spines, *Ferocactus gracilis* with its red spines which, unlike most *Ferocacti*, do not lose their colour in cultivation. *Mammillaria geminispinia* has long white spines, the var. *nivea* probably being the most striking with its brown tips to the pure white spines. *Mam. bombycina* is sought after by many people because of the contrast between the dark green body, the white radial spines and the red hooked centrals. *Mam. hahniana* has long white hairs similar to the *Oreocereus trollii*, both being plants which should be in everyones collection. *Neolloydia beguinii* is a very attractive plant with its 2" long white spines tipped black.

Coming now to plants which collectors look for, the *Ariocarpus* group is probably the best known. These plants require somewhat drier conditions than most plants. Given full sunlight, they will flower quite freely, the flower varying from a deep purple *A. scaphorostrus* to bright pink in *A. fissuratus*. *A. trigonus* has yellowish flowers, *A. retusus* and *furfuraceus* *rostratus* having a pale pink or white flower. Of the above plants, probably *A. scaphorostrus* is the least known, and most difficult to obtain. It is very easily confused with *Neogomesia agavoiles*, the main superficial difference between the two being the position of the areole. In *scaphorostrus* it is at the base of the tubercle, in *agavoiles* it is near the tip. The latter plant is rare in cultivation as well as in the wild.

*Aztekium ritterii* is a very small plant, usually grey in colour, very slow growing but producing many flowers during the growing season, in fact, one of the few ways to tell whether or not the plant is still alive is to wait to see if it flowers. *Strombocactus disciformis* is a flat disc-like plant, sometimes pale dirty green or grey in colour. *Obregonia denegrii* is a pie-shaped glossy green in colour with lense white wool at the growing point. It is one of the most free flowering plants I know, requiring a fair amount of sun and lots of water during the growing season.

One genus of plants which has gained in popularity in the past few years is *Copiapoas*. These plants are probably most interesting as seedlings or young plants. There is a wide variety of spine colour and formation, varying from many long glassy spines in *C. krainziana*, through golden colour spines in *C. haseltoniana*, to short black spines in *C. cinerea*. Body colour also varies from bronze/purple in *Krainziana*, green in *haseltoniana* and mealy grey in *cinerea*. Other plants of interest in this genus are *lembkei*, *coquimbana* and *grandiflora*. There are of course others, and any catalogue will list them. In general they require full sun and a fair amount of water. Growth rate is fairly slow but they form clumps with age.

Many people consider the oddest plant in the cactaceae to be *Leuchtenbergia principis*. Superficially this resembles an agave, having extremely long tubercles (about 4" long) with long papery white spines at their tip. The flower is golden yellow, but unfortunately, the plant is very shy in producing them. The plants require a fairly rich, well drained compost, medium amount of sunlight (half shade) and reasonable amounts of water during the growing season.

I don't think any article on desirable plants would be complete without reference to the *Melocactus*. These plants are quite common in habitat, but fairly rare in cultivation. The reason for this is that they require a temperature of 60 - 70°F during the winter. They will exist at winter temperatures of 50°F but look emaciated and not very pleasing to the eye. During summer, the more sun they can get the better; couple this with lots of water and the plants will thrive. The flowers appear from the cephalium at the top of the plant, the flowers being followed by pink/red berries. When these seeds have ripened, the berry is ejected from the cephalium often landing some feet from the parent plant.

to be continued

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"IT SEEMS TO ME....."

(RANDOM JOTTINGS BY YOUR CHAIRMAN)

It seems to me that a regular spot in "Manxonian Cactivities" that will provide an opportunity for just one member of our society to express his own personal views on matters affecting our hobby maybe of general interest. Should my views provoke criticism, let me hasten to say that they will be my own views and not necessarily those of the editor, the branch committee, or of the National Society. It seems to me that as chairman of the Manchester branch I must try to be diplomatic, democratic and unbiased, but in this spot in each issue I claim the right to be forthright, controversial, and I hope, interesting. Some readers may even be moved to write to the editor about points raised in this column.

I wonder for instance, how many people were as disturbed as I was on seeing in the current issue of our "National Journal" the announcement of the formation of yet another society catering for a minority interest in the succulent plant world. Unoubtedly there is a growing interest in the more recently introduced caudiciform succulents, Madagascan, and East African species, but it seems obvious to me that the collection and publication of information about these plants can be undertaken by interested persons within the N.C. & S.S. (possibly by the introduction of a "Round Robin" within the society) far more effectively than by the promotion of yet another "splinter society" under the title of "The African Succulent Plant Society". Surely in the very nature of things, the majority of people who are sufficiently interested in African succulents to wish to exchange information and experiences, will already be members of either the "National" or the "The Cactus & Succulent Society of Great Britain". Either of these established societies possess far better facilities for the publication of information and photographs than would be possible by any specialist group, which would of necessity have a very limited appeal, and therefore a very limited capital for the provision of services to members.

Incidentally, carrying the above argument to its logical conclusion; when are the two established succulent societies going to end the folly of each going their separate ways ( and thus largely duplicating each others services and activities) and really get together under one executive, pooling their total resources, and providing one excellent monthly journal, one really comprehensive reference library, one really good slide library, and a first class seed and plant distribution scheme? obviously such an amalgamation would present difficulties, but they should not prove insurmountable, given good will, common sense, and a real desire for progress in our hobby by everyone concerned.

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The Late Curt Backeberg. It was with deep regret that I received news of the sudden death on January 14th of Curt Backeberg, who as recently as last May visited Manchester, and delighted so many of us with his wonderful slides, his learned commentary on them, and the little anecdotes, and interjections with which Herr Backeberg was wont to punctuate his talks.



During his lifetime Curt Backeberg made many collecting trips to South America with particularly intensive research work in Peru and Bolivia, where many of his very numerous descriptions originated. Few collectors in the field could approach him in his knowledge of Mexican, and South American cacti, and his prolific writings gave us many an interesting moment, sparking off much entertaining controversy, which always aided the increase in our knowledge of these plants. In addition to all this activity, Curt Backeberg contrived to spend several years as conservator of the Marnier Garden, to form a collection of his own, which is now in the Jardin Exotique, in Monaco, and to become an expert in the field of colour macrophotography.

This great character in the world of cacti died at the age of 71, with many of his plans still unfulfilled, and an unfinished autobiography. Everybody in the cactus world has lost a very real friend, and his loss will be felt for many years to come. As Curt himself wrote in 1956 "Life passes like a breath on a looking-glass; but cactology keeps us young, because the object of our work is immortal" ---- a fitting epitaph to a great man in my very humble opinion.

C. Partington

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### THE VALUE OF PH IN CACTICULTURE

by. G.M. Taylor

It is only natural, I suppose, that most 'experts' pass on some erroneous information in their lifetime, unwittingly and usually on some subject which is incompletely understood by their betters. Undoubtedly some has been passed on, on this subject, but where the dividing line is to be drawn is difficult to say. There is no mystery as to what pH is; but there is incomplete knowledge on its application to plant life and how one plant can thrive and another perish in the same circumstances.

The gardeners of yesteryear regarded all soil as 'sweet' or 'sour'. If the latter, it required more lime to make it sweet, and in extreme cases it smelt sour or acid. In fact it was not the soil which was acid but the water content adhering to all the clay particles. This is present even when apparently as dry as dust, except only where it has been burnt off.

Pure water is of course 2 parts of Hydrogen and 1 part of Oxygen. Water in the soil is not chemically pure, and, besides salts in solution it contains additional Hydrogen ions. It is the concentration of these either positively or negatively charged ions about which this article is concerned. Each clay particle, microscopic though it is, has up to three enveloping layers of water. The innermost is always present unless burnt off, the second or middle layer is the one which concerns us. In this layer the electronic charged ions, the positive ones in particular are magnetically attracted to the particle of clay. It is for this reason that J.I. composts 'so called' differ from the genuine article, the pH value of peat may be standard, but the value in loams can vary immensely.



It is the balance and concentration of the Hydrogen ions positive and negative, which give us the pondus Hydrogenii (not a plant but the full name). When they are in balance there is approximately a concentration of 0.000,000,1 grammes per litre of water. Logarithmically this is expressed  $10^{-7}$ , hence pH 7. A concentration of 0.1 is violently acid = pH 1 and at the other end of the scale 0.000,000,000,000,001 is violently alkaline = pH 14. Testing for these values is easy to-day either with impregnated papers or BDH Universal medium by comparing the resulting colour with a colour chart. This will give either the pH value or less usefully, the amount of lime required to restore fertility.

So much for fact, not that the rest is fiction but in dispute to some degree or other at the present time. This is largely the result of the lack of research by cactophiles, few of whom individually have the necessary number of plants of a species to carry out the required tests on a fair basis. Hence one says, "I don't bother, in my experience anything around pH 7 is alright", and another in case his peat no-soil compost is becoming alkaline through using mains water (he hasn't tested it) adds a few drops of dilute Nitric acid to each gallon of water

Some research has been carried out, but little notice has been taken of it judging by the number of Zygocacti being grown in J.I. compost. It has been shown that optimum growth is obtainable for true species at about pH 5, the upper and lower LETHAL limits being about pH 7 and pH 4.5- respectively. Schlumbergera are not quite so exacting in their demands and are happier with pH 5.5.

It was information like this which prompted the suggested use of composts for different genera by Marsden, especially as values of habitat soil came filtering through. Values of 5 or 5.5 are quite common in some parts and so are others, not far away, of 7.5 !! These cannot be strictly compared with a plants requirements in this country as we have more water available in which the mineral salts are dissolved and therefore more readily available to the plant. This coupled with the fact that most of us like to use the same compost (within reason) for as many plants as possible brings us back to square one; are we content with satisfactory annual improvement - can we do better?

I have carried out some limited experiments, limited by the number of plants available of one species - 24 are really too few; again limited, as they were seedlings. Basing a compost on 4 parts leaf mould, 2 peat, 1 Vermiculite and 3 of grit I could achieve pH 5.5 without much difficulty, lower by substituting coke breeze and basic slag for the grit, acidity was maintained by using Maxicrop Complexed Liquid feed or by acid correction of the water. Some plants thrive at pH 5, notably the Peruvian species, but with loss of spination, others just stool still. Last year I aimed at pH 5.75, checking the compost at the end of the year it had fallen to pH 6 but all the plants had made good growth without loss of spination; far better than the few controls which were growing in an amended J.I. type compost. There is great difficulty in being accurate about this as one cannot be certain without a laboratory that sufficient basic ions were present at all times for the flow of water in the different media for a true comparison to be made. At least it offers hope for those who would like to experiment with a more acid compost and perhaps there is something in the latest theory that the higher the latitude away from habitat, the more acid our compost.