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ILLUSTRATIONS SHOWN IN BRACKETS

NEW DESCRIPTIONS IN HEAVY TYPE.

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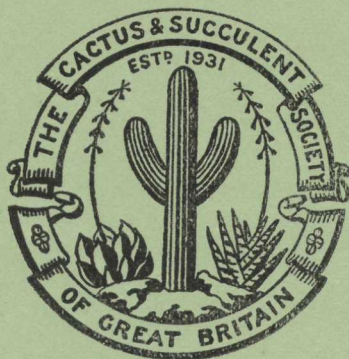
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SOCIETY NEWS

1954

Feb. 16th 7.0 p.m. Annual General Meeting
March 16th 6.30 p.m. A Boarder : Demonstration, raising cacti from seed.
April 13th 6.30 p.m. C. E. L. Gilbert : Culture of Cacti and Succulents.

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EDITORIAL

With the commencement of another volume of our Journal, I have again to pay tribute to those who have so finely supported us with their contributions. It is surely unnecessary to draw attention to Mr. Boarder who has for so long helped us all by his Cultural Notes. Mr. Green also deserves our thanks for his long association with the Journal. There are many others, but I cannot forbear to mention our new contributor, Mrs. Stillwell, and that other good friend, Gordon Rowley. The generosity of Professor Schwantes and Dr. Tischer must not be forgotten. To these and all our other generous contributors our best thanks, and mine in particular.

I have an important piece of news for you. In 1955 there is to be a Conference of the International Organisation for Succulent Plant Study. It is hoped to be able to provide a generous programme which will attract many eminent savants and high authorities on our subject from many countries. It is to be hoped that everybody interested in cacti and succulents will play their part to make this Conference a notable success. There will be business meetings, lectures by world authorities, social events and many things that make these gatherings the important events that they are. All except the business meetings will be open to all and it is to be hoped they will get the support they so fully deserve. Of course, such an ambitious project requires the fullest support, financial and, in many ways, otherwise. If you would like to help towards its success, please write to me. You may be sure that you are playing an important part in forwarding the knowledge of our plants by any contribution you care to make towards its success.

The Society programme for 1954 will be : February 16, Annual General Meeting ; March 16, Demonstration, raising cacti from seed, by Mr. Boarder (1953 seedlings) ; April 13, Culture of cacti and succulents, by Mr. Gilbert (*Rebutias* and *Gibbaeums*) ; May 4, *Echinocereus*, by Mr. Collings (*Cereus* and *Echinocereus*) ; June 29, Summer Show, evening, Diseases by a panel, questions ; July 27, Succulent plants other than cacti, by Mr. Pullen (*Crassulas*) ; August 24, *Euphorbias*, by Mr. Edwards (*Euphorbias*) ; September 7, Autumn Show, evening, Covent Garden Plant exchanges ; October 19, Mimicry Plants, by Mrs. Stillwell (mimicry plants) ; November 16, Epidiascope, members photos, Mr. Edwards ; December 7, lantern lecture. Members are invited to bring the bracketed plants to make table shows on the evenings indicated.

Have you paid your subscription yet ? It helps the treasurer and enables the Council to make arrangements, if subscriptions are sent promptly to E. W. Young, 35 Castle Drive, Ilford, Essex.

CACTI CULTURAL NOTES

By A. BOARDER

At the commencement of another year I am sure that we all look forward eagerly to renewed efforts with our plants. It seems no sooner have we seen one season's results than another is with us, whether it is that time appears to go faster as one gets older or that the interest of growing Cactus plants helps the time to pass I do not know, but the days seem shorter than they used to be and jobs pile up endlessly. The question of seed sowing will be in our minds from now on, but I do not think that it is much use sowing seeds of Cacti until well into February. Even then it does not pay unless you have the means to provide a temperature of at least 70 degrees. I have given my methods for seed sowing on several occasions and there is no need to repeat them here. Two years ago I described in detail the whole process and would refer any new members to the January, 1952 issue. Not that my methods follow an exact pattern as I am always experimenting. No one can say for sure which is the best method until all ways have been tried. My usual seed sowings are often varied very slightly and one I have tried has certainly given good results. I have previously advised that no Cactus seeds should be covered. The sizes of these vary so much that I have found it a good plan to slightly cover the larger seeds, but to leave the tiny ones uncovered in a mixture of the John Innes Seed Compost which has not been flattened down too much. This allows some of the seeds to drop between the fine particles which will assist their germination.

Where larger seeds are being dealt with I have found that it is beneficial to cover the soil with one layer of tiny stones. I obtain these by sifting some coarse sand. The very fine sand must not be used, and if the stones are about an eighth of an inch in diameter they will do nicely. They appear to hold the seeds rather firmly to the soil which assists them to get their first root into the compost. Also the stones help to prevent the formation of moss and also keep the soil from drying out too quickly.

I had very good germination with my seeds in 1953, and found, as usual, that seeds saved from my own plants gave much better results than did the imported seeds. I do not often find a hybrid amongst my seedlings, which is rather strange, as although I am careful to sterilise my brush when pollinating, I have no control over the bees and flies that enter the greenhouse. I found that the seedlings which I had time to transplant in July made much better progress than those which I was unable to move until September. If one has the time and space I am sure that to transplant seedlings in June or July will mean that the plants have a good chance to grow well on into the autumn. By this means it is quite possible to have plants over an inch across, and *Mammillarias* included, before the year of sowing is out.

Some growers complain that some of their seedlings damp off soon after they have been transplanted. It is always advisable to sterilise the soil even if you only water with a fairly strong solution of permanganate of potash after pricking out. Cheshunt Compound can also be used for this purpose, but I have found that certain types of seedlings do tend to damp off more than others. *Lemaireocereus pruinosus* and some of the *Ferocactus* seedlings are bad ones for this and sometimes *Astrophytum myriostigma* seedlings will also go wrong soon after having been moved. Even although the soil has been treated against damping off disease it is not wise to water too much or too soon when the seedlings have been moved. If the soil is just damp when pricking out is done, the seedlings may not need watering for at least a week, but this will depend on the weather. Being kept rather dry at first will mean that the plants make new roots into the compost and make better growth when you do start watering.

I have sometimes tried seed of *crisates* but have found that generally the seedlings come up just normal ones. *Cereus peruvianus monstruosus* will often provide a number of queer shapes but *Mam. crisates* do not appear to come true from seed. Now and again a *crisate* will crop up among a normal lot of seedlings and I have a very nice *crisate* seedling from a batch of *Aylostera fiebrigii*. This plant has formed a double crest and looks like developing into a good specimen.

You should be preparing for the annual repotting now. Get all empty pots well cleaned and stored in the dry so that you will be ready to start sometime during February. Get the potting soil ready in good time, but there is no need to make this up too soon before use. I like the mixture to have at least a week in which to settle down and become thoroughly damp before use. On the other hand the soils which are made up similar to the John Innes Potting Compost, but with more roughage, will not keep indefinitely as some of the strength of the fertilisers may fade after a few weeks. I have been re-potting all my plants each year for very many years now and I still think that this is imperative. The more experience I have with these plants the more I am convinced that to get the maximum healthy growth it is necessary to give the plant fresh soil each year. I am sure that many plants, whose owners say they never flower, would do so if they were re-potted regularly. When you commence this task

depends on the number of plants and the position where they are to be kept. I have to start mine in February and even then it is difficult to get all moved inside the resting period.

I had a good flowering season in 1953, and, even as late in the year as the middle of November, I had several *Mammillarias* in bloom. Some of the *M. rhodanthas* were still out, and also, *M. zeilmanniana*, *M. albescens*, *M. decipiens*, *M. durispina* and *M. tetraacantha*; and although I had already removed hundreds of seed pods, the remaining ones made a grand display of colour. A small *M. perbella lanata* had a dozen red pods around the white top of the plant which looked very attractive.

In the previous journal I had said that I was unable to obtain any seeds from my *M. zeilmanniana* plants. As usual, when I make a similar statement, I am proved wrong. I have since found many seeds on my plants and the method of growth leads me to suppose that I may have missed some on other occasions. The plants in question had flowered between every tubercle, and one day whilst carefully examining one I noticed a seed pod. I may have missed several as the seed pod was the same shape, size and colour as a tubercle. The only difference was that there was the remains of a dead flower on the top instead of an areole with spines. The pods were very tender and soon broke disclosing the small black seeds. Having found out what they looked like I was soon able to find some more pods.

The statement about seed pods was not the only one proved wrong as when I had had visitors to my greenhouse this year I pointed out my *Lithops* which were on a shelf near the glass. I do not normally like shelves, but I had to find room for them somewhere. In July four or five flowered, but as August and September passed by without the sign of another flower, I came to the conclusion that they were not happy in that position and told the visitors the spot was unfavourable. They must have heard me as 37 different plants have since flowered and even now some are budded.

Once the weather improves and the days get longer it is essential to give as much air as possible on all fair days. Many plants are kept too close in greenhouses and so do not thrive. Many kinds could be planted out for the late spring and summer, but I always think that it is well to place outside only those plants which are duplicates or which are not irreplaceable. If we had a summer similar to that enjoyed in the south of France, the plants would benefit greatly from this outside treatment, but do not be misled about this question, we don't get summers like the south of France and so it is well to remember that and keep the choicest plants under some cover where they will be safer from the wind and rain, apart from pests. A good plan is to place many in a garden frame which can have the lights removed completely during very hot settled weather and, in any case, when conditions are suitable, the lights could be raised so that the maximum amount of fresh air can enter the frame.

The glass of the greenhouse will be dirty again as although all may have been cleaned at the commencement of the winter, the fogs and soot will almost surely have soiled the glass and much valuable light lost. Do not be in too much hurry to start watering unless the weather is very mild and the plants appear to need some. Even when you do start there is no need to water so much that the plants are forced into growth too soon. With many types it is a good plan to only water when the plants show some signs of new growth. It is often noticed that some plants lose some of their tiny fibrous roots during the winter, and if the plant is watered too soon the older roots may rot and you can lose the plant. Give a little water at first and wait to see if there is new growth showing before giving any more. In a large collection it is not possible that all the plants need water at the same time.

Several members had trouble with mealy bug through the winter and this can be a real nuisance in a large collection. Fortunately, beginners need have few worries on this account as with a hundred or less plants it is fairly easy to pick off the odd bug with a pointed match. It is when the collection has reached a thousand plants or more that the pests have a good chance to be a nuisance. Many plants in such a collection are never moved from the time they are re-potted until they need it again and these can be badly attacked. I have seen it written that methylated spirits will kill mealy bug, but I have proved that this is wrong. In 1932 I wrote in the Journal of my experiments and found that one part of nicotine to forty parts of spirit is fatal to the bugs. I have tried to find something better than nicotine, but have not yet been successful. I thought that Sybol would be all right, but, when this is placed in spirit, instead of turning milky, as it does in water, it appears to crystalise, and I still find that nicotine is the best. The only fault with it is that it tends to discolour the white hairs and spines on some *Mammillarias* and it is a pity that some colourless poison cannot be found which will kill the bug and not dirty the plant in any way. Perhaps some reader has the solution to the problem.

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CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

January, the month of good resolutions. Here we start off a New Year full of hope and fresh ideas for growing our plants more and more successfully.

This is the month to prepare for the spring re-potting. Order your soil, etc., now and a fresh supply of labels. When I re-pot I also like to give a new label when necessary. I prefer the small T shaped ones as they are not so conspicuous and can be read at a glance. Hunt up all those old pots that have been laying by and give them a good scrub in readiness for the fray. I always soak my pots in very hot water and a strong detergent and then scrub with a stiff brush, scraping round the rims with an old knife to remove water marks and stains. Always keep an old knife especially for this purpose, for you will find the blade is soon worn down to a sharp point. Get a new bottle of nicotine and methylated, so that, when you start re-potting, you will be able to deal with root bug or any other pests you come upon. When re-potting, I find it a good idea to buy a few of the larger pots to start off with and then I re-pot the largest plants into these. The empty pots can now be scrubbed and used for the next size downwards and so on, until I get down to the small pots. You will find by using this method you usually have the right size pot for the plant you are potting at the right time. I try to make a point of potting about a dozen plants every day and scrubbing the same number of pots ready for the next day. I do not re-pot everything, but only those plants which have outgrown their pots or are not looking too good. The rest I just top dress.

If you have any seedlings, I should leave them in their pans until about April, unless we get a really warm early spring.

Most of the *Gibbaeums* should be coming into bud now, particularly *G. shandii*, *G. pubescens*, *G. velutinum* and *G. petrense*. The latter is usually covered in flowers by March or April. My plant is in a five inch pot and the bright cerise flowers against the silvery foliage makes it very attractive. I believe some people find this plant difficult to flower, but with me it never fails. I find during the summer it likes a lot of water. Although many of the succulents are growing at this time of the year and need a little water, do take care. The golden rule is never water a plant in the winter if it looks all right without it. Most of the *Cheiridopsis* are autumn and winter growers, but I find they require very little water at any time. The small *Cheiridopsis meyeri* should be treated as a *Conophytum*. I have flowered *C. comptoni* and *C. cigarettifera*, but, generally speaking, these plants are shy bloomers. *Lithops* should be resting now until about April or May. Here is another golden rule, never water a *Lithops* if it has more than one pair of leaves.

I wonder how many of you prepared a few succulents to bring indoors for the winter months when flowers are scarce? I have a large pot of *Crassula lactea* which I use as a table centre. It has masses of sprays of white bloom. The beautiful red *Kalanchoe granata* and the deep golden *Sedum adolphii* seem to be quite happy indoors, whatever the conditions.

Although your greenhouse will not need so much attention during the winter months, always have a look round at least once a day to make sure that the heating apparatus is working and also that there are no drips to do damage. Many of the *Euphorbias* are very susceptible to damp in the cold weather and a drip could soon set up rot and prove fatal. The same applies, among other things, to the *Titanopsis*; these must be kept quite dry during the winter.

Make sure that your *Fenestrarias* are in a warm spot, well away from the glass. They are very susceptible to a touch of frost. *Echeverias* will need an occasional drink, say about once every three weeks. I always like to remove all dead leaves from these as they harbour mealy bug and can also cause mildew if allowed to remain damp. A very pretty winter flowering *Echeveria* is *E. carnicolor*. The leaves are a silver grey and have a sparkling effect in the sunlight. It has a rich salmon coloured flower. *Echeveria retusae* hybrid is a much larger growing plant and has tall sprays of flowers up to eighteen inches high, in fact, some florists use them as cut flowers in arrangements.

Since I have been writing these articles I have had several letters from the members and I have done my best to answer their questions. I shall be pleased to continue to do so, but would appreciate a stamped addressed envelope. One member wished to know what to do with a *Bryophyllum* that had lost its bottom leaves. These plants are better grown as annuals, but it is possible to behead the plant and re-root the top. Very often the plant will be more inclined to bloom when treated this way.

For those of you who have a small collection plus plenty of time, it is well worth keeping a card index of your plants. Have a separate card for each plant. Mark it off into sections and record its name, where it was obtained, when it was re-potted, when it flowered and a short description of its requirements. You will find this most useful. You can see at a glance when it flowered last year and what progress it has made.

Pleiospilos nelii will soon be coming into bud. This is the only *Pleiospilos* that does not bloom in the autumn; when the buds appear I give mine a little water, providing the weather is favourable. All the other *Pleiospilos* should be kept quite dry until the end of July, or until the bottom pair of leaves have completely dried up. *Conophytums* can be given a little water when the weather is right and then rested from April until the end of July. Most of the *Adromischus* are autumn and winter growers. These are charming little plants and are well worth growing. *Adromischus cooperi* is one of the best and resembles little blue spotted bird's eggs. They like full sun to bring out their true colours and are very suitable for beginners.

Always open your greenhouse windows on bright sunny mornings as plenty of fresh air is most essential to the well being of our plants. It is very important to create a really dry atmosphere during the winter months. Close the lights by three o'clock at the latest, to conserve what little warmth may have been in the sun. Try and give the glass an occasional clean, particularly where you keep your stemless *Mesemb*s as they need every bit of sun that is available to produce their next season's flowers. That is the cause of many of them failing to bloom. We just do not get sufficient sunlight in this country. Whatever you do, never shade that part of the house where you keep these particular plants. Mine really bake in the summer and that, I find, is the only way to get them to bloom successfully. Many of the succulents do not like draughts, especially in the winter, so do not open the doors wide and let a cold air blow directly through. No doubt, they catch colds in the way that we do, although they possibly show it in a different manner. It may be a fad of mine, but at all times of the year I prefer to water my plants with water that has had the chill taken off it. I know scientists have proved that it makes no difference at all, but I feel personally that to pour stone cold water on any plant, at any time, must give it a certain amount of shock. Seedlings especially I feel should be treated very carefully in this respect.

If you have a good propagator, you can sow a few seeds now. They must be kept at a temperature of at least seventy to germinate. A two-foot frame, fitted with a one-foot tubular heater, or even a seventy-five watt lamp, would suit the small grower admirably. Have the heat at the bottom of the frame. A metal sheet directly over the heater is quite a good idea. It will radiate a gentle heat and the pans can be stood on it. Stand each pot in an earthenware saucer and a little water can be poured into each as they need it, or, if preferred, the pots can be bedded in sand which can be kept damp. I prefer the former method myself.

If you have a *Euphorbia splendens*, I find it does need a little water during the winter, but only if it shows signs of shrivelling badly. If you let it go too far it will not always recover. On the other hand, if it is kept too damp it will rot very easily, so use your own discretion.

Kleinia nerifolia and *Cotyledon cacalioides* are autumn and winter growers. They prefer a rest during the summer months and should not be watered. They will remain leafless until about September. It is a good plan to try and arrange all your winter growing plants as near to your heaters as you can. Owing to the fact that they require water at this dangerous time of the year, they will be far safer. Do not try to force them with extra heat, but just put them in the warmest spot in the house. If, by any chance, you are lucky enough to receive any imported plants during the winter months, whatever you do, do not water them. Pot them up quite dry and put them in a warm place until the start of the growing season. I always find *Stapelias* are rather difficult to bring through the winter. They seem to prefer dry feet for the winter. When I re-pot these plants, I always take out all the old growth and only pot on the new. The rest can be used for cuttings. *Stapelias* only bloom on the new growth. They must have a very open soil and like a little shade. I trust you will all have a very successful and happy growing New Year.

Mr. Boarder advises that he has 102 different kinds of seeds for distribution of the following genera (too many species to list): *Agave*, *Aloe*, *Anacampseros*, *Aptenia*, *Argyroderma*, *Aridaria*, *Beschorneria*, *Bijlia*, *Braunsia*, *Bulbine*, *Carnegiea*, *Carruanthus*, *Cephalophyllum*, *Cereus*, *Cheiridopsis*, *Crassula*, *Cylindrophyllum*, *Dactyloopsis*, *Dasyliirion*, *Delosperma*, *Dorotheanus*, *Dyckia*, *Ebracteola*, *Echinocactus*, *Echinocereus*, *Echinopsis*, *Echinus*, *Erepsia*, *Faucaria*, *Ferocactus*, *Gibbaeum*, *Harrisia*, *Haworthia*, *Lampranthus*, *Lapidaria*, *Lemaireocereus*, *Lithops*, *Lobivia*, *Machairophyllum*, *Mammillaria*, *Myrtillocactus*, *Nananthus*, *Notocactus*, *Ophthalmophyllum*, *Opuntia*, *Orthopterum*, *Pitcairnia*, *Pleiospilos*, *Puya*, *Rabiea*, *Rebutia*, *Sempervivum*, *Stapelia*, *Trichocereus*, *Weingartia* and mixed cactus seed. Members only. Twelve packets each applicant. Self addressed, stamped envelope and, as some are in short supply, give alternatives. No correspondence. Apply to Mr. Boarder, Marsworth, Meadway, Ruislip, Middlesex.

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MORE ABOUT MEXICO—*contd.*

By HOWARD E. GATES

From Jalapa we rapidly ascended to Perote where we took a road through the pines at an elevation of seven or eight thousand feet, to Teziutlan, where we again began to descend to the Gulf of Mexico. We made our camp at four or five thousand feet in dense vegetation. The most remarkable plant in this area was a great long leafed tree fern whose slender trunks occasionally rose to a height of twenty feet. We reached the shore near Nautla and followed close to the beach to the ferry at Tecolutla. Beyond the river mouth, we secured a fine full course luncheon in a high-class resort hotel for the equivalent of a dollar and a half. The saddest feature of it was that we had an early breakfast in our mountain camp and had to wait until two-thirty in the afternoon for serving to begin. Mexican meal hours are usually much later than those we are accustomed to having. The coastal plain in this section was still narrower and with a rich vegetation. We found investigating the edge of a swamp quite interesting. There were *Epiphyllums* on the trees, vines and *Bromeliads*. Most interesting was the flower on a glossy green, broad leaved plant that was neither vine nor shrub. The six to eight inch cream coloured buds stood up like candles. When they opened, the few petals recurved like a partially peeled banana and the intervening space was filled with an aigrette of very colourful stamens.

On our way inland we passed through rich agricultural districts. This is one of the places where certain species of climbing orchids are cultivated for the production of vanilla. Well into the hills we came upon Posa Rica, one of Mexico's rich oil fields where great flaming torches burned the surplus natural gas. Then we climbed still higher until we camped amongst the pines west of Huauchinango. There I noted in my trip log: "Very interesting day's trip. Saw many *Bromeliads*, orchids, *Epiphyllums* and *Hylocereus* but no other cactus."

The next day we wound through the highlands and mountains to the mining centre of Pachuca in the State of Hidalgo. From there, we climbed the stiff grade over the mine tunnel honeycombed ridge at Real del Monte and northward until we had left the good road far behind. On the upper slopes of a great canyon, we found heavy stands of *Lemaireocereus dumortieri*. These looked somewhat like *Pachycereus marginatus* except that the branches arose from a short stout trunk instead of from the base of the plant and they make many more branches. Both of these species will find resting places in other genera. The fruits of *dumortieri* are quite remarkable in that they are only about an inch in diameter, spineless and when full ripe the extremely mucilaginous, yellow pulp oozes out through a lateral crack in a manner similar to that of *Bergerocactus*.

However, the lower slopes of the canyon were still more interesting on account of the thick stands of *Cephalocereus senilis*. These only grew on steep slopes in a peculiar whitish soil which may carry considerable gypsum. They grew to twenty-five feet high with upright branches growing from the base and closely paralleling the central branch. The branches were fluted with many ribs and bore short spines as well as hair. The upper parts of the branches were quite white but below the hair had weathered away or turned a dirty gray. Old plants nearly always bore small clusters of *Bromeliads* on their sides. The unilateral cephaliums, composed of dense woolly mats, were near the tips of the branches. As in the case of *hoppenstedtii*, the cephaliums were extended upward a few inches annually and the lower part turned black. In contrast to *hoppenstedtii* which tapers a bit at the top, these carried full diameter until the crown rounded over. In fact there appears to be a bulge just above the cephaliums which slightly hoods them. At the time of our visit, the pink flowers about two inches long, were just beginning to poke their tips out from the woolly mass.

The bottom of this canyon is an old lake bed and the farms along the river carried the best stands of corn that we saw in Mexico. We made our camp beside a ditch full of water flowing under a row of immense pecan trees. Hedgerows were formed by *Pachycereus marginatus* which were in fruit. These followed the tubular pink blossoms which varied from an inch and a half to two inches in length. The fruits were globular, red with red flesh and bore scattered clusters of vicious spines. The black seeds were large and comparatively few in number per fruit.

On the slopes along the road, we passed great colonies of gigantic *Echinocactus ingens* which were quite similar to the *E. grandis* we saw between Tehuacan and Zapotitlan. Three foot clusters of snowy white *Mammillaria parkinsonii* with their many heads looked like great round pans of biscuits. One of our botanical splitters that would like to make a new species for every millimeter of spine length, would have a field day here as the spines varied all the way from very short to two inches in length. The bright flesh-coloured flowers and scarlet fruits contrast well against the white spines. There were also numerous *Agaves* and *Fouquierias*.

Just outside the village of Mezquititlan, we really hit the jack pot. Here on one hillside, were slender

Astrophytum ornatum in all sizes up to four feet. We had heard of some tall ones but never any like these. Along with them were *Echinocactus*, *Coryphanthas*, *Thelocactus*, *Dolichotheles* and of course the omnipresent *Opuntias*.

In my account we will take a big jump from this canyon to the area along the highway north of Ixmiquilpan en route to Zimapan. Here we had to make many stops for photographing. There were immense old *Myrtillocactus geometrizans*, great clusters of *Mammillaria compressa*, *Coryphanthas* and *Echinocereus* as well as fine single plants of *Ferocactus latispinus*. We found the *Mammillaria compressa* very variable, which accounts for the long list of specific and varietal names that Dr. Craig put under *compressa* in his *Mammillaria* monograph. I note that there is a steady stream of new species of *Mammillarias* being described from Mexico. Doubtless there are still some to be described, but it is likely that, as in the past, many of these will prove to be mere variations of known species. It would be a lifetime project for some student just to work out the proper relationship of the many species in the Genus *Mammillaria*. His task would be made much lighter, if the authors of new descriptions would abandon their haphazard assignment of the origin of a species simply to Mexico and give the name of a definite locality. Mexico is a big place. Even quite a bit bigger than our State of Texas, so to locate the origin of a small plant that is simply ascribed to Mexico is worse than looking for the needle in the haystack. Also if a person does not know enough about it to do more than assign a plant merely to Mexico, does he know enough about it to justify describing it?

One of the beauty spots on the road to Zimapan was the Tasquillo River gorge which is crossed by a fine steel and concrete bridge. There was a fine stand of *Lemaireocereus dumortieri* growing beside the river as it swung around the great cliffs.

From the pleasant small city of Zimapan, we began the long descent winding through the mountains to Tamazunchale known to most of the tourists phonetically as Thomas and Charlie. This portion of the journey was very scenic though not rich in cactus. Part way down there was a cluster of thatched roadside stands beside the road with an attractive waterfall tumbling down through the forest behind it. These stands offered curios, bananas, soft drinks and especially vile cigars that must have been made for the tourist trade. On the counter at one of them was a pet coatimundi which was mischievous and playful. Dr. Dawson caught some beautiful large butterflies for his small daughter's collection.

At Antiguo Morelos, we turned inland again to climb over the mountains to Ciudad del Maiz (Corn City). These mountains were largely forested with oaks. In places, there were colonies of *Beaucarneas*. Their swollen bases were not as large as those of the species at Zapotitlan. After crossing the summit, there was not much of real interest to us until we came to some hills well to the east of San Luis Potosi. On the slopes were bright red *Ferocactus pringlei* and numerous species of *Mammillarias*, *Coryphanthas*, *Neolloydias*, *Echinofossulocactus* and *Echinocactus*. Large *Cereus* were absent except in a broad valley filled with very large *Myrtillocactus geometrizans*. We found a fellow in the shade of one of these, stripping leaves of a small *Agave* through a rude comb to secure fibres from twelve to fifteen inches long. Later we saw bundles of these fibres on sale in the city markets.

In this section the farmers all live in the towns, often going out several miles to work their farms. This is rather an arid section so probably the towns are built near the good water supplies. We photographed one fellow driving a team of oxen hitched to a high wheeled cart. His plough was a wooden one, apparently made from one piece of wood.

San Luis Potosi we found to be an interesting city with good accommodations. We were glad to be in a hotel as there were several rainy nights. From there our route swung southwest via Lagos de Moreno to Guadalajara. En route we were surprised to find a number of towns where there were as many blue-eyed blondes as there would be in a Swedish village of Minnesota. We did not have the time to satisfy our curiosity as to the origin of this racial group.

West of Guadalajara, on the lava flows of Ceboruco, we found *Cephalocereus leucocephalus*, *Acanthocereus*, *Hylocereus*, *Peresklopsis*, and great terrestrial orchids growing in what appeared to be almost sterile soil between the chunks of broken lava. *Leucocephalus* is another of the much branched slender *Cephalocereus* with the flattened apple fruits. The cephaliums were tufts of very long white hair arising from one side of the branch. These were the longest hairs we saw on any *Cephalocereus* and Dr. Bravo reports that they are utilized in the weaving of textiles. The only other place on this route from Guadalajara to Tepic that we saw strikingly large cactus, was in The Barrancas, a very deep canyon that held up highway building for many years. In the lower parts were *Pachycereus* and large *Lemaireocereus*. As we neared the top on the way out, I stopped to make a kodachrome of the rugged terrain. In the meantime, Dr. Dawson investigated a pile of horse droppings and made a rich haul of brilliant green beetles.

(To be continued)

CEROPEGIA

By G. G. GREEN

Spreading throughout the country at the moment is a new vogue, the growing of plants in the home purely as a means of decoration, and not as we grow Succulents, for the love of the plants themselves. This vogue for house plants, a resurrection of pre-war days, is being carefully cultivated by the skilful use of advertisement in a variety of ways. Periodicals and magazines, mainly devoted to the interests of the ladies, have for some time now given ideas, in articles and photographs, of what interesting effects can be obtained by the use of various species of plants such as *Ficus*, *Cyperus*, *Grevillea*, *Sansevieria*, *Peperomia*, *Tradescantia* and the variegated Ivies, etc. Such names as these were in common use years ago and were to be found in most homes in some form or other, giving a brightness and colour that is hard to find in these days of "modernism."

It is therefore, most interesting to find that Interior Decorating firms and the like seem to make great use of these plants, devising ingenious holders and containers in basket work, wrought iron work and so forth, as part of their decorative schemes, whilst florists have taken up the cue and are stocking some, if not all, of the more striking varieties in plants, plus a wide range of the containers.

Whilst agreeing heartily with this attempt to incorporate nature, in the form of carefully selected plants for such use, I wonder sometimes how some of the plants offered for sale will fare in most homes where ignorance of the particular needs of the plants may soon discourage their use as decoration. However, once the idea has got hold, initial failures may be the spur to further experiment.

Some long-established firms are tentatively using more space in their propagating houses to the cultivation of the more hardy species that can withstand to a great extent the unskilled treatment such plants are likely to receive. In this initial presentation to the public, hardy plants are essential until the time when a more intelligent grasp of the simple horticultural rules necessary for plant survival are universal.

In our case, there is little inhibition, and still more choice of decorative plants for the home, for most of us understand the needs of Succulents, (and here I include the Cactaceae), especially when they are used in conjunction with the internal furnishings of the living room, away from the light and atmosphere of the greenhouse or window sill.

With a modest collection of succulents, there can be a weekly or monthly change of plants that will sustain the interest of the decorative scheme and also help the plants to overcome the unusual change in atmosphere and conditions. In the case of wall plants where trailing or creeping species are required, the one that springs first to my mind, and which was the instigator of the preamble to this article, is *Ceropegia*.

In this family, *Asclepiadaceae*, there are several ideal species for either indoors or greenhouse decoration and I will endeavour to describe a few with the emphasis on greenhouse cultivation, as this is what we, as collectors, are mainly interested in.

All the following trailing sorts will, however, prove to be admirable subjects for indoors as they will withstand variations in temperature, intermittent watering and most important, shade.

The creeping or trailing species of *Ceropegia* are, I think, the most attractive in that the foliage is extremely interesting and attractive, whilst the peculiarly shaped flowers are produced in profusion practically all the year round.

First to my mind in elegance and interest is *C. woodii* from Natal. This lovely little trailing plant has slender, thread-like stems, very tough and extremely long growing, with small heart-shaped leaves on short stalks, spaced every inch or so along the stems. These are variegated with dark and light green in a marbled effect, thick and almost everlasting.

The small tubular flowers are deep pink at the base and dark brown at the tips where the corolla lobes are attached to each other. The stems spring from round tubers which are also formed at the nodes along the stems, and when planted on the staging soon take root. They can then be separated to form new plants. As an edging to the staging this species is most attractive if the stems are allowed to hang over the sides, or the plants may be grown in hanging baskets lined with moss.

The tubers, as they are formed along the stems should be pressed into the moss and held in place by a hairpin, or bent wire, until eventually the whole basket is covered with trailing stems and foliage.

The trailing *Ceropegia* likes moisture and can be watered all the year round when necessary, though if grown in a cold greenhouse, choose a dry day for this, preferably in the early morning, too.

Ordinary soil compost, rather sandy, as used for other succulents, is ideal.

Among the trailing sorts are other attractive species such as *C. barkleyii* which has long and narrow green leaves, slightly marked, and darker flowers. *C. sandersonii*, which has leaves similar to *C. woodii*, but much longer and

spaced at wider intervals along the stems is more robust in growth. The flowers of this species, together with *C. haygarthii*, are much larger than the preceding, looking like inverted lanterns, dark purple in colour. They are strong in growth and prefer to climb rather than trail.

There are also some varieties of *C. woodii* and *barkleyii* with the purely local names of "Capricio" and "John Quince," but there is very little difference between these and their parents.

The strongest climber of all is the well known *C. stapeliiformis*, the stems of which grow to a thickness of half an inch and more under good cultivation. This species has quaint lantern-like brownish-green flowers, and very minute leaves. The stems are a dark brown in colour with lighter markings, and it has a cristate form, rather uninteresting in appearance, that never seems to complete the true formation of flowers. A fairly large pot with a coarse compost will encourage robust growth, and if the ends of the stems are pinched back, many branches will form which can be trained fan-wise up trellis or canes.

The seed pods of *Ceropegia* form into twin, horn-like growths with blunt ends and rough surfaces, similar to those of *Caralluma*. The seeds, when the pods burst, are attached to feathery membranes and float around in the air like those of the dandelion.

Of the upright, thick stemmed species that flower from October to December, *C. fusca* and *C. dichotomum* are perhaps the most interesting. During the resting period, the leafless stems stick up starkly from the pots like skeleton fingers pointing to the sky.

The narrow leaves are produced from the widely spaced nodes or joints in late summer, followed by the lemon coloured flowers in *C. dichotomum* and yellowish brown in *C. fusca*, in October. These are rather small for the size of the plants, but on robust stem growth, appear in clusters to form a welcome splash of colour against the brownish grey stems. During the winter, these two require no water at all, unless the house is heated, when the pots may be damped at the base each week, by a short immersion in water.

The soil for the erect growing species should be a rich porous mixture containing extra leafmould, and, as they develop a strong root system, room for expansion should be allowed by the use of large pots. Propagation of these is by cuttings, taken at a joint, or node, in early spring, and treated as with other succulents. It is better to cut the stems in order that bushy specimens may develop, as otherwise overlong growth of the plant will ensue. New shoots grow freely from the nodes and many stemmed specimens look much more attractive.

In the house, when hanging from the wall bracket or wall vase, the long stems, as they grow, may be either cut shorter to produce side shoots, or simply turned back over the pot in loops. It should be noted that plants in the living room may need more frequent watering than those in the greenhouse, and should not be allowed to remain dry for too long in order that the leaves may keep their colour and freshness.

Those people who have plants of the Epiphytic groups will, no doubt, have been thrilled by the lovely blooms of *Epiphyllum delicatum* during the month of December. These beautiful pale pink blossoms of the *Zygocactus*-like plant have been much more free this year, due no doubt to the mild weather we have experienced this month, and as the *Zygocactus* are also in bloom, the show has been very delightful. Remember to ease up with the watering as soon as the flowers have faded.

REVIEWS : Foyle Handbooks, 119/125 Charing Cross Road, London, W.C.2, "Cacti and Succulents" by L. W. Cahill and P. J. Panting, price 2/6. It is full of good advice, but it is obvious the authors are very old collectors as they say our plants are not easy to care for correctly as some would have us believe ; mention buying cuttings for 6d. ; plants become misshapen if not turned regularly to the light ; plants do better when somewhat potbound ; water should be left in the greenhouse for several days ; drops of water act as lenses, scorching plants. It is a pity these long exploded fallacies are included as otherwise the book is of the utmost value to anyone interested in our plants and, notwithstanding, I recommend the book.

It is hardly my place to review "The Gibbaeum Handbook," a posthumous work by Professor Nel and edited by Professor P. G. Jordaan and myself, but I desire to pay tribute to the talented author and to the usefulness of the book. It follows closely the plan of "Lithops," is very fully illustrated, some in colour, and records the author's field experience and his decisions and the facts he establishes fully entitles the book to be the authority on the subject. Published by Blandford Press Ltd., 16 West Central Street, London, W.C. 2. 22/- post free. (E.S.).

The Librarian, Mr. P. V. Collings, 53 Northumberland Road, New Barnet, Herts., appeals for donations of books dealing with cacti and succulents, especially those suitable for beginners. The demand is enormous.

NEW CONOPHYTA

By Dr. A. TISCHER

Conophytum speciosum Tisch. spec. nov. (*Euconophytum*, *Wettsteinia* Schwant.).

Planta caespitosa ; corpuscula obconica, 13-18 mm. alta, 13-20 mm. diam., supra visa circulata, interdum irregulariter 5-angulata, apice plana, fissura non depressa ; glabra, levia, griseo- vel caeruleo- viridia, punctis obscuris sat magnis notata ; fissura-2.5 mm. longa, rhomboidea, punctis viridibus confluentibus cincta ; flores diurni, ovarium inclusum ; calycis tubus -7 mm. longus, vix compressus, -3 mm. diam., segmentis 5, -3mm. longis ; corollae tubus compressus, supra ampliatus, albus, -15 mm. longus, segmentis 55-60, spatulatis, 2-3 seriatis, -20 mm. longis, -1.5 mm. latis, supra obtusis vel emarginatus, inferne albis, superne roseis ; stamina multa, filamentis inferne albis, superne luteis, antheris exsertis ; stigmata 5, filiformia, -15mm. longa, lutea, stylus -13 mm. longus ; ovarium supra planum, discus inconspicuus, viridis.

Habitat : Little Namaqualand.

Type in State Botanical Collection, Munich, *Mesembr.* No. 193.

Plant forming loose clumps ; body cone shaped, 13-18 mm. high, 13-20 mm. in diameter ; upper side circular or occasionally irregularly flat and five angled in outline, top slightly or very slightly arched, at the sides sharply set (Type 11-12 according to Tischer's table), not depressed towards the cleft ; smooth and bare, ground colour dark grey green to blue green, the upper part having a number of dark green dots which become bigger and closer and finally overlapping as they approach the cleft ; cleft not compressed, -2.5 mm. long, cleft zone brighter and broadly rhombic in outline, framed by a number of occasionally converging dots. Flower diurnal ; ovary hidden ; tube -7 mm. long, slightly wider at top, not depressed, -3 mm. in diameter, greenish white, with five segments, -3 mm. long, succulent, bright green ; corolla -15 mm. long, top somewhat depressed and broader, white ; 55-60 segments in 2-3 rows, -20 mm. long and -1.5 mm. wide, spatulate, top bluntly pointed or notched, inside partly shorter and narrower, coloured white underneath and bright pink above ; stamens numerous, growing from the bottom of the tube, filaments white below and yellow above, anthers jutting some way out from the middle of the tube ; 5 stigmas, 1.5 mm. long, yellow, on 15 mm. long, whitish green style ; ovary -3 mm. in diameter, top flat or scarcely raised, ovary slender, low, dark green.

I have grown a plant of this beautiful and fine looking species for a number of years. Its true place of origin is unknown. It was probably discovered by W. Triebner, it belongs to the larger forms of the *Wettsteinia* Schwant., group and ought, therefore, to be a native of Little Namaqualand. *C. speciosum* is distinguished especially by its wonderful pink coloured flower, which is easily the largest among the genus *Conophytum*. From its magnificence (*speciosum*) and the size of its flower it rightly deserves its name.

Our picture reproduces well the plant's typical surface. In the course of several years it forms some delightful groups. Unfortunately, I possess only one plant, so propagation by the rooting of offshoots would take a very long time. For the time being, therefore, *C. speciosum* will remain a rarity in cultivation. But it is very much to be hoped that it will soon be rediscovered in its native home.

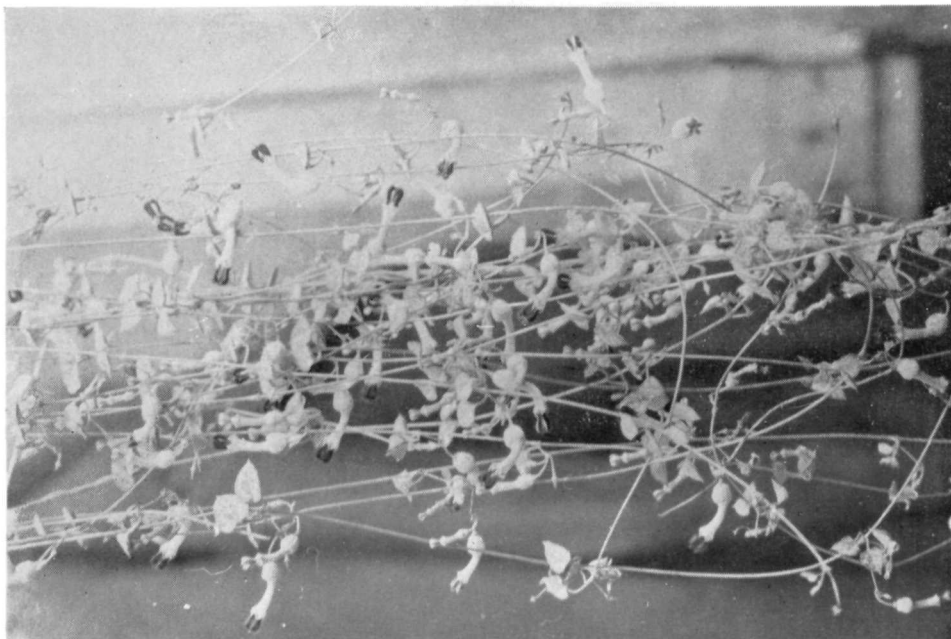
This species is closely related to *C. wettsteinii* (Bgr.) N. E. Br., *C. robustum* Tisch. and *C. gratum* (N. E. Br.) N. E. Br. It is distinguished from these species, however, by the size and structure of the flower as well as by the shape and design of the plant body itself.

After Australia and the Union of South Africa, Rhodesia is now infested by the jointed *Opuntia*. The Colony's Noxious Weed Act prohibits the growing, selling or importing of prickly pear.

Mr. S. Horton Ormerod, 17 Kenwood Road, Moss Bank Park, Bolton, asks if members would send him specimens of any pests they find on their plants. He is fully qualified to discover means of eliminating them. Live pests, in firmly corked test tube, preferred.

A labourer was remanded in custody for stealing three plants from a Brighton Show, viz., *Euphorbia splendens*, *Agave attenuata* and *Mammillaria lasiacantha*, worth it was said £13, the *Euphorbia* (a rare and deadly plant !) assessed at £10. Prices are high in Brighton !

Have you paid your subscription yet ? It helps the treasurer and enables the Council to make arrangements, if subscriptions are sent promptly to E. W. Young, 35 Castle Drive, Ilford, Essex.



Ceropegia woodii

G. G. Green

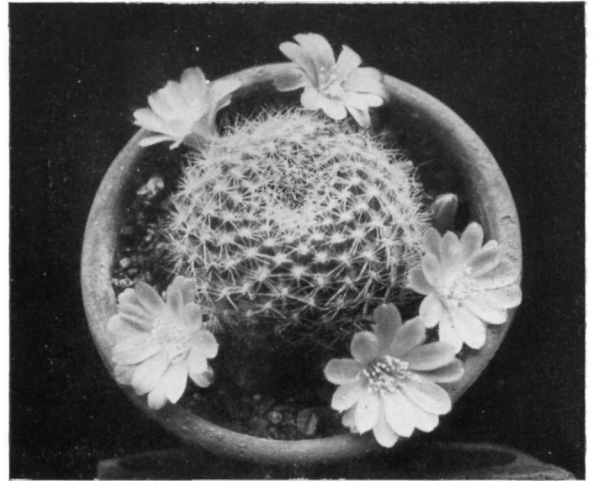


Rebutia violaciflora

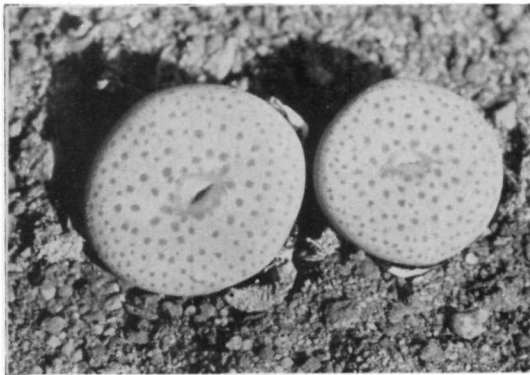
A. Boarder

*Rebutia senilis*

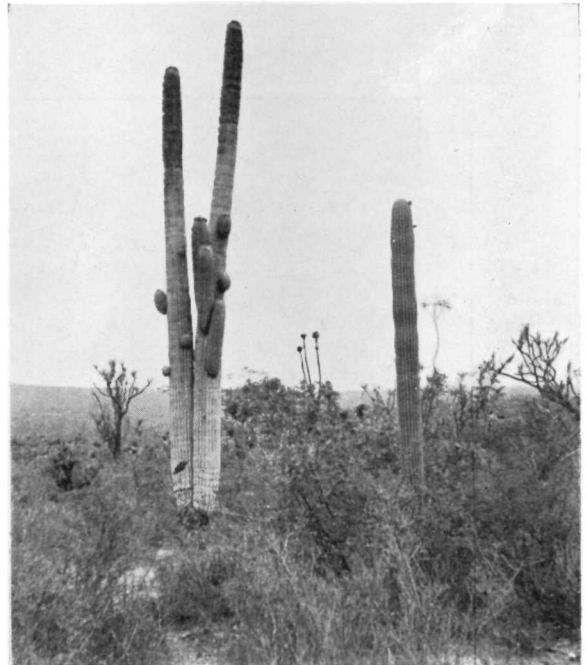
C. Backeberg

*Rebutia senilis* var. *lilacino-rosea*

W. Beeson

*Conophytum speciosum*

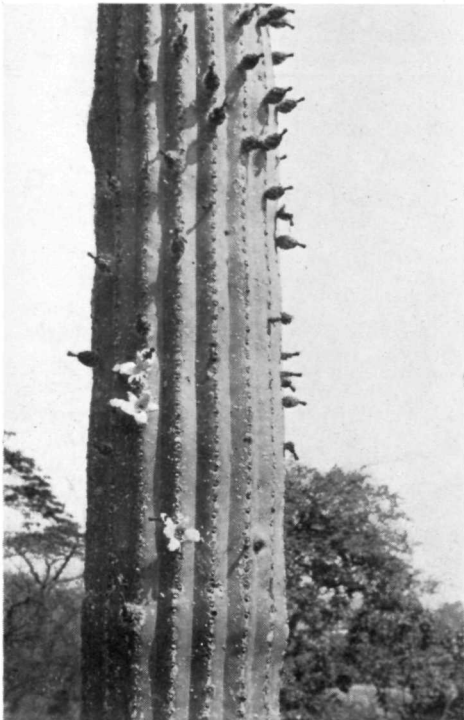
Dr. A. Tischer

*Cephalocereus (Neobuxbaumia) macrocephalus*
(Zapotitlan de Salinas, Puebla)

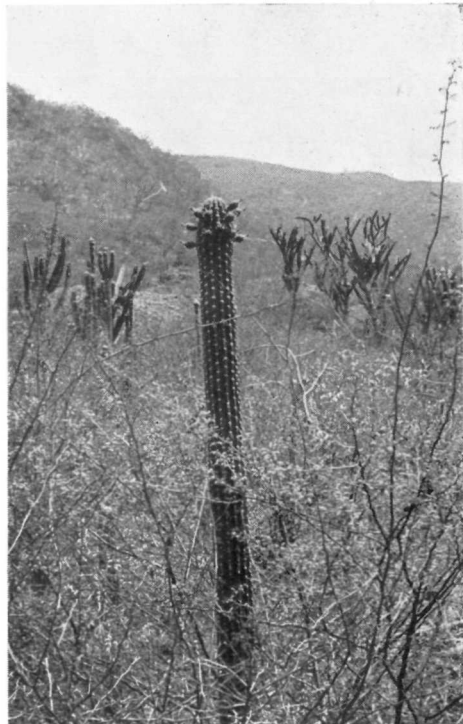
Howard E. Gates



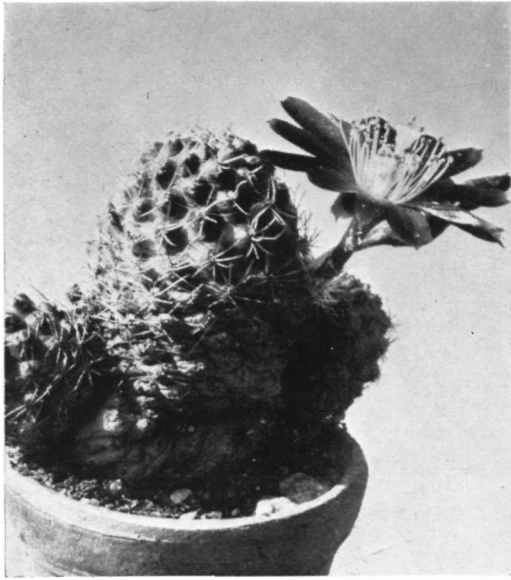
Cephalocereus apicicephalum (centre) *Escontria chiotilla* (right) Howard E. Gates



Cephalocereus mezcalaensis
(Acatlan de Osorio, Puebla) Howard E. Gates

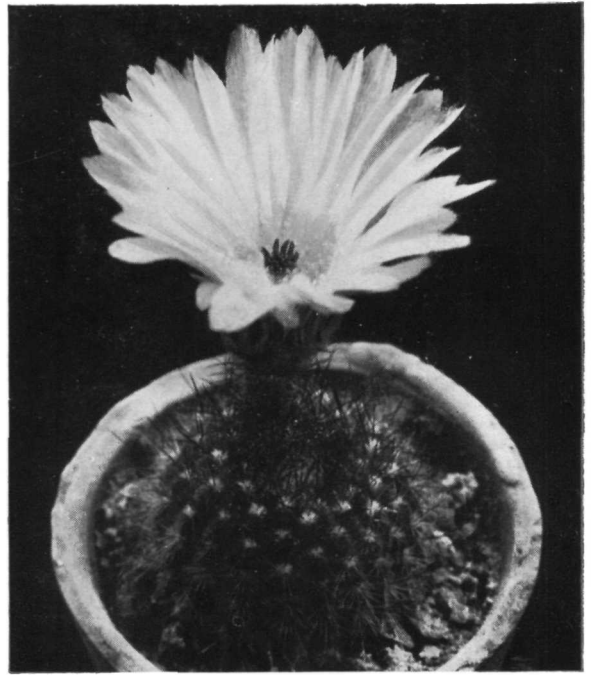


Cephalocereus tetetzo
(Totolapan, Oaxaca) Howard E. Gates



Aylosteria sp.

C. Backeberg



Notocactus tabularis

W. Beeson



Coryphantha sulcolanata

W. Beeson

REBUTIA SENILIS (BACKEBERG) AND ITS VARIETIES

By J. D. DONALD, B.Sc., A.R.I.C.

Rebutia senilis is one of the more remarkable of the true *Rebutias* (*Eurebutia*) in that no less than 12 additional varieties of the species have been ascribed to it at one time or another. The species resembles *Lobivia famatimensis* (Spegazzini), (syn. *L. pectinifera*, Wessner, & varieties), in the wide range of flower colour covered by the special varieties. If these described varieties can be truly diagnosed as derivatives of *R. senilis*, then, like *L. famatimensis*, *R. senilis* can rightly be called a polymorphic species, which some authorities hold to be a sign of youth of the species (and of the genus) on the evolutionary scale! However, from a close study of the plants concerned, it would appear that many of these so called varieties are either synonymous with the other varieties of *R. senilis*, or *R. xanthocarpa*, or with other distinct species.

The original description of this species was given by Curt Backeberg in 1932 (*Der Kakteenfreund* 1932, p. 123) and again in 1935 together with the validating Latin diagnosis (Knuth & Backeberg, *Kaktus ABC*, 1935, p. 277 & 416) and repeated in 1936 (Backeberg, *Blatter für Kakteenforschung* 1936-6). This description is not particularly extensive. The pale green body is globular to short cylindrical and caespitose in later years, with individual heads up to nearly 3 inches in diameter and height. The crown is deeply umbilicate (indented). The plant body is entirely obscured by the dense white interwoven spines that cover the whole plant. The ribs are resolved into spirals of slightly raised hexagonal tubercles. The areoles are situated on these tubercles and are approximately $\frac{1}{4}$ inch apart and filled with short white woolly felt, from which spring 35-40 white bristly spines up to an inch in length; the radial and central spines are quite indistinguishable. The flowers arise from the lower areoles on the plant body and are comparatively large for the genus; they are bright carmine red in colour and funnel shaped, with the sepals and petals lanceolate. Single flowers can be up to $1\frac{3}{4}$ inch long and $1\frac{1}{4}$ inch wide when fully expanded; the receptacle and pericarp are reddish yellow in colour with small naked, reddish mauve scales attached; the style, the 5 or 6 lobed stigma, and filaments are yellowish white, with the anthers pale yellow in colour. The plant is self-fertile; the fruit is a small round naked berry, pale red in colour, with small shiny black, cap-shaped seeds. The habitat of the species is given as Northern Salta, Argentina.

Rebutia xanthocarpa (Backeberg) is quite often mistaken for *R. senilis*, but the true 'senilis' is quite easy to distinguish from the true 'xanthocarpa.' *R. xanthocarpa* has a much smaller flower, (about $\frac{3}{4}$ inch long and wide), with a yellow receptacle and pericarp; its fruit is also yellow, as opposed to the pale red fruit of *R. senilis*. Whereas the true 'senilis' is completely hidden by its spines, the true 'xanthocarpa' is only lightly covered; the spines of the latter are less numerous and shorter. The position is somewhat complicated now, however, by the existence of horticultural hybrids between *R. senilis* and *R. xanthocarpa*, and *R. senilis* and *R. minuscula*, which have characteristics intermediate between the two. These hybrids are frequently found in collections labelled as *R. senilis*.

The typical 'senilis' characteristics that one might expect to be shown by its varieties, would be largish flowers, fairly dense spining, and self-fertility. Plants not showing these characteristics might possibly not be varieties of *R. senilis*, but this is by no means conclusive evidence since there are many internal factors that may show distinct relationship between two plants, whereas the external factors (i.e. appearance, etc.) may point against any such relationship. It is unusual, though, for special varieties to be radically different in external appearance from the species itself, when grown under similar conditions. Internal evidence is more used for classification of plants into genera, while the external evidence can be used for classification into distinct species and special varieties, after the internal evidence has established the correct genus. Unfortunately in the case of *Rebutia senilis* and its varieties, the descriptions published for these plants lack sufficient detail, in many instances, to enable one to make an exact and unshakeable classification of an unknown plant, suspected of being a variety of *R. senilis*. In consequence of this, the following observations on the varieties of *R. senilis* known to the author are recorded with the reservation that the particular plants studied may not have been exactly identical with those from which the original diagnosis and description were taken, but they are to the author's best belief typical of the plants now cultivated under the same name as headed the original description.

Rebutia senilis v. *aurescens* (Backeberg 1935)

A very inadequate description of this plant is given in *Kaktus ABC* p. 278, with an extremely brief Latin diagnosis on p. 416. The plant is described as differing from the species in having yellowish bristles and a bluish red to lilac flower, no dimensions being given at all. Yellowish bristles can occur in all varieties of *R. senilis* and their appearance would appear to depend largely upon the growing conditions of the plant. Fast growing appears

to favour white bristles, and yellow spined plants undergoing rapid growth frequently develop white spines, whereas the reverse is frequently noted in cases of slow development, especially in plants grown in full sunlight. *Rebutia senilis* under these conditions quite often develops yellow bristles in the crown. We cannot take the bluish red to lilac flower as a differentia in this case without some knowledge of the dimensions of the flower, since a bluish red flower is possessed by the variety 'dasyphryssa,' and lilac flowers by the varieties 'lilacino-rosea' and 'violaciflora,' each of which is capable of developing yellowish bristles under the appropriate conditions. The author has in his possession a plant that came bearing the label 'v. aurescens,' and certainly this plant approximated to the brief description given for this variety, for it had long fine white and yellow bristles, that covered the plant body, not however so densely as with the true species. It had an extremely large flower, and bore reddish fruits (when cross pollinated), but the plant was self-sterile and the flower certainly not lilac. Its flower closely resembled that of *R. kranziana* in being bright red to red-violet in colour and with brownish violet scales on the pericarp and receptacle. It would be extremely difficult to call the colour distinctly as either bluish red or lilac. The plant has however in the meantime been positively identified as *R. wessneriana*. Another plant in the author's collection that came originally bearing the legend 'R. elegans,' also approximates to the Backeberg description for v. aurescens. The plant has longish white or pale yellow spines, again not so dense as with the true species, and a largish flower equal in size to that of *R. senilis*, and of a colour which might be called red with a faint bluish tinge. The plant bears reddish fruits but is probably self-sterile. It is very possible that this particular plant may be a hybrid, the arrangement and disposition of its spines and of its self-fertility would suggest an affinity with *R. wessneriana*. Only in its original label does the plant resemble *Mediolobivia (Rebutia) elegans*, let alone the *senilis* or *xanthocarpa* (?) variety 'elegans'!

Rebutia senilis v. *elegans* (n.n. Backeberg 1937)

This plant was first mentioned as a variety of *R. senilis* by Backeberg as a nomen nudum in 10 Jahre Kakteenforschung 1937 (p. 38), it is however synonymous with *Rebutia xanthocarpa* v. *elegans* (Backeberg 1935) originally described in Kaktus ABC (p. 279). The validating Latin diagnosis for this variety of *R. xanthocarpa* did not appear until 1951, in the Cactus and Succulent Journal of America (vol. xxiii, p. 83), "differt (a typo) saetis longioribus, tenuibus, costis spiralibus." The plant certainly resembles *R. senilis* more closely than *R. xanthocarpa*, and it is quite probable that the plant would be more correctly described as a variety of *R. senilis* rather than of *R. xanthocarpa*. The long white, bristly spines, and its reddish fruits and flower receptacle, are more typical of *R. senilis*, while the size of the flower is intermediate between that of the two species. The colour of the flower is clear scarlet, with a lighter, yellowish throat. The plant is very free flowering and self-fertile.

Rebutia senilis v. *lilacino-rosea* (Backeberg 1935)

Rebutia senilis v. *violaciflora* (n.n. Backeberg 1937)

(*Rebutia senilis* v. *dasyphryssa*, Werdermann 1935, Marshall & Bock 1941)

These three 'varieties' will be considered together since they are externally very similar and all have small flowers more reminiscent of *R. xanthocarpa* than of *R. senilis*. The plant bodies are all grey-green in colour and covered with white or yellowish white spines in length somewhat shorter than those of *R. senilis*, but longer than those of *R. xanthocarpa*. All have fruits predominantly yellow in colour, although those of v. *dasyphryssa* sometimes are more orange than yellow. The latter plant is synonymous with *R. xanthocarpa* v. *dasyphryssa* (Werd.) originally described as *R. dasyphryssa* by Werdermann in Blühende Kakteen und andere sukkulente Pflanze (Pt. 26, pl. 103, 1935) with full Latin diagnosis. In 1935 Backeberg described without a Latin diagnosis *R. xanthocarpa* v. *coerulescens* (Kaktus ABC p. 279). The Latin diagnosis was not given until 1936 in his Blätter für Kakteenforschung (no. 6). In consequence of this, since these two plants are now considered synonymous, Werdermann's name has priority, but the plant itself is not sufficiently differentiated from either *R. xanthocarpa* or *R. senilis* to warrant specific status. In 1941, Marshall & Bock in Cactaceae (p. 125), referred the plant to *R. senilis*, although in 1939, Backeberg through Udo Kohler, in Beiträge zur Sukkulenteenkunde und -pflege (p. 3) had referred his plant (v. *coerulescens*) to *R. dasyphryssa* as the new combination *R. xanthocarpa* v. *dasyphryssa* (Werd.) Backeberg. The plant resembles a slightly longer spined *xanthocarpa* with a small flower (slightly larger than that of *R. xanthocarpa*) red in colour with a distinct bluish tinge, tending towards mauve rather than crimson. The fruit is typical of *R. xanthocarpa*, as is the shape of the flower petals, so that it would appear that this plant should be referred to *R. xanthocarpa* as the variety 'dasyphryssa,' rather than to *R. senilis*. v. *lilacino-rosea* and v. *violaciflora* are identical, the former is very briefly described in Kaktus ABC (p. 278 & 416) together with a validating Latin diagnosis, while the latter is only given as a nomen nudum in Backeberg, 10 Jahre Kakteenforschung 1937 (p. 38). The plants are indistinguishable, externally resembling *R. xanthocarpa* far more than *R. senilis*, while the small

pinkish mauve flowers and yellow fruits certainly indicate a close affinity with *R. xanthocarpa* and not with *R. senilis*. The floral dimensions are almost identical with those for *R. xanthocarpa*. The var. '*violaciflora*' should not ever be confused with *R. violaciflora* (Backeberg 1935) described in Blatter für Kakteen-forschung 1935-8. Only the flowers of these two plants show some resemblance, the external appearances are radically different. The true species '*violaciflora*,' has a slightly larger flower (35 mm long x 30 mm wide) compared with (25 mm. long x 25 mm. wide) for the variety '*violaciflora*' ; the flower tube of the former is pale mauve compared with reddish yellow for the latter and the style and stigma lobes white for the former and yellow for the latter. The petal colours are identical for both plants. The plants are very easily distinguished apart by means of their external appearance. The species '*violaciflora*' has a bright green body with about 20 short yellow brown spines situated on fairly prominent tubercles, whereas the variety '*violaciflora*' has the typical white spined appearance of *R. xanthocarpa*. The fruit of *R. violaciflora* is reddish orange compared with yellow for the variety.

These three varieties should almost certainly be referred to *R. xanthocarpa* and not *R. senilis*.

Two recently described varieties are *v. iseliniana* and *v. kesselringiana* are remarkable in the unusual shades of colour exhibited by their flowers, which are so distinctive as to give no doubt as to the positive identification of the plant.

Rebutia senilis v. iseliniana (Krainz 1946)

Rebutia senilis v. kesselringiana (Bewerunge 1947)

v. iseliniana was first described together with Latin diagnosis in 'Schweizer Garten' 1946, p. 284, and repeated in Sukkulentenkunde I, 1947, (p. 9), the year book of Schweizerischen Kakteen-Gesellschaft, (SKG.), and *v. kesselringiana* was described only in Sukkulentenkunde I, (p. 9), together with Latin diagnosis. Both descriptions are very adequate in detail. The external appearance of both plants is similar, and again appears to be midway between that of *R. senilis* and *R. xanthocarpa*. Both are white spined, with spines up to $\frac{1}{2}$ inch in length, but in not nearly so dense formation as with the true *R. senilis* but both can and do develop yellow spines. They do, however, closely resemble *R. senilis* in the size and shape of their flowers. The flower of *v. iseliniana* is light orange in colour and that of *v. kesselringiana* golden yellow. The colour of the flower buds also are quite distinct, for *v. iseliniana* they are reddish mauve (typical for most *Eurebutiae*) but for *v. kesselringiana* they are light greenish yellow (a colour unique amongst the *Eurebutiae*). The flower of *v. iseliniana* is so distinctive that no other means of differentiation from the other *Eurebutiae* except *R. chrysacantha*, is necessary, but it is possible that there could be some doubt in the case of *v. kesselringiana*, although the greenish yellow flower bud is almost conclusive. The other yellow flowered *Eurebutiae* are *R. marsoneri* (Verd. 1937, Kakteenkunde p. 4), *R. sieperdaiana* (Buining 1941, Succulenta xxiii p. 15), *R. arenacea* (Cardenas 1951) and *R. glomeriseta* (Cardenas 1951) both described in Cactus and Succulent Journal of America XXIII (p. 94 & 95 respectively). These four species are self-sterile, whereas the two varieties of *R. senilis*, like *R. senilis* itself, are quite self-fertile and readily set seed without cross-pollination. The closest in appearance of these four plants to *v. kesselringiana* is *R. sieperdaiana*, which is described as 'like a finely spined *R. senilis*,' the plant is very rare and the author has not received a plant under this name, but does possess a plant approximating to the description given by Buining, this plant was raised from seed received from S. America. The chief difference between the two plants lies in the flower. The flower tube of *v. kesselringiana* is light yellow in colour with olive green scales, whilst that of *R. sieperdaiana* is reddish or rose-white with mauve scales. The petals of both plants are both clear yellow in colour but those of *v. kesselringiana* are somewhat broader in shape (20 mm. x 5-8 mm. as opposed to 20 mm. x 3.5-5.0 mm.), they are described as being spatulate for *v. kesselringiana* and lanceolate for *R. sieperdaiana*, but in the plant in the author's collection spatulate with pointed tip would be a more correct description. The fruit for *v. kesselringiana* is olive-green in colour, while that for *R. sieperdaiana* is orange-red. *R. sieperdaiana* is self-sterile, whereas *v. kesselringiana* is not, both plants give black coloured seeds but those of *R. sieperdaiana* are larger (1.5 mm. x 0.5 mm.) than those of *v. kesselringiana* (1.0 mm. x 0.5 mm.). *R. marsoneri* is readily distinguished by means of the spine colour, the spines are white tipped brown or yellow tipped brown, the rounded deep purple flower bud, and spatulate rounded petals. The fruit and flower tube are olive-green with reddish scales, and seeds similar to those of *R. sieperdaiana*. *Rebutias arenacea* and *glomeriseta* are not yet in cultivation in Europe, but may be readily distinguished by their external appearance. *R. arenacea* closely resembles *R. krainziana* and is possibly related to it, its flowers are quite small 30 mm. x 30 mm.) with golden yellow lanceolate petals. *R. glomeriseta* is unique in appearance and flower, it is densely white spined, completely covering the plant body as with *R. senilis*, but the uppermost spines are reddish-brown in colour and shorter. The flower is very small (25 mm. long x 20 mm. wide) with an exceptionally short tube (3-4 mm. long), with lanceolate narrow yellow petals tinged with lilac.

(To be continued)

REPORTS OF MEETINGS

September 22nd, 1935 ; A. Boarder—A *Mammillaria* A.B.C.

Mr. J. Brown was unavoidably prevented from giving his address and Mr. Boarder stepped into the breach without previous notice. The following are short notes on *Mammillarias* he mentioned.

albescens, pale green, stiff white spines, flowers a long time, scent like lime tree, offsets sparingly ; *albicoma*, like a small *bocasana* without hooked centrals ; *aurihamata*, golden hairs and hooked centrals ; *baumii*, free flowering, covered silky white hairs, red hooked centrals ; *bicolor*, long white spines ; *bombycina*, symmetrical, fine white radials, red hooked centrals, magenta flowers ; *blossfeldiana*, difficult, hooked centrals, large flowers with stiff waxy petals, terra cotta coloured fruit ; *candida* var. *rosea*, fine white spines and pink tips, flowers dirty white ; *camptotricha*, long thin pointed tubercles, interlacing spines, flowers creamy white, scented ; *chionocephala*, round, flat, depressed top, rarely offsets, requires chalky soil, flowers pink ; *carnea*, var. *rosea* has rosy spines ; *decipiens*, low growing, in groups, reddish tipped spines, flowers late, scented ; *dolichocentra*, lemon shaped, rarely offsets, prominent tubercles, few spines, centrals curved, flowers magenta pink ; *dioica*, dioecious, difficult, hooked spines, likes shade ; *deliusiana*, " old man " of *Mams*, like *spinosissima* with longer spines ; *elongata*, many varieties from spine colours, flowers cream ; *erythrosperma*, bright carmine pink flower, whitish spines, pale hooks, large tubercles ; *elegans*, rarely offsets, tiny white spines, sometimes dark tips, spines vary with varieties ; *falcata*, similar to *centricirra*, green, longish open tubercles, few strong spines, dot of wool in axils, flowers carmine, red fruits ; *fraileana*, difficult, hooked spines, flowers pinky-creamy-white, large, stigma pinky red ; *gracilis*, close white spines, freely offsets, flowers creamy, small fruit ; *hahniana*, real O.M. of the *Mams*, symmetrical, heavily spined and haired, flowers magenta ; *hidalgensis*, like *kewensis*, heavily spined, reddish brown ; *inaiae*, white, like *elegans*, spines hide plant ; *jalicana*, golden green, fiercely hooked ; *karwinskiana*, like *carnea*, open type, large tubercles, short and thick, hair in axils, fierce spines, reddish pink flower, fine seed pods ; *longiflora*, one of the finest flowers of all the *Mammillarias*, very long tubercles, radials cover stem, centrals hooked, self sterile (?) ; *lesaunieri*, covered closely with spines ; *microhelia*, like *elongata*, finger type, tall, reddish brown on upper part of spines ; *microheliopsis*, rather stouter than *microhelia*, more spines, golden with reddish brown tips ; *napina*, white or whitish yellow spines interlacing at top ; *nealeana*, greeny yellow, tiny spines with golden centrals ; *ocotillensis*, globular, very woolly in axils, jet black centrals ; *ocamponis*, stated to equal *longiflora* ; *peninsularis*, like *carnea* ; *pennispinosa*, loveliest as a seedling ; dwarf, whitish feathered spines, distinct hooks, hooked centrals coloured like fire glow, flowers small ; *prolifera*, freely offsets, yellowish shade, flowers small, fruits persist ; *praelii*, open type, deep red tips to centrals ; *quevedoi*, like *elegans*, but broader, white, stated to be variety of *bravae* ; *rhodantha*, simple, no offsets, lemon shaped, pronounced tubercles, shiny spines, long centrals lightly coloured shiny bronze, flowers freely, carmine pink ; *surculosa*, yellow flowers, short, dwarf, pronounced tubercles, greenish yellow hooked centrals, fruits transparent green ; *schelhasei*, flowers over several weeks, a redder hooked *bocasana* type ; *spinosissima*, simple, dense spined, spine colours vary even from same seed pod, centrals rarely hooked ; *sempervivi*, low, very woolly at top ; *stellaris*, white (? *multiceps*) ; *tetracantha*, simple, heavily tubercled, spines strong, not hooked ; *uncinata*, hooked spines, like *sempervivi*, one strongly hooked central, small flower, bright pods ; *vaupelii*, *elegans* type with yellowish-golden brown spines ; *viperina*, growth like *elongata*, tuberous root ; *waltheri*, deep green, stiff spined ; *winteriae*, like *zahniana* ; *xanthina*, very rare, dwarf growing, lemon yellow flowers ; *yucatanensis*, tall, spines brownish yellow ; *zeilmanniana*, very free flowering, deep carmine, offsets, tall type, short hooked centrals, fruit same size, shape and colour as tubercles, thin transparent skin ; *zahniana*, broad like *winteriae*, few radials, 1 or 2 straight centrals ; large bud, pale yellow flower, 2-inches across.

October 20th, 1953 ; P. V. Collings—Preparing your plants for winter

His opening remarks were addressed to members with small collections and who had no greenhouse or frame and who kept their plants either in window boxes or on a table in a room where during the summer they enjoyed plenty of sun and fresh air, similar to a collection which had spent the summer in the open. Our winter presents a pretty problem for these folk. Plants outside, of course, must be brought inside and the first essential is to see that no outdoor pests, such as slugs, are brought in with them and they must be examined with care for less obvious pests and the pots also cleaned up. Plants kept indoors do not require a lot of heat, but they do require air and light. A sunny room is ideal for wintering, but care must be observed to see that the plants are not too near to the glass on frosty nights. The amount of watering depends on the warmth of the room and, consequently, on how quickly the pots tend to dry out.

For those who house their plants in frames and who are unable to bring their plants indoors, frost can be kept off by covering the glass with sacking. If it is possible to run a cable to the frame, a 60 watt lamp will cope with the colder spells.

Members with greenhouses should have all their plants inside by now and he instanced *Aloes*, *Agaves* and *Opuntias* which he habitually kept outdoors during the summer. Plants require the maximum amount of light during the winter and everything should be done to further this. In particular, the glass itself should be clean, dirty glass breaks up the already meagre winter sunlight. Have all plants within reach so that suspects may be examined immediately. Examine all plants before bedding down for the winter. If a plant is going yellow, do not leave it until the "proper time," check it over and re-pot if necessary. Whilst checking the plants, see the pots are clean.

If stages are covered with shingle or sand and damped, the danger of the soil drying right out is prevented and, with it, the chance of roots dying back and so rotting off when watered in the spring, instead of filling out. This is also a great danger in room culture where dry heat is present and, to counteract this, small plants in, say, 2-inch pots should be stood in saucers of water for half an hour. This will keep the roots alive and the plants fresh, but will not be sufficient to stimulate growth. Resting periods should be observed, but seedlings should be kept growing. Inside the greenhouse damped sand will help to keep down red spider.

If you feel disposed to attempt wintering cacti outdoors throughout the winter, it can be done with some of the *Opuntias*, but not *microdasys*; provide overhead cover by supporting glass on bricks as frosty wetness is the greatest enemy. Our climate, however, usually takes its toll sooner or later.

Inside the greenhouse, the glass should be carefully checked for leakages and if there are any mossy or other deposits likely to cause syphonage through joints in the glass, clean them up. Keep a sharp watch for condensation and take action immediately before your best plant is killed. In extreme cases, temporary relief can be obtained by shielding the plant and deflecting the drip with a piece of glass. Clear up these points before the winter breaks.

Questions resulted in many interesting bits of information.

Zygocactus truncatus claimed three questions which brought out the information that they grow throughout the summer, but that watering should be continued whilst keeping them warm. They should shortly be showing buds. The need for nourishment can lead to pads falling off as can too cold a position. *Gasterias* can be watered all the year round. *Epiphyllums* must be watered with care because of the danger of rotting off at the collar. Manure should be given in the spring. *Euphorbia bupleurifolia* should be kept perfectly dry. Keep very choice *Euphorbias* in double pots, watering the outer, sand filled pot. *Pleiospilos* need no water until the outer pair of leaves have been absorbed. *P. nelii* is the only one to flower in early spring. *Lithops* and *Conophytums* should be watered from below when the dry outer covering has split. *Lithops* usually die in early spring or in autumn from too much moisture when the plant is grey green at the base and watery, or from too little water when the roots die off. When re-potting, the soil should be moist enough to bind, but not to dirty the hands. Draughts are undesirable, but frost must be kept out. On heating frames by oil it was generally agreed that it was a matter of personal preference, but with clean lamps, good oil and controlled ventilation it could be quite satisfactory.

November 17th, 1953; A. J. Edwards—Heating

Numbers of our plants will stand temperatures down to 33 degrees without any harm provided they have been hardened off ready for their winter rest by reducing or ceasing watering during September. Arrange them on the staging away from the middle so that more tender plants can benefit from the warmth. It is near the glass that we get the lowest temperatures.

So much depends on the structure of the greenhouse for the efficiency of any heating apparatus. Greenhouses built on a brick base up to bench level with wood glazing bars and half glazed doors give the maximum efficiency with the minimum of heat losses. The least efficient are of metal with concrete glazing bars, with glass down to the ground. Small types, wood constructed, often result in shrinkage with the consequent open joints. See the doors and ventilators are close fitting and seal off those places where heat can escape or cold winds enter.

From records taken at my Surrey home, I find January and February are the coldest months when the temperature can fall to as low as ten to fourteen degrees below freezing point, on one or two days it was freezing point at noon, so we must provide heating to cope with temperatures down to ten to fourteen degrees below freezing.

There are several ways of heating, chief of which are paraffin heaters, stoves and water pipes and electricity.

Paraffin heaters will certainly serve a useful purpose. Many members have started with this form and some

still do. To be perfectly safe they must be left on every night and many times during the day as there is no control against sudden changes of temperature. One of their drawbacks is the discharge of oily smuts all over the greenhouse and plants if oxygen is exhausted in a perfectly efficient house, or if the wick is too high when lit and there has been no later inspection.

Coke boilers again are very useful. It is difficult to keep them at the highest point of efficiency except by keeping alight all the time and giving constant attention. Smaller installations are known to race up heat and go out, due to high winds, leaving the plants a prey to frost, cold and damp. There is also the discomfort of having to go out on stormy, frosty and inclement nights to attend to them.

Electricity is, without doubt, the most efficient form of heating and if controlled by thermostat it is the most economical and, also, it is perfectly clean. Tubular heaters are usually used, the amount depending upon the size of the greenhouse and the type of construction. Instal sufficient heaters to ensure safe temperature coverage, if in doubt put in an extra heater, apart from the initial cost it does not cost more as the extra heater helps to warm up quicker and the thermostat cuts out quicker too, thus saving current.

Thermostats should be placed in a position furthest away from the heater and at plant level. Warm air rises and the greenhouse is warmed from the ridge downwards, so that, with the thermostat at plant level, it can be assured that the plants are kept at the right temperature.

For small houses, or garden frames, there is a soil warming cable which can be laid round the plant bench or hung round the sides of frames. This cable is made in two sizes for use with the normal voltage, 220/240 volts, 40 ft. long, 150 watts and 220/240 volts, 80 ft. long, 300 watts.

There are also portable convectors and many other appliances all of which have their uses and there is sufficient choice to satisfy every taste. In all cases, I urge the installation of thermostats to control the temperature, effecting economy and preventing over heating. Unless you are thoroughly competent yourself, I urge the employment of a properly experienced man when installing your apparatus as it is expensive economy, involving the loss of your plants possibly, if handled by inexperienced hands.

The Society has received fraternal greetings from the K.I.O. Cactus Club (Kansas, Iowa, Oklahoma ?) in the form of a beautiful flocked Christmas card. We are glad to reciprocate their good wishes.

If you understand French, "Cactus," published by the French Cactus Society, will be found invaluable, amply illustrated and with much important matter. Subscription 22/- per annum, post free. Subscriptions to J. Calle, 28 Avenue des Gobelins, Paris, 13e, France.

Major A. A. Dorrien Smith, of Tresco Abbey, Tresco, Isles of Scilly, has now entered the ranks of commercial growers of cacti and succulents (see advertisement).

LISTS RECEIVED

Worfield Gardens, Bridgnorth, Shropshire : printed 12 paged booklet listing cacti and succulent plants ; also special offers lists.

Messrs. Woodman, who advertise in this issue, have a new idea in their Easi-Kneeler Stool which can be used for kneeling and seating.

Byron Hill Nurseries Ltd., Byron Hill Road, Marrow on the Hill, Middlesex, now supply miniature gardens in the form of small greenhouses for window and table use, also cacti and other succulent plants.

STOP PRESS. W. T. Neale & Co. Ltd., of Franklin Road, Durrington, Worthing, have just introduced Kodachromes of cacti and succulents suitable for projectors and supply a "one eye" viewmaster for use with them. More details in the next Journal.

SHOW RESULTS — 22nd & 23rd SEPTEMBER, 1953

- Class 1. Three *Echinocactanae*.
Ist, P. V. Collings ; 2nd, R. H. West ; 3rd, A. J. Edwards.
- Class 2. Three *Coryphanthanae*.
Ist, P. V. Collings ; 2nd, R. H. West ; 3rd, K. H. Walden.
- Class 3. Three *Cereanae*.
Ist, P. V. Collings ; 2nd, R. H. West ; 3rd, Mrs. E. B. Pryke Howard.
- Class 4. Three *Echinocereanae*.
Ist, R. H. West.
- Class 5. Three Cacti (any Genera).
Ist, R. H. West ; 2nd, Mrs. E. B. Pryke Howard ; 3rd, P. V. Collings ; V.H.C., S. J. Pullen ; H.C., K. H. Walden.
- Class 6. One Specimen Succulent (excluding Cacti).
Ist, Mrs. M. Stillwell ; 2nd, P. V. Collings ; 3rd, Mrs. E. B. Pryke Howard.
- Class 7. Three *Faucarias* and/or *Stomatiums*
Ist, Mrs. E. B. Pryke Howard ; 2nd, Mrs. M. Stillwell ; 3rd, K. H. Walden.
- Class 8. Three Stemless *Mesembryanthemums*.
Ist, P. V. Collings ; 2nd, Mrs. M. Stillwell ; 3rd, R. H. West ; V.H.C., K. H. Walden.
- Class 9. Three *Haworthias*, *Gasterias* and/or *Aloes*.
Ist, Mrs. M. Stillwell ; 2nd, K. H. Walden ; 3rd, S. J. Pullen.
- Class 10. Six *Euphorbias*.
Ist, S. J. Pullen ; 2nd, Mrs. M. Stillwell.
- Class 11. Three *Crassulas*.
Ist, S. J. Pullen ; 2nd, Mrs. M. Stillwell ; 3rd, K. H. Walden.
- Class 12. Three *Echeverias* and/or *Cotyledons*.
Ist, Mrs. E. B. Pryke Howard ; 2nd, Mrs. M. Stillwell ; 3rd, K. H. Walden.
- Class 13. Three Succulents other than Cacti.
Ist, Mrs. M. Stillwell ; 2nd, A. J. Edwards ; 3rd, Mrs. E. B. Pryke Howard ; H.C. K. H. Walden.
- Class 14. Succulents other than Cacti raised from seed sown on or after 1st January, 1952.
Ist, Mrs. J. A. Luty Wells ; 2nd, Mrs. M. Stillwell ; 3rd, Miss A. M. Pilcher.
- Class 15. Three *Stapeliads*.
Ist, Mrs. M. Stillwell ; 2nd, Mrs. E. B. Pryke Howard ; 3rd, P. V. Collings.
- Class 16. Group of Cacti and/or Succulents to cover table space 5 ft. x 2 ft.
Ist, Mrs. J. A. Luty Wells (Amateur Gardening Diploma) ; 2nd, Mrs. E. B. Pryke Howard.
- Class 17. Group of new and unusual plants to cover table space 3 ft. x 2 ft.
Ist, Mrs. M. Stillwell (Amateur Gardening Bronze Medal).
- Class 18. Six South African Succulent plants in pots not larger than 3½ in. dia.
Ist, A. J. Edwards ; 2nd, Mrs. M. Stillwell ; 3rd, K. H. Walden.
- Class 19. Three Succulents other than Cacti (For Juniors under age 18 years).
Ist, Michael Simms (Shield trophy).

Cups awarded for highest points gained at both Shows :

Sir William Lawrence Cup for Cacti—R. H. West.

Evelyn Theobald Cup for Succulents—Mrs. M. Stillwell.

P. V. Collings Cup for *Euphorbias*—S. J. Pullen.

R. S. Farden Memorial Bowl for Groups of Cacti and other Succulents—Mrs. J. A. Luty Wells.

Shield Trophy for Juniors under 18 years—Michael Simms.

S. J. Pullen Cup for best Miniature Garden (June Show only)—Mrs. M. Stillwell.

Mrs. E. B. Pryke Howard Cup for South African Succulents in pots not larger than 3½ in. dia.—A. J. Edwards.

! ! !

Birmingham Gazette : enthusiasts pay as much as 30/- for a specimen only half an inch wide. Encyclopedias say there are about 50,000 varieties.

The Smallholder : The true cacti with spiny, green stems, can be dried completely from October to March.

Sevenoaks Chronicle : if he has the patience to wait several years, the grower is often rewarded with the most exquisite and unusually shaped flowers. Keep the soil dry—don't water them too much or they die. (Also Kent & Sussex Courier).

Birmingham Mail : mesembrianthemums, corypanthii, mammallaria.

Manchester Daily Despatch : growing one cactus variety, the opuntia, under glass as a winter feed for cattle. It grows several feet high.

Sunday Graphic : need a little water, but the plant itself must not be splashed or decay may set in

Colchester Gazette : they have few pores, or stomata, through which to lose moisture. . . slow growing . . . the drier you can keep the air round them, the better.

S. H. Scott in Daily Sketch : one of the main requirements is soil that soaks up water quickly and holds it in the upper half of the pot.

Rochdale Observer : areloes. Some varieties grow in the jungle and fasten themselves to branches of trees by means of "barbed fingers."

Colchester Gazette : Cacti are better in a "pot bound" condition. Water should be air warmed. Drops may act as lenses and burn the skin.

Lincolnshire Daily Echo ; stomata, through which to lose moisture. Chief characteristic is a possession of spines or prickles. The drier you can keep the air round them, the better.

Daily Sketch, London : Sieve over with some of the same compost, just enough to cover the seeds.

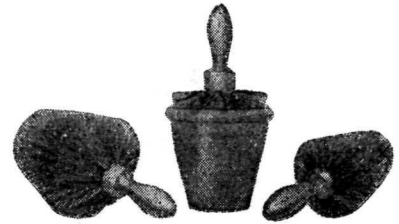
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Oreocereus (Pilocereus) celsianus var. ruficeps, with red hair

Oreocereus (Pilocereus) fossulatus, long white hair, forms tall column

Oreocereus (Pilocereus) trollii, the Old Man of the Andes of South America, with white wool, spines orange-red

Espostoa lanata, white silky hair.

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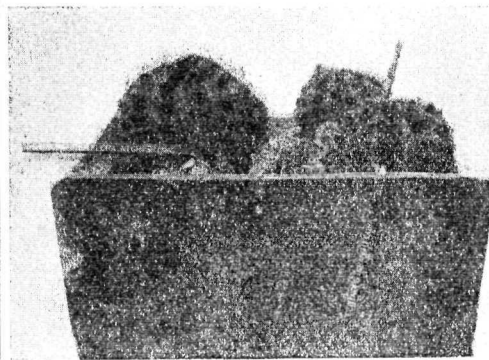
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Vol. 16

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No. 2

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Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6.30 p.m.

SOCIETY NEWS

1954			PLANTS FOR TABLE SHOW
April	13th	6.30 p.m.	C. E. L. Gilbert : Culture of Cacti and Succulents. Rebutias and Gibbaeums.
May	4th	6.30 p.m.	P. V. Collings ; Cereus and Echinocereus. Cereus and Echinocereus.
June	29th		Summer Show
		6.30 p.m.	Panel : Diseases.
July	13th	6.30 p.m.	S. J. Pullen ; Succulents other than Cacti. Crassulas.

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West Kent : *Secretary* : Mrs. J. M. Hoather, 6 Cromwell Close, Bromley, Kent.

North Kent : *Secretary* : S. F. Milton, 75 Portland Avenue, Gravesend.

Essex : *Secretary* : A. W. Heathcote, The Cottage, 1 Walden Road, Hornchurch.

North London : *Secretary* : Miss D. M. Judd, 25 Abbey Road, Waltham Cross, Herts.

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From the Editor, 7 Deacons Hill Road, Elstree, Herts.

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EDITORIAL

Once more a new growing season opens under auspices of good weather that are encouraging after the bad weather we have been having. That is to say, at the time I am writing these notes, mid-March. I can only trust that members will have a good season and will support the Shows and the Table Shows during the year.

We are very pleased to announce that a Subscription List has been opened with a view of establishing a Memorial Trophy in honour of our late friend, Will Denton. Everybody knows what a good friend he was to all of us and many personally benefited from his advice and good nature. Now is the opportunity of contributing to his lasting memory by sending subscriptions to the Hon. Treasurer, Mr. E. W. Young, 35 Castle Drive, Ilford, Essex.

In paying tribute to those who have so generously helped towards the success of our Journal, I forgot Mr. R. J. H. Ellen, who translates from the German and Spanish for the benefit of our members. This young man even thanks me for the privilege of keeping himself brushed up in these languages. His work has been invaluable to me.

NORTH LONDON BRANCH. Members in this district should get in touch with the secretary, Miss D. M. Judd, 25 Abbey Road, Waltham Cross, Herts, for details of an ambitious programme for 1954 including four visits to collections, two film shows, demonstration on potting, lectures and exchanges of plants. Mrs. Pryke Howard is giving an At Home at her address, "The Pines," Old Park Road, Enfield, Middx. to all members of the Society on Saturday, 3rd July, 3 p.m. Such a generous gesture should receive an equally generous response by all.

ESSEX BRANCH. The Branch and its secretary, Mr. A. W. Heathcote, 1 Walden Road, Hornchurch, Essex, are to be congratulated on a very extensive report of their inaugural year, 1953. The members and the officials are very energetic, they even organised a very successful show.

The Editor's attention has been drawn to his own error in the report of Mr. Boarder's "A.B.C. of the *Mammillarias*" in the January issue of the Journal. In between "M. baumii" and "free flowering" should be inserted, "distinctive golden yellow flowers with a scent like lemonade crystals. *bocasana*."

CACTI CULTURAL NOTES

By A. BOARDER

By the time these notes are in your hands I expect that many of you will have plenty of seedlings up. Some growers are of the opinion that most Cacti seeds take a considerable time in which to germinate. I do not agree with this idea as I find that as long as the correct procedure is followed the seedlings should be up within a month. Generally if germination is delayed it is through the propagating frame not having sufficient warmth. Very few healthy seeds fail to germinate fairly quickly if the right temperature is maintained. On February 9th, this year, I commenced seed sowing and I set 435 different species and varieties of Cacti. Before all these were sown some days had passed by, but before the end of February I had well over 300 different kinds of seeds up. I only sowed one other succulent, *Euphorbia obesa*, and most of these were up in four or five days. In ten days there were dozens of seedlings up and in my opinion Cacti seed take no longer to germinate than many other types of plants.

Last season I had a very good germination and there was only one species which did not show up in about a month. These seeds were of *Testudinaria elephantipes*, and although they were sown in early February, nothing arrived until well into November, when they all appeared as if by magic, and within a few days of one another. Their first appearance reminded me of the shoots of wheat when first up, but they later developed a large almost round leaf on a long stalk. This was similar to a Nuphar leaf. Anything more unlike the mature plant with the root-stock like an elephant's foot would be hard to imagine.

I see that in the February Journal I recommended readers wishing to sow seeds to read my notes in the January issue of the Journal in 1952. I now understand that this issue is out of print. However, the main points about seed sowing are :- No cover for very small seeds ; a temperature of 70 degrees if possible, damp and shade until plenty of seeds are up and then go easy with the watering. Keep shaded from strong sun until spines are formed.

Many new members applied for seeds in reply to the offer in the last Journal. Some were not quite sure of the procedure. In the first place no charge is made by the Society for these seeds. Most have been sent to the Society for distribution. They are not for sale or distribution to non-members. The note in the notice about no correspondence does not mean that I am unapproachable, but that I am so busy with the distribution that it is quite impossible to enter into correspondence and give full details as to how to grow the seeds. Many members appear to think that I have only one or two applications to deal with. This is not so. The first two mornings after the Journal had reached most of the members, I could not see my front door mat for letters and they are still coming in, 4th March. I have had hundreds of applications, and as each one was sent twelve packets of named kinds and most kinds had to be counted, let alone packeted and named, it will be seen that my whole time for many days was fully occupied often into the early hours of the morning. Many kinds were out by the first evening as I only had one species of some genera, and few seeds of each. I am afraid that some of those who sent later on were disappointed, but I could not make them go any further, but there is one thing I am pleased about, and that is although I have sent out thousands of packets, no-one has been left out and twelve packets have been sent to everyone who has applied, except in two instances where the applicants asked for no duplicates. I had been busy making seed envelopes all through the winter but the hundreds I had ready were soon used up and I had to search around and buy two thousand. These too have disappeared. I did have a bit of a shock after spending many hours making these when I found that I could buy them at 7/9 per thousand, just a little less than a penny for ten.

I notice that many of my plants are sending out seed pods. These are, of course, the result of fertilised flowers last year. Many kinds had already produced seed pods last year, but the later flowers appear to wait until the spring when the warmth comes again, before sending out the pods. This gives the impression that these kinds do not produce seed pods the same year as they flower, but I think that most kinds do so, but the exceptions are those which have had flowers late in the year, and then the pods do not form that season.

Some Cacti form flower buds late in the year and these do not develop. Many kinds will form quite healthy looking buds in October, and if sufficient sun is experienced they open up all right. If, however, the weather keeps dull these buds do not open. Most shrivel and fall off the following spring, but I have a plant of *Harrisia martini* which formed a bud very late last year. It did not get larger than three-eighths of an inch across and by the winter I thought that it had died. However, it still looks alive and I am sure that it has plumped up slightly lately and I have every hope that it will open. The *Aporocactus flagelliformis* is an early bloomer as a rule and this plant although common can make a very fine show. Some growers are concerned when some of the stems shrivel up and turn brown. These should be pruned right back to healthy growth. If some of this older wood is removed much more new will be formed.

I gave some advice for re-potting in the last issue of the Journal and I advise that if all plants have not been dealt with this should be done as soon as possible. It does not matter if a plant is in bud, it makes little difference to the eventual flower if re-potting is done with care. You should now be watering all Cacti, but always wait until the soil has dried out completely before giving any more water. Most growers with a greenhouse arrange to have a tank there which can allow the water to get the chill off before being used. Some people are of the opinion that it makes no difference to the plant whether the water is very cold or not, but at least where seedlings are concerned I feel sure that if the chill is off the water it will be an advantage. After all when you have been trying to maintain a temperature of 70 degrees for these small seedlings it seems silly to deliberately chill them again when this could be avoided.

I should like to give some advice to new members as to the treatment of a plant which, on re-potting, is found to have no healthy roots. Such plants must not be dealt with as you would treat plants with good healthy roots. If a plant has no roots and is potted up in ordinary potting compost and placed with the others, it may not form new roots and will probably die if given the same treatment as the healthy ones. These un-rooted specimens should have special treatment. Clean off all dead roots and leave to dry for a few days. If only hard, dried, bark-like skin can be seen at the base it will be better to pare some of this away as fresh roots do not form readily through this bark. If any is pared off the plant must be left in the sun to callous over. Once a skin has formed the plant should be placed on a pot of potting soil which has an inch of Vermiculite or sharp sand on the top. An occasional spraying should be given especially on sunny days. The advantage of using Vermiculite is that the plant can be lifted up now and again to see if new roots are forming. Once a good set of roots are formed it will not be possible to lift the plant. It can then be left for some months, or even until the following year. It is sometimes possible to have a large box in which to root these plants, but once they do get going they form so many roots that they become entangled and make it difficult to take out for potting up.

When the weather is mild see that plenty of air is provided, no plant can thrive for long in close conditions. The greenhouse can be closed just before the sun leaves the house when the atmosphere should be nice and warm. Once the warm weather arrives most of the plants will benefit from a spraying when the house is closed. Some tap waters are very hard and lime impregnated, if this water is used too often for spraying, the spines may become slightly coated with lime which will spoil the colour. If water is left for some time after being drawn from the tap it will be better, and if it is very hard a bag of peat can be hung in the water tank as a part corrective.

A member has suggested to me that Nutilis D.D.T. mixture is good for killing mealy bug. I have a feeling that root bug has been confused with mealy bug. The above is probably all right for the job of killing root bug, but as it would not penetrate the meal of the surface bug I do not think that it would be of much use. The only thing these types of insecticide appear to do is to make the mealy bug leave their hiding places deep down between the tubercles and come into the open where you have a chance of catching them. The addition of some crystals of naphthalene over the crock in a pot has a tendency to keep down root bug. Paradichlorobenzene will also do the trick.

I hope that few plants were lost by members during the very severe weather in the early part of the year. I managed to keep my plants safe and the temperature did not drop below 38 degrees. I keep an oil lamp going all the time and have electric tubular heaters as well. These are operated by a thermostat set at 40 degrees. There were one or two bad power cuts during the severest weather and when one lasted for three and a half hours I was forced to put on an extra oil lamp. If one uses a double wick lamp, with one and a half inch wicks, it is surprising how much heat can be obtained, especially if the lamp has water pipes over. The advantage of this type of lamp is that it is very easy to control the warmth. One or two wicks could be lighted and they can be turned up or down according to the time of day or the outside temperature. In an old greenhouse, due for destruction, I had a bowl of Cacti and I noticed that one or two *Mammillarias* went through the severe weather without coming to any apparent harm. The temperature in my garden went to 10 degrees at least once and it is safe to assume that the old greenhouse only kept out about four degrees of frost. The plants were of course very dry or they would have been killed.

Some growers do not believe in re-potting their plants each year as I recommend, but I am sure that if they are not re-potted the plants would benefit from a watering once a fortnight with some liquid manure. The John Innes liquid fertiliser is a good one to use. Of course, if the plants have been re-potted there should be sufficient nourishment for the year. If too much fertiliser is used the plants can get rather flabby and lush. Most fertilisers are so potent that only a very little should be used, especially when one considers the small area in the average pot.

I hope that all members have a good year for flowers and if any have problems I shall be glad to deal with them in my notes. As a matter of interest I had 102 kinds of seeds for distribution but none were of sufficient interest to me to sow, however, I have already sown over 430 kinds and have some more to sow still.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

April is a very exciting month in the succulent world. All our plants are preparing to give us another happy year of growth. By now, most of the re-potting should be accomplished, except for certain of the stemless *Mesembryanthemums* and the *Conophytums* in particular. These should not be disturbed until the commencement of their growing period, which is the end of July, or, in some cases, the beginning of August.

At the early date of writing these notes, I am about to start re-potting my plants. I shall be using a very open mixture, comprised of two-thirds John Innes potting compost and one-third Bedford sand, with the addition of some broken brick, charcoal and, in some cases, limestone grit. I usually use about half an inch of the latter as drainage, on top of the broken crocks in the bottom of the pots. Do not hesitate to re-pot a plant that is not looking too good, even if it is not the right time of the year to do so, as it may be suffering from root bug which can soon cause a lot of damage. The best cure is to shake every particle of soil from the root and let it soak for about half an hour in a saucer of nicotine and methylated solution. For the benefit of new members, it can be mixed by a chemist at the strength of forty parts of methylated to one part of nicotine. Half a pint will last you a very long time. You will, probably, have to tell the chemist what you are using it for as it is classed as a poison. When you have soaked the roots, shake them in a little dry sand. This will separate the finer ones that have got clogged together by the wetting. Always endeavour to use new sterilised compost and clean pots and you should have very little trouble. Soak new pots in water for about twenty-four hours as, if used dry, they are liable to draw all the moisture out of the soil.

Some of the plants have taken rather a long time to pick up again this year owing to the very severe cold in the early months. I kept all my plants bone dry during this trying period, even the winter growers, such as *Gibbaeums* and some *Crassulas*. Many of them shrivelled badly, but it is better to be safe than sorry. In spite of this, in early February, I had flowers on the following: *Gibbaeums*, *shandii*, *molle*, *perviride* and *fissoides*. You will find all these *Gibbaeums*, after flowering, make their new growth and then like a rest through the hot summer months, with just enough water to stop them shrivelling. They commence to grow again in the autumn.

Do not be in too great a hurry to water your *Lithops*. Wait until the bottom growth has completely dried up and can be removed like a piece of brown paper. Do not try to remove this while it is the least bit fleshy, or you may damage the neck of the plant and rot will set in. You can re-pot your *Lithops* during the next month. Be very careful that you do not damage the long tap root, and be sure to give a pot that is deep enough to accommodate this root at full length. Long Tom pots are the best if you can obtain them. *Lithops* make splendid growth if planted out in pans. Surround them with matching pebbles, but make sure you have good drainage. Give the soil an occasional stir round the neck of the plants to prevent the water from laying on the top of the soil.

Towards the end of the month those people not having a propagator can sow their seed without the aid of artificial heat. I, personally, never sow any seed until April and have had quite good results. I like to mix a little Vermiculite with the top soil of the seed compost as it prevents it from drying out so quickly and also encourages the tiny seedlings to root better. Sprinkle the seed lightly on top of the soil and do not press down, or cover with more soil. I like to cover the pans with a piece of glass until germination takes place, but I know many people say succulent seed should not be covered. It is up to the individual, but I do not advise you to keep the glass on too long after germination as succulent seedlings can damp off very quickly. A good preventative is Mr. Boarder's remedy of spraying at intervals with a weak solution of permanganate of potash. Succulents generally are much easier to grow from seed than cacti. In some cases they can be pricked out in two to three months. Last year I had very good results with *Gibbaeums*, *Titanopsis* and *Lithops* sown in April without bottom heat. They were pricked out at the end of July.

Do not be in too much of a hurry to water the *Euphorbias*. Wait until they show signs of growth. It is so easy to over water some of the choicer dwarf kinds. *E. splendens* should soon be showing its new leaves and flower buds. The gem of the genus is, in my opinion, *E. bupleurifolia*. It resembles a small brown fir cone, from the top of which comes a whorl of light green, lanceolate leaves during the summer months. Great care must be taken with the watering and a very open compost used. It is safer to double pot. When the leaves start to fade and drop in the autumn, that is the signal to cease watering. Keep quite dry until the following late spring when the new leaves start to grow again. I flowered it last year for the first time. Most of the *Euphorbias* are very susceptible to cold and to damp. Great care must be taken to ensure that they are well away from any stray drips. Many

people fear these plants as they are reputed to be poisonous. It is only the milky latex that is dangerous if allowed to enter a cut or scratch. There is no danger from being pricked by the thorns, although, in most cases, they are stiffer than the average cactus spine and, therefore, give more pain. Incidentally, it is quite easy to identify a spiny *Euphorbia* as a succulent and not a cactus as the spines rise straight out of the skin and have no cushion or areole as have all cacti.

Try to open the windows of the greenhouse as soon as possible in suitable weather. It is surprising how high the temperature rises with the early morning sunshine. Plenty of fresh air is the secret of good growing. Those people who grow their plants indoors should also let their plants have all the fresh air and sunshine possible. An ideal arrangement for the indoor grower is to have a stand specially built that can be lifted bodily out into the garden, or, in the case of flat dwellers, on to the balcony. They would be far more likely to flower too.

If you have not already done so, I should re-pot your *Stapelias* and take out all the old growth. This wants doing every year. They never flower on the old shoots. They make a tremendous amount of roots and, by taking out the unwanted growth, you make more room in the pot for the roots of the current flowering stock. If you should see any of the dreaded black spot, cut it out at once, even if it means destroying the greater part of the plant. There is no other known cure. *Stapelias* are known as the Carrion Flowers and, in most cases, have a very obnoxious odour. They are pollinated by the bluebottle or horsefly which lays its eggs in the heart of the flower, believing it to be a piece of meat in the advanced stages of decay. These plants are not recommended for room culture for various reasons as stated, but for those people with a greenhouse well away from the house, the sheer beauty of the flowers are worth enduring the other drawbacks. *S. hirsuta* resembles a beautiful pink fluffy powder puff. *S. gigantea* produces flowers over twelve inches across. The bud before opening reaches the size of a breakfast cup.

Last year I planted out in the rockery a few very small cuttings of the common shrubby *Mesembryanthemum roseum*. I was astonished to see how quickly it grew into fine stocky clumps and it flowered abundantly. This particular part of the garden was not only in the shade, but in a low part of the ground that is always very damp. This proved to me that it is not only the seaside towns, with their brilliant sunshine, that can achieve such a riot of colour, but that the average front or back garden could also produce some fine results. One good sized plant kept as stock through the winter could provide a whole border for the following year.

If your *Haworthias* have made a whole lot of offshoots round the base, I should take some of them off, so that the central growth can be encouraged to grow to a better size. Some of the more prolific kinds, such as *H. minima*, *H. pilifera*, *H. planifolia*, etc., often look better if allowed to become a potful.

Now is the time to start thinking about the Summer Show. As soon as you receive your schedule, take it out into the greenhouse and try to select the plants you would like to enter. Have a look to see if they need re-potting, if so, now is the time to do it. They will have a chance to get nicely settled down and will stand the journey to the show far better than a freshly potted plant that very often gets shaken out of its pot during transport. Those who have handled your plants, or the poor driver of the vehicle who took them, always gets the blame when it can often be traced to last minute potting up. Put a little chalk mark on each pot you are hoping to show and then they will be the ones that get the extra special bit of care. It is a great thrill to see your pet plant standing there on the show stand for everyone to see and admire. It is right that we should share the beauties of our plants with fellow members and what better way to do it than to bring them along to the show, even if it does mean a slightly uncomfortable journey on the train or coach with a rather heavy box or basket. What a reward is waiting when the judge comes along and says, "What a beautiful plant and how well grown." That makes up for all the trouble you have been put to.

Please note that the meeting scheduled for July 27th has had to be amended to July 13th.

Mr. E. Lamb of W. T. Neale & Co. Ltd., Franklin Road, Worthing, the publishers of "Neale's Photographic Plates," has been kind enough to present to the Society sets of five transparencies in each set, in colour, of the same size as Kodachromes which can be used with projectors. There is also a viewer for use with the transparencies. Each set costs 16/6, viewers 13/-.

RICHARD BRADLEY AND HIS "HISTORY OF SUCCULENT PLANTS" (1716—1727)

By G. D. ROWLEY

Richard Bradley has been the subject of many biographical sketches, some favourable, some not so favourable, and no attempt will be made to rival them here. As a writer on gardening, husbandry and agriculture in the early eighteenth century he produced so many books and pamphlets that no-one has yet succeeded in compiling a complete catalogue of them, or unravelling the originals from the pirated editions. His claim to remembrance rests on versatility and enterprise rather than personal genius. Bradley was no genius, or even exceptionally gifted. Yet almost by accident he managed to get himself remembered as a pioneer in many ways.

The subject of this review is the first book devoted entirely to succulent plants. Bradley also wrote the first general account of their cultivation, including it as Chapter V of his "New Improvements of Planting and Gardening."¹ This book is better known for its account of the generation of plants, wherein is found the first record of a man-made plant hybrid (Thomas Fairchild's famous *Dianthus* cross) together with Bradley's own proof of the rôle of pollen in fertilisation by showing that a Tulip could set no seed when its stamens are removed. It was Bradley, too, who grafted a variegated *Jasmine* on to a green stock and noticed that the latter also became variegated: the earliest record of the transmission of a virus by grafting. He published the first botanical dictionary, and was a pioneer in horticultural journalism, producing a monthly periodical on husbandry between 1721-2.² His definition of succulents as "plants as are not capable of an hortus siccus" (herbarium) is no less apt than many subsequent definitions, and the name "Fig Marigold," invented by him for shrubby and annual *Ficoidaceae*, is still in use in England. His career as first Professor of Botany at Cambridge was no less unique: there is an oft-quoted (though inaccurate) saying that he obtained the Chair by fraud and lost it by incompetence. Actually it was his death in 1732 that abruptly terminated the appointment. And we cannot close the catalogue of his less creditable achievements without reference to the famous translation of the works of Xenophon—a remarkable linguistic accomplishment for one who, we are assured on good authority, couldn't read a word of Greek! Ghost-writing, it seems, is no modern innovation.

WRITINGS ON SUCCULENTS

Succulents were amongst Bradley's earliest loves, and his debut in the literature was an advertisement in 1710 for the *Historia Plantarum Succulentarum*. It was, however, six years before publication commenced, and this is how Haworth, writing 62 years after Bradley's death, pays him tribute :-³

"In the days of Bradley, succulent plants, by the beauty and splendour of their various coloured flowers; by their numbers and variety; by their singularity, oddness and spangled gaiety; and by the great facility accompanying their cultivation, gained the admiration of most, and they won the esteem of that celebrated writer so much, that he undertook a work which he entitled, '*Historia Plantarum Succulentarum*,' five decads only of which he lived to finish; the plates whereof are so characteristic, that the premature death of their author, is to this day at once regretted and felt by the Botanical world. . . ."

"Those five decads were published at different periods in quarto, between the years 1716 and 1727, and are now become so extremely scarce, that few have been fortunate enough to see, much less possess them of late."

"Bradley I think is the only one, who wrote any book exclusively on succulent plants; on which account, I incline to inscribe and dedicate these OBSERVATIONS on a completely succulent family of plants to his memory. . . ."

Bradley published no other book on succulents that has survived, but he makes passing references to them in the "New Improvements" and the "Dictionarium Botanicum," and also in his "Philosophical Account of the Works of Nature" (1721), where there is a plate of three cacti: *Cereus hexagonus* and *Melocactus communis* from the same originals as the larger plates of the *Historia*, plus a new picture of *Opuntia ficus-indica* which is of interest in showing for the first time the distinction between stems and true leaves. Mention should also be made of the account of *Agave* and *Cereus* that was appended to J. Cowell's "The Curious and Profitable Gardener" (1730)⁴ and which Pritzel in 1872 credits to Bradley's pen. Piracy of one man's writings by another was no less common then than now, and it is often impossible to decide the authorship of such early publications.

BIBLIOGRAPHIC DETAILS

The five decads of the "Historia" each figure 10 succulents, so that a complete copy illustrates 50 plants on 49 plates, figs. 26 and 27 being on one plate. The work was reprinted whole in 1739, but without any attempt at correcting the many errors of the original issue. This second edition differs only in the date on the frontispiece, and the remarks that follow are all based on copies of the first edition.

The book as it reached the public was unfortunately marred by errors of plate numbering and binding—errors which were to lead to much confusion among later writers who attempted to pin names to Bradley's species. Ideally, each of the plates (which are numbered serially) faces the appropriate page of text, where a brief description is given in English and dog-Latin. In actual practice this is never so, and no two copies I have examined are alike. They appear to have been flung together by the binders with carefree abandon, plates being misplaced or reversed, bound sideways or even upside down, and most copies are cropped close, often with the headings cut into. Worse still, five of the plates were mis-numbered in the last two decades, and it is these transpositions which have led to confusion and often peculiar mistakes. For instance, contemporary colourists based their tints on the adjacent text rather than on live plants, and thus gave us a white "*Crassula coccinea*" and a *Crassula tetragona* with blooms of a "beautiful carmine colour," the plates 41 and 50 being switched in relation to the text. Even Haworth, who detected most of the Bradley misprints, failed to spot this one, and made a variety "*floribus albis*" of his *Larochea coccinea* for this botanical chimaera that never existed outside of an artist's studio! Such are the complications that can ensue from a simple typographical error.

The other transposition involves three plates and three pages of text. What should have been plate 34 was labelled 44; 44 was labelled 49 and 49, 34. Some at least of the later writers managed to unravel this teaser, so the confusion was less severe than it might have been. Whether or not Bradley's reactions on seeing the 1727 issues led to the premature end of the work without the promised index of synonyms we cannot say, but it would not be surprising! In an endeavour to clear up once and for all the sequence of pages and plates, I have compiled the following table, arranging the plates numerically and giving the relevant text pages together with the acceptable modern binomial and a selection of references to other identifications.

A few copies of Bradley's books were issued with the plates hand coloured; others have been coloured independently, and it is not easy to say which may be regarded as authentic. The copies I have seen at the British Museum and in Mr. Harle's library are fully coloured in bright realistic hues; that at Kew is partly coloured in paler washes.

IDENTIFICATION OF THE PLANTS

Mr. Wilfred Blunt views Bradley's illustrations with the stern eye of the art critic rather than the gentle affection of the botanist Haworth. He says :-⁵

"Bradley made his own drawings for his *History of Succulent Plants*, a work whose appearance was long delayed because 'the Spirit of Botany was not powerful enough to pay the Expence of Engraving the Copper-plates.' The Spirit eventually engaged the services of a very second-rate engraver. But the work is of importance botanically, and its figures are cited by later authors."

But even if we must admit that Bradley was no equal to Redouté and Salm-Dyck, the majority of his succulents are at once recognisable from the plates alone, and there can be no doubt that they were drawn by someone acquainted with living plants. In cases of doubt, additional help can sometimes be had from notes in the other Bradley books referred to above. A. J. Janse has pointed out that Bradley's plate 28 (*Euphorbia neriiifolia*) is merely a copy from Commelin 1703, however.

Forty of the plates are cited by Linnaeus, and at least two more can be referred to Linnaean names via citations of Boerhaave's descriptions. Haworth was quick to adopt and name most of the remainder, leaving only four which have, apparently, been overlooked ever since. Of these, failure to cite the striking *Agave americana* of plate 11 is rather surprising. Plate 2 is, I am sure, merely a badly-grown *Selenicereus grandiflorus*, although Backeberg suggests that it could be *Leptocereus (L. leonii Br. & R. for example)*. However, this would demand a much earlier date of introduction for *Leptocereus* than is usually given. For the same reason I prefer Marshall's diagnosis of *Pilocereus royenii* for plate 12, although a small but aged *P. palmeri* in the Cambridge Botanic Gardens, with its apical tuft of hairs and grey, glaucous stem closely matches this illustration. Finally there is the *Ruschia* of plate 46 which is quite distinct from the other two *Ruschias* (plates 26, 27). The same plant is common in English gardens under various names: I have had it as *Mesembryanthemum callifera*, *M. laxipetala* and *M. nonimpressa*. Of these I take the first name as the closest approximation.

(To be continued)

Mr. Lex Fuaux, Arden Crescent, Rosanna, Victoria, Australia, is the proprietor and editor of "Fuaux Herbarium Bulletin." It is very well written and contains a considerable amount of information interesting to all cacti collectors. Subscription 10/- per annum.

ESSAYS FOR THE OPTIMIST

I—WITHOUT A GREENHOUSE

By E. B. CHAMPKIN

They grow naturally half-hidden in the stony dust of the Karroo with camouflage directed, it might seem, solely against the marauding botanist. The service of man is not among their purposes. But, as often, the reticent is discovered, then prized, so that now, as 'specimens' in the other hemisphere, they change their bodies with the same automatic precision without the bright heat and punctual rain of home.

In London, surely the city least congenial to them, they congregate on my glass shelves, built across a large window facing south-east: not an ideal situation for these peculiar 'living stones' and mimicry-plants from South Africa, nor for the exotic succulents and cacti near them whose share of the sunlight is reduced by the summer haze and winter fog. I cannot pretend to know why they grow regularly and well, nor to account for the flowers that come and go. It may be that the certain minor rituals described below offset the tremendous odds brought against them by human interests. They are overcrowded in the dry atmosphere of central heating, given an obscured view in the wrong direction, water from the tap and the easiest soil mixture in which they will all grow. In addition, there is sympathetic but misguided 'dusting' by third parties and much else that might persuade an amateur less hopeful or more textbook-minded to forego the struggle in favour of parachute-jumping or farming silver foxes where, by comparison, success would be certain.

The townsman without a greenhouse or cold frame or, indeed, other than very limited time to look after plants, may be surprised to know what can be done with the least trouble at the greatest disadvantage. Many like him have been discouraged before on being directed in a manual to add 'one-third of builder's rubble and a pinch of bone-meal' and finding neither commodity in the larder or at the chemist's. Others may have diverted their savings to television on being unable to differentiate between humus, loam, leaf-mould and just plain earth, and reflecting that none of these may be bought in the length of Oxford Street, though doubtless there exist places in the world with a surplus. And there may be some who scorn what they suppose is an ephemeral 'craze.' But it is not that, for the cultivation of succulents derives, with periods of obscurity, from the age of Capability Brown when many of them were grown without what was termed 'genial heat.' "Of so kindly a nature are these manageable plants," wrote Haworth in 1794 of the genus *mesembrianthemum*. The fanatical fury which has attended their cultivation in Germany (where the cactus-window originated) and their wide popularity in Holland and Scandinavia are well-known. Those of an analytical cast of mind might hold that cacti shapes have an intellectual appeal with their 'wiry-bounding line' (Blake) rather than a romantic one as have most annual flowers without clear definition or outline. Certainly no-one has made a bouquet of cacti. Whatever the reason, their present popularity cannot be denied, and it shews no sign of falling off though it may not survive the renewal of interest in the Victorians, who preferred the genteel aspidistra with its indifference to tobacco-ash and carpet-sweepings and partiality for the 'best' room.

IN THE RIGHT PLACE

I think it essential that a collection which stands in a town house or flat should be conceived as an integral part of the decorative scheme. Nothing looks worse than a collection of odd pots in odd saucers in an odd window-sill. It is like keeping a cat in a bathroom. In the conditions I have described, cacti and succulents look their best and grow well in a large and, if possible, southward facing window away from a radiator—a window on a stair, for example, with two or more glass shelves erected across its breadth. The shelves, resting on brackets at each end, require, unless made of toughened glass, a central support of plywood, the shape of which I leave to the reader's imagination and its construction, perhaps, to his son. What is important is that it should still be easy to open or close the window when the shelves are in position, whether the window opens outward or raises. Here, then, is a place, as near to the glass as possible, where the collection may be impressive but not dominating.

Contrasting plants are best (since such limited cultivation must satisfy more than purely botanical requirements). Where they are of good size, one specimen of each of the basic 'shapes' will look better than a number of the same 'vertical features' or spheroids or rosettes. Examples of these are given below all of which will do well in this special environment.

POTS, SOIL AND WATER

The most laborious and essential attention is the annual re-potting. The soil 'works out' much more quickly in a room, due largely to more frequent watering, and new earth must be provided in a clean pot, larger by one

size than before. The latter must have been soaked and scrubbed, otherwise it will soon shew a white deposit. I am too busy elsewhere to re-pot at the best time in April or May and have to do this when the plants are dormant, or going to rest, a proceeding which is certain to shock the maniac dedicated to the last sacrifice, and may incur the censure of the fastidious grower who labours under no *force majeure*.

As for soil, there are well-known ideal mixtures, but for me the easiest to mix that, without variation, gives good results, is John Innes potting compost and silver sand in the proportion by weight of four to one respectively. The addition of porous matter as a means of retaining moisture and passing nutrient to the roots is justly recommended by our luckier comrades with their heaps of builder's rubble ; yet no great harm is done by allowing the roots to seek the side of the pot with the same effect. As much fresh air should reach plant *and roots* as possible, and, in the arrangement described above, this can be done by opening the window whenever convenient throughout the summer and by disturbing any caked top-soil whenever it is noticed.

Expert advice on watering usually includes so many *caveats* that the beginner is left with hardly one positive direction. But I doubt if he will go wrong if he follows the method given below throughout the growing period, i.e., April to the end of September except (of those plants named below) with *Zygocactus truncatus* and all species of *Lithops* and *Pleiospilos*. As stated, a house-grown plant requires, in its drier atmosphere, more frequent watering than if it were 'under glass' or in the open. A pot that has been long in use tends to convert all water it receives into brine on account of the accumulation of salts left in the porous ware from previous watering after the moisture has evaporated. This is another reason for providing new soil and a fresh pot each year. It will be enough if, whenever the earth has dried out, the pots are stood in half their depth of water until the surface is damp, and this method avoids a white ring forming around the inside of the pot and on the stem of the plant. It is very important to ensure good drainage with plenty of small crocks at the bottom of the pot.

START THE EASY WAY

Obviously it is easier to start a collection with a few medium-sized plants than by raising from seed, although the latter method is cheaper and ultimately more satisfying. Just as a collection can be maintained in a room, so can seeds be germinated and the seedlings raised in the same room without any special device. But this is a subject for later discourse. Meanwhile, I have named in the short list given below only plants which are being offered for sale now and which will do well in a window without special attention.

THESE WILL GROW WELL

Stemless *mesembryanthea* have caused the greatest interest in the last few years, which is not surprising for a certain excitement attends their cultivation and the strange renewal of their bodies as readers of Dr. Schwantes' monograph, first published in this Journal, will know. Of the numerous kinds, I suggest, to begin with, available species of *Lithops* and *Pleiospilos*. The former are numerous and colourful, and a simple choice might be *L. turbiniformis* and *L. lactea*. *Pleiospilos bolusii* or *P. compactus* are not hard to maintain if the watering direction is strictly observed. *P. nelii* is often suggested, but I have not seen it for sale. Some *Argyroderma* will complete this nucleus of 'stone' plants. For watering, a bold rule is that *Lithops* and *Argyroderma* should rest from December to early May, in which period the new body will burst through the old absorbing its moisture in the process. It is axiomatic that watering should not begin until the old body has withered completely. Water *Pleiospilos* from mid-June to December. These and others of the stemless variety stand on the top shelf in my arrangement where they receive most light. It happens that for the most part they grew there from seed. They are placed in miniature landscapes in unglazed earthenware dishes with light grit, sand or limestone chippings on the surface. A small single specimen in a pot rarely looks its best, even when in flower, and seems an exiled, isolated thing. Perhaps this is because, unlike cacti and other succulents, its size is never proportional to any except the smallest pot which is useless because it dries out quickly and the soil becomes exhausted soon. No casualties result from the freer space of these small gardens as long as the resting periods of the plants are not vastly different, as, for example, with *Conophytum* and *Lithops*. The former is not suggested at this stage and should be attempted after experience with *Lithops*.

And now, for the reason that this article describes special conditions which demand it, I shall differentiate other suggestions into 'shapes' which form the visual, if not the botanical, grouping.

Of the vertical shape with pads, *Opuntia (ficus indica, vulgaris, robusta)* are very easy and fast growing. An *O. ficus indica* acquired in 1950 is 5 ft. high, adds three 7-inch pads each summer and aspires to immortality ; but always needs a bigger and more impracticable pot and strong bamboo stakes. While not soliciting envy for such a monstrosity, which stands sentinel in another room, there is no doubt that the clean, sharp definition of smaller *Opuntia*, *O. microdasys* for example, provides the indispensable shape in the collection.

(To be continued)

DWARF OPUNTIAS

By G. G. GREEN

Now that most of us are busy with the welcome work that needs doing in the greenhouse, there is little time to spare in deciding what to grow this year or what to throw out, or in trying to remember all the things one meant to do when the time came along.

The more tidy ones amongst us will have made notes throughout last season and the winter months, on what progress certain plants have made ; which of them need re-potting for some reason or other ; noted the warm and cold parts of the greenhouse and which plants have liked or disliked their positions. Some may need more light and others may have had too much.

These and many other problems and experiments that were made during the last year will have to be decided now in order that the coming growing season is not upon us before we are ready.

Pots and composts should have been made ready during the winter months and those plants we have marked for re-potting will either have been done or are ready for this operation.

Where a certain amount of heat can be maintained seed sowing may have started during February, though I believe nothing is to be gained by sowing before the end of March. Though the heating apparatus may be fool proof and very reliable, March weather is so undependable that sudden drops of temperature during the night can be expected, and the effect on seedlings half germinated can be fatal. Seed sown at the end of March seem to grow on without hindrance and soon catch up with earlier ones.

During all this activity, many plants have been in bloom. Succeeding the *Zygocactus*, which still have an odd flower or two, and the larger *Aloes*, have been the *Schlumbergera* with its vivid orange blooms, *Rhipsalis* and *Rhipsalidopsis*, and now the rat-tail, *Aporocactus flagelliformis*. Some *Epiphyllums* are already bursting into flower and even *Notocactus* and *Rebutias* are full of buds, whilst quite a few of the *Mammillarias* such as *elongata*, *erythroperma* and *bombycina* are showing colour. All this gives us a pleasant reminder of the days ahead.

There are then, many problems and questions that need answering regarding the past year's experience, and the future planning of one's collection, though time alone and the study of past editions of this Journal will iron most out. In the small collection where space is very limited, many of the tall growing species of Cacti are unsuitable as they take up far too much valuable room, yet many collectors like to have a representative collection of as many genera as possible. In this respect, the *Opuntias* have often been discarded because of the robust growth and size that they soon attain under good cultivation. There is also the difficulty of getting many species to flower before they reach a size too unwieldy for the average greenhouse or house window, though this is a matter of the proper choosing of suitable species.

There are, however, a great many *Opuntias* that are very low growing, small in structure but profuse in flowering under good cultivation. Most are species mainly from the sub genus *Cylindropuntia* with one or two from *Platyopuntia*. These are extremely attractive plants that may be grown in shallow seed pans or half pots, attaining a maximum height of six inches or so amongst the tallest, and forming attractive cushions in the lower growing types. Some of the most beautiful spine arrangements and body constructions are to be found among the species in this group, and as most are easy to grow, a very interesting collection can be formed.

The flowers, for the most part, are delicate and brightly coloured, fairly large and profusely borne, lasting for long periods and followed by bright coloured fruits. The stems or joints are usually short under cultivation, cylindrical, either smooth or warty and highly coloured in greens and browns or reds. In the *Platyopuntias* they form very small pads closely resembling the larger species.

All those described here like full sunshine or as much light as possible in order that the stems remain dwarf and so that flowers are encouraged to form, but most will grow in rather shady places such as house windows that do not face south. In these cases, however, flowers are not so abundant though the plants are so attractive that they are still well worth growing despite this.

As for soil, any good compost will do if it is porous or gritty with either limestone in some form, or crushed bricks. With these small growing species, the essential condition of the soil is its porosity, and if this is combined with a highly nourishing composition the plants do not need re-potting so often. Round pans are best for the *Cylindropuntias* as these enable a stronger root system to develop, which means a healthier and more attractive plant.

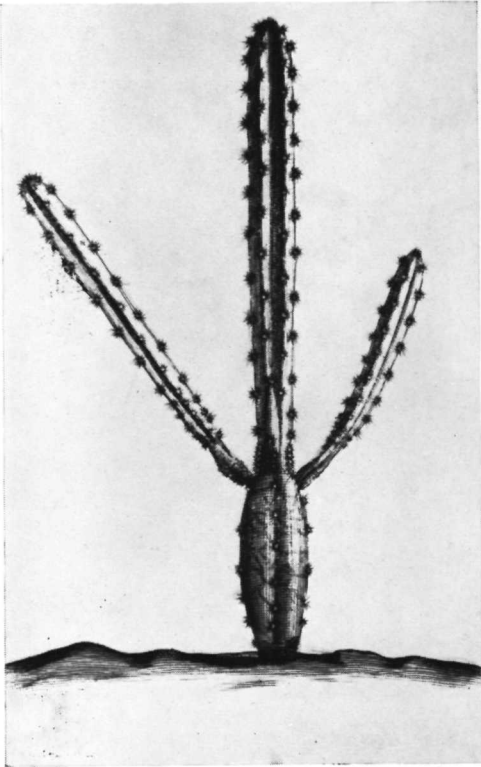


Plate 2. A misshapen *Selenicereus grandiflorus* showing effects of bad cultivation.

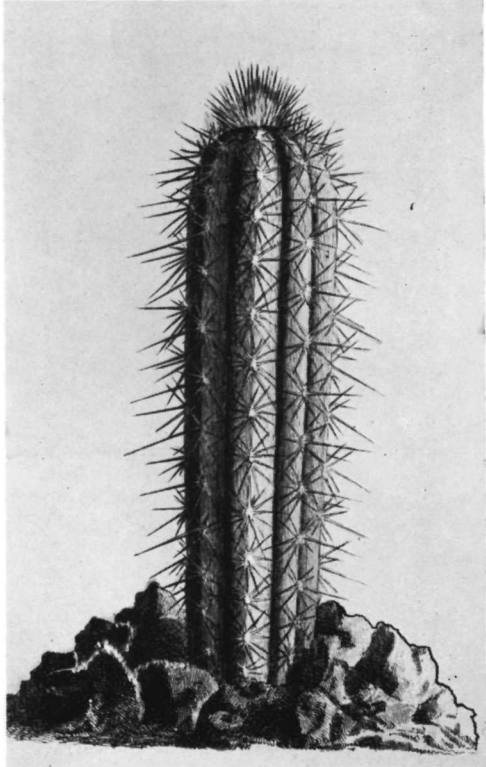


Plate 12. *Pilocereus royenii*, or perhaps *P. palmeri*.

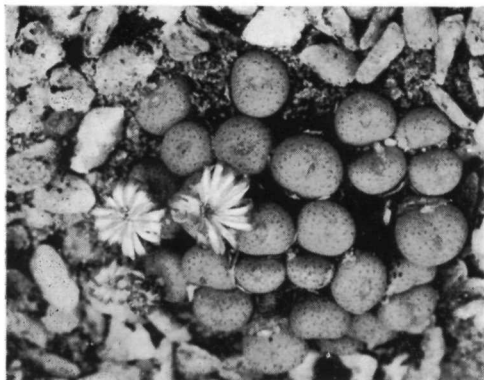


Plate 20. Named *Mesembryanthemum graniforme* by Haworth, but certainly not matched by any living plant since.

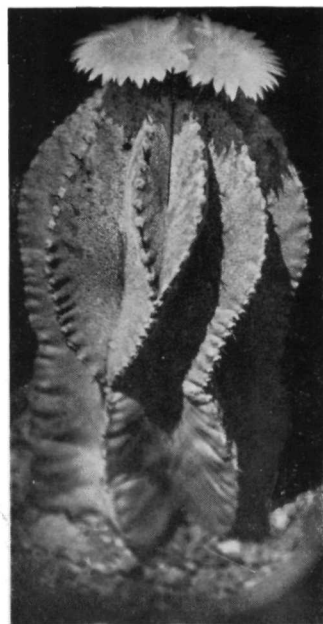


Plate 46. A *Ruschia*, probably *R. callifera*.

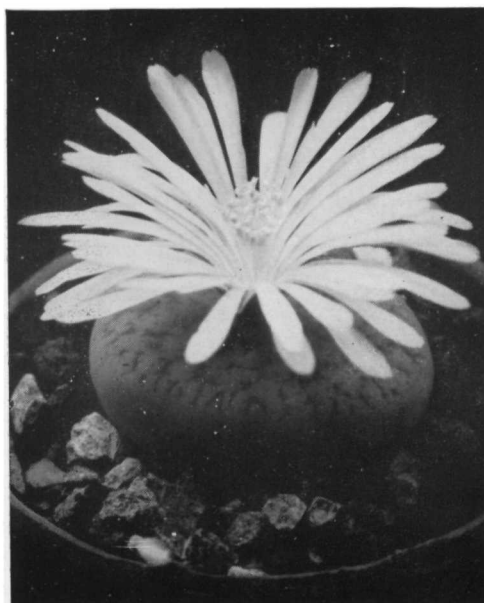
Four drawings to illustrate Mr. Rowley's article.

*Conophytum praegratum* Tisch

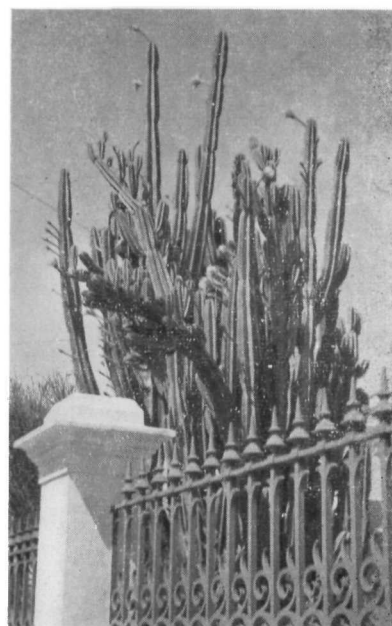
Dr. A. Tischer

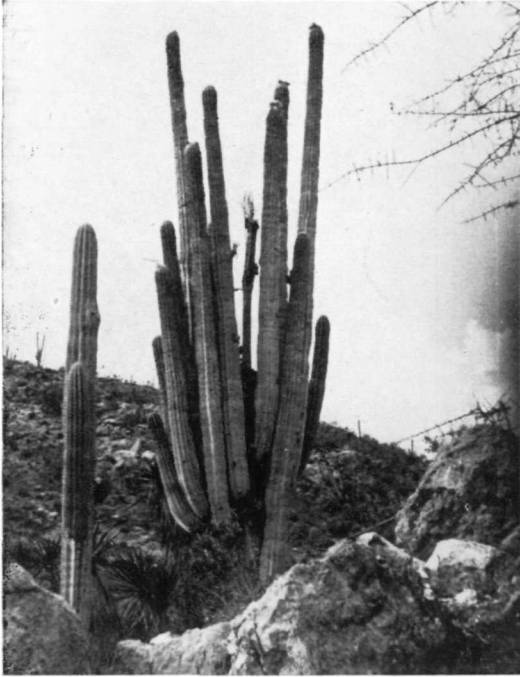
*Astrophytum myriostigma*

D. Collings

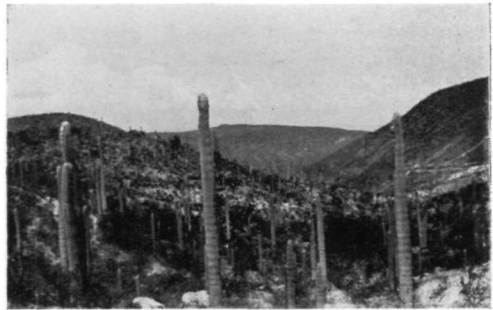
*Lithops alpina*

W. Beeson

*Cereus peruvianus* in Cape Town H. Hall



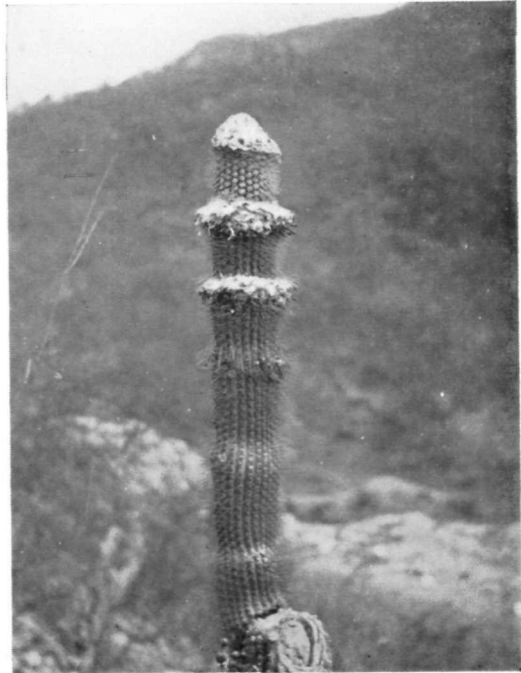
Pachycereus columna-trajana, Puebla



Cephalocereus hoppenstedtii, Puebla.



Beaucarnia species with Howard Gates, Puebla.



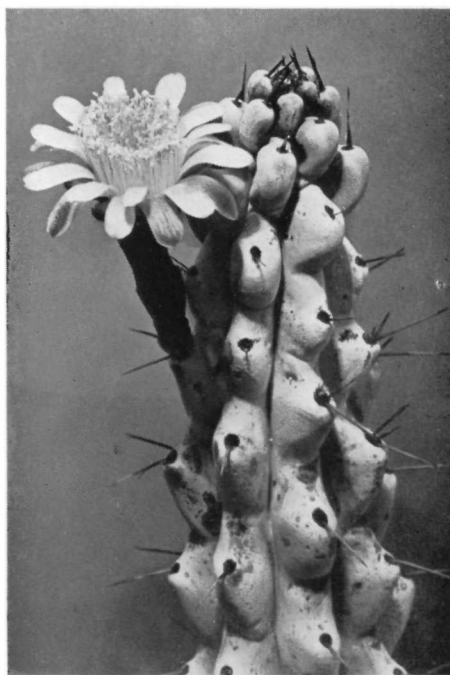
Cephalocereus (Neodawsonia) apicephalium, Oaxaca.

Four photographs by Howard E. Gates.

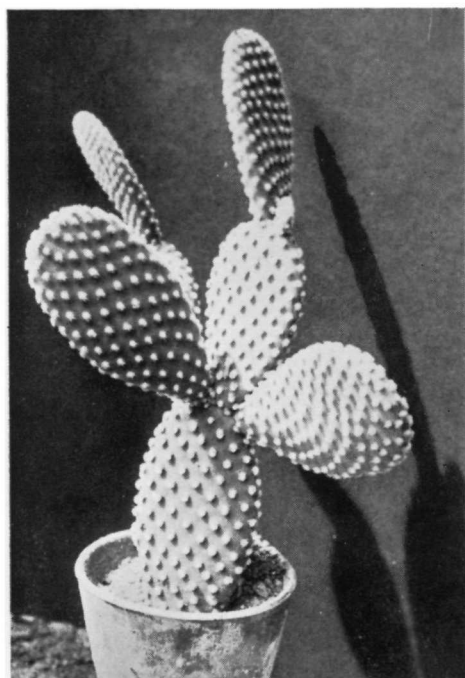
*Euarthrocerus microsphaericus*

L. Fiaux

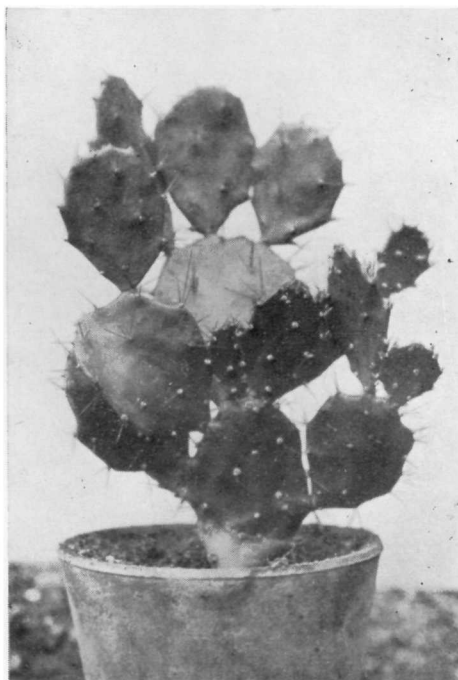
These two illustrate the fine work by
Mr. L. Fiaux as mentioned in this Journal.

*Lemaireocereus beneckeii*

L. Fiaux

*Opuntia microdasys minima*

G. G. Green

*Opuntia brasiliensis*

G. G. Green

During the summer months, say from June to September, stronger and more colourful growth will be obtained if the plants are sunk in gravel, sand or ashes in cold frames where the lights can be raised all day and a few inches at night. This method of cultivation is ideal, as the constant moisture at the base, and fresh air always circulating is just what the plants need, but, of course, it is not always possible to have such frames, especially if the collection has to be housed in the window sill of, say, a flat, or where there is no garden.

Window sill plants will benefit greatly if the windows are opened during the summer days so that fresh air can get to the plants, but remember to water regularly by immersing the whole pot in water so that the soil is really soaked.

Opuntia brasiliensis, from S. America, is probably the best known of the smaller *Opuntias* with its rather cylindrical stems and thin, oval, pale green joints about the size of a penny. These joints or pads soon fall off if the plant is allowed to get too dry at the roots, so continuous moisture is advisable throughout the whole of spring and summer. The pale yellow flowers with their five golden haired petals are very dainty and almost transparent.

In the genus *Cylindropuntia*, I have selected a few of those I consider to be the easiest to grow, and which are the most likely to be obtainable at the present time.

O. spgazzinii has thin, cylindrical, shining green branches covered in small glochids, which drop off at the lightest touch. The plants, however, look extremely attractive when in flower, as well as after, when the bright red fruits, which follow, are themselves covered with new joints that spring from the areoles on the berries.

O. salmiana is very similar to the above, but grows smaller with highly coloured branches, shining smooth and with yellow spines at the areoles. The flowers are pale pink to red in colour, followed again by red fruits.

O. weingartiana and *O. albisetacens* are two very beautiful plants when grown well. They are low growing with cylindrical shining green joints and most attractive spines. These are very long and flexible, more like bristles than spines, red coloured in the first, and white in the second species. The areoles and glochids are very white and large and the whole appearance is extremely beautiful. When grafted on *Selenicereus* or *Opuntia*, very handsome specimens can be obtained in a year or so.

O. bulbispina is a curious looking species with smooth, light green oval stems, thick like potatoes, and spines that fatten out at the base. The orange yellow flowers are large and striking.

O. corrugata is a very slow growing plant with wrinkled oval joints. The white spines spring from deep yellow glochids with, sometimes, large brown spines on the new growth. The reddish yellow flowers are produced freely if full sunshine has been enjoyed by the plants, and these are followed by the prickly, red fruits.

A rather different and difficult plant to grow on its own roots, *O. clavarioides* is most interesting on account of the curious shapes in which the joints grow. These are greyish brown and scale-like, adapting various forms such as cylindrical, conical, or as fingers joined to a thickened base. The name "Niggers fingers" has been given to the cristate form on account of this resemblance to the human hand. The plants do not like too much sun and grow better when grafted on a robust stock.

A beautiful plant when in flower is *O. versaffeltii* which has thin, soft, warty stems, dark green to brown in colour, and has leaves that persist like those of *subulata* or *cylindrica*. These are green at first, but turn red purple as they ripen in the sun, greatly enhancing the appearance. Spines are few, white and slender, and the flowers are orange red, large and beautiful.

O. sphaerica is much like *O. corrugata* in appearance, though it is of a more erect growing habit, but it has the same white spine formation, the flowers being purple red.

The familiar *microdasys* group has a few very tiny species, or varieties, that resemble the larger sorts in every detail. Two varieties *O. microdasys minima* with golden yellow glochids, and *O. rufida minima* with rich red glochids are very handsome. They are very hardy and soon grow into compact clumps of many branched stems. There are many other species not mentioned here that are equally attractive and easy to grow, and for anyone with the interest could prove as fascinating to collect as other Cacti.

Points will be given at each meeting for "Plants for Table Show" (see membership cards), only one plant is required. At the end of the season the winner, second and third will receive proportions of £2 donated by the Editor to encourage members to bring plants to the meetings.

MORE ABOUT MEXICO—*contd.*

By HOWARD E. GATES

In Tepic we found a new motel with pleasant accommodations facing a patio. On one wall of the patio was an exquisite shrine backed by a tile design. We made a side trip to the sea at Miramar over the partially constructed roadbed of a new highway via Jalcocotan. The farmers were busy clearing the hillsides in preparation for banana planting. The building of good roads immediately results in other forms of progress even in the byways of Mexico. Towards the coast, we passed through a dense belt of coconuts palm which the natives call the oil palm. These palms were often left standing when the ground was cleared for planting. The object of this rough side trip was to re-locate a stand of fern trees that Dr. Dawson found late in 1946. These were the only tree ferns known to grow on the Mexican west coast. When we finally arrived after travelling some beastly roads, we found that the clearing of land for agricultural purposes had exterminated the colony. So we do not know whether another species has disappeared from the face of the earth or not. We passed many stands of slender, tall bamboo and noted several species of *Philodendron* and *Nephtytis*, but not much in the way of cactus except *Acanthocereus* which are nearly always along the Mexican coast. There were numerous highly coloured birds in various kinds and sizes.

Between San Blas and the large beach hotels to the south, we found a crew laying paving stones. Mexican stone roads are always rough travelling, so we enquired as to why they were using stones instead of asphalt. We were told that it was much cheaper as the labourers picked up the stones from piles beside the road bed and hammered them into place for the equivalent of fifteen cents a square meter which is larger than a square yard. In Spanish colonial days San Blas was the chief port of the Pacific coast with a well made pack train road connecting it with Vera Cruz via Mexico City. Now aside from the resort hotels in the suburbs, it is a sleepy fisherman's village nestling under the giant coconut palms. Green coconuts were on sale and we found their milk a very refreshing drink.

The road north to Mazatlan was near the hills at the upper edge of the coastal plain. There were numerous savannas bearing a good stand of slender trunked fan palms. We drove off the highway on to a nice looking place to camp. However the mosquitoes and gnats were so thick, by the time we had a bite to eat, we were ready to take to the road for the several hours ride after dark to Mazatlan. We found lodgings in a twelve storey steel frame building that still was not completed though years have been spent in its construction. In the ground floor lobby we found a mason setting stone floor tile. This fellow told us that he was getting twelve pesos a day, equivalent to a dollar and a quarter, for this skilled work. Dr. Dawson left long before daylight, to make a boat trip to the islands off shore for collections of marine plants. He is one of the few marine algologists of the world and this trip helped him to complete a comprehensive collection of the algae, sea weeds to most of us, from the Mexican west coast.

Just outside of Mazatlan were good stands of *Pachycereus pecten-aboriginum* and some *Cephalocereus purpusii*. This is another of the slender, much branched *Cephalocereus* with the flattened fruits. Somewhat farther north, we found a few of the little known *Lemaireocereus martinezii*. This is a large much branched plant with a dark green, rather oily looking surface. The ribs were approximately nine, which is considerably less than in *Lemaireocereus thurberi* and the spines were darker. The fruits were immature but promised to develop into a spine covered *Pithaya* somewhat similar to *thurberi*.

At Culiacan we bade farewell to paved highways and began a rough ride through two hundred miles of thorn forest interspersed with farming communities. The road had been coated with rock and coarse gravel but seldom smoothed with a grader, so we were continually bouncing along. In places we were able to use the uncompleted road bed of the new highway. The grade for this road was built high and wide and was being surfaced with heavy layers of asphalt. When completed early in 1954, it will be better than any highway that we saw in all of Mexico.

At Los Mochis in the northern part of Sinaloa, we turned off over a gravelled road leading to Topolobampo. Here was a small range of hills with great arms of the bay running back between them. The small village with its pier and railroad terminus, is nine miles from the harbour entrance. The chief industry other than that of transportation was the large shrimp fishing and cannery project. As soon as the manager of the shrimp cannery learned of Dr. Dawson's desire to collect sea weeds at the mouth of the bay, he placed one of the company's landing barges at our disposal. So instead of spending two days there, all of Dr. Dawson's work was completed in one. Our return to Los Mochis was over a natural road that was much more comfortable than the gravelled road.

After leaving Los Mochis, we were soon deep in the thorn forest again. We found many *Pachycereus pecten-aboriginum*, *Lemaireocereus thurberi* and *Lophocereus schottii*. Both the *thurberi* and *schottii* were quite different from those we were familiar with in Lower California. There were fewer branches and they were both taller and more slender.

Twenty-two miles south of Navajoa, we again reached the pavement for an easier ride across Sonora than we

had across Sinaloa. Gradually the flora changed. Both *Pachycereus pringlei* and *Carnegia gigantea* began to appear. These are larger and more massive than the *P. pecten-aboriginum*. The small green parrots which had been with us in abundance as we crossed Sinaloa disappeared.

As we skirted the bay between Empalme and Guaymas, we were interested in an island hill that was forested with *Pachycereus* in contrast to the more barren mainland. In Guaymas, we visited with a research scientist employed by the shrimp fishing industry which is much alarmed at the recent falling off in the shrimp catch. Possibly this is the result of a vicious cycle set in motion by the action of man. Some of the islands in the Gulf of California are nesting places for large colonies of sea birds whose droppings fertilize the water. Native fishermen in dug out canoes visit these islands to secure the birds eggs for market. Upon arrival they smash every egg they can find to ensure that those collected a few days later are all fresh. Naturally this reduces the bird population which in turn reduces the fertilizer supply for the small floating vegetable and animal life forms collectively known as plankton. All forms of marine animal life depend upon a sufficient supply of plankton. The smaller fish and marine animals eat it and the larger fish eat the smaller ones and the birds live off of the fish, so one broken link in the cycle upsets everything.

Just north of Guaymas, we made a short side trip to San Carlos Bay, which snuggles back into the hills which are dominated by a higher peak tipped with twin volcanic cores, known locally as "The Goat's Tits." Overlooking the bay were large plants of *Ferocactus covillei*, *Mammillarias sheldonii*, *johnstonii*, and brightly coloured short spined *Echinocereus scopulorum*.

On the way northward to the border at Nogales, we saw scattered stands of *Carnegias*. The most interesting plant of the district occurred in colonies between Hermosillo and Guaymas. It is the very heavy *Fouquieria maddougallii* which makes much branched small trees to fifteen feet high with red flowers. It is much different from the slender branched *Ocotillos*.

Here in a few minutes of reading I have tried to compress the most interesting things of more than five thousand miles of travelling in Mexico. It took six weeks, but every day was interesting.

The End

REBUTIA SENILIS (BACKEBERG) AND ITS VARIETIES—*contd.*

By J. D. DONALD, B.Sc., A.R.I.C.

To distinguish *R. chrysacantha* from *R. senilis* v. *iseliniana* is very difficult if guided by the description given by Backeberg for *R. chrysacantha*, (Kaktus ABC p. 276/277), for it could apply equally well to that of the *senilis* variety, especially when the latter develops yellow spines as it does when grown slowly in full sun. The flowers of the two plants are very similar, and differ only in shade, *iseliniana* is full orange coloured whereas *chrysacantha* is reddish orange. When the two plants are grown side by side under identical conditions of soil, light, water, etc., one is struck by the very close similarity of their external appearance. Both plants are self-fertile, and it is quite possible that these plants are sufficiently related for *iseliniana* to be a variety of *chrysacantha* rather than of *senilis*, probably v. *kesselringiana* could also be included here. If on the other hand v.s *iseliniana* and *kesselringiana* are to be definitely diagnosed as varieties of *R. senilis*, then so must *R. chrysacantha*, e.g. as *R. senilis* v. *chrysacantha* !

The following two varieties of *R. senilis* have been very poorly characterised, and no valid diagnosis has been published.

Rebutia senilis v. *cana* (Backeberg n.n. ?)

This plant is attributed to Backeberg by Prof. J. Borg in 'Cacti,' 2nd Edit. 1951 (p. 233), and described as having dull white spines ! It is remarkable that Backeberg does not acknowledge this plant in his list given '20 years of Cactus Research' in the Cactus and Succulent Journal of America XXIII, p. 83, nor is the plant listed by Krainz in Sukkulantenkunde I, (p. 21), under the varieties of *R. senilis*.

Rebutia senilis v. *hyalacantha* (Backeberg 1932 n.n.)

This plant is merely listed as a nomen nudum in Der Kakteenfreund 1932 (p. 131). It is a large growing plant, with long white spines, glass-like (hyaline), standing out from the plant body, not adpressed and interlaced as with *R. senilis*. The flower is large, closely resembling that of *R. krainziana*, and self-fertile. It is certainly identical with *Rebutia wessneriana* (Bewerunge 1948) described in Sukkulantenkunde II 1948 (p. 24). The plant only superficially resembles *R. senilis*, the long (up to 20 mm) outstanding spines are unmistakable and characteristic.

Rebutia krainziana (Kesselring 1948), described in Sukkulantenkunde II (p. 23), is given as synonymous with *R. senilis* v. *brevisetata*, originally described in Kaktus ABC (p. 278) with Latin diagnosis on p. 416.

Rebutia senilis v. *brevisetata* (Backeberg 1935).

The plant shows little resemblance to *R. senilis* and it is difficult to see why Backeberg identified this plant with *R. senilis* from which it so markedly differs. The original description of the plant given by Backeberg in Kaktus

ABC, gives the spine lengths as up to 5-7 mm. long, whereas Kesselring describes the spines of *R. krainziana* as being only 1-2 mm. long, both authors indicate the pectinate and adpressed nature of the spines. The flower of Backeberg's plant is described as being similar to *R. senilis*, but only 30 mm. long and 25 mm. broad, whereas Kesselring's plant is 30 mm. long and 40 mm. broad. The colour descriptions given for both plants are identical, petals deep red with a violet sheen, yellowish towards the throat, also the receptacles of the plants are similar each with small brown-violet pointed, naked, scales. Backeberg did not describe the petal shape, but since the flower was described as similar to *R. senilis* it would be reasonable to expect it to be lanceolate. From photographs of Kesselring's plant given in *Sukkulentenkunde* II, the petal shape here would appear to be spatulate, with rounded and not pointed tips. *R. krainziana* is also described as being self-fertile, while we have no information for *R. senilis* v. *brevisetata*. The author has in his possession plants described as *R. turbinata* (Schuldt) and *R. krainziana* (Kesselring), admittedly all these plants are grafted, and this may account for some of the variations of spine length from that given in the original description. The plants bearing these names are identical, this agrees with Krainz's note in *Sukkulentenkunde* I (p. 22) that *R. turbinata* (Aut. ?) is probably identical with *Rebutia senilis* v. *brevisetata*. These plants have large flowers as is indicated for *R. krainziana*, or even larger being up to 50 mm. wide. The colours of the petals and receptacle and scales are also as described, but the petals are not spatulate, but definitely lanceolate with pointed tips. Their spines are as indicated for v. *brevisetata*, being pectinate, adpressed, mostly 2-3 mm. long and a few up to 5-7 mm. long. The plants are self-fertile, and appear to combine the characteristics described for both *R. krainziana* and *R. senilis* v. *brevisetata*. The plant has a most striking appearance and is probably one of the most beautiful of the *Rebutiae*, with its small snow white areoles situated on prominent tubercles strongly spiralled round the plant body. The radial spines are very short and white, while the centrals are a little longer and yellowish in colour, both types are adpressed to the plant body. The flowers spring mostly from the older areoles situated on the lower half of the plant, but by no means from the base of the plant typical for most *Eurebutiae*. The published descriptions of both plants agree, in so far as one can judge from the meagreness of the description given for var. *brevisetata*, except in the actual floral dimensions and lengths of the central spines.

The last validly described variety of *Rebutia senilis* is Backeberg's variety 'stuemariana.'

Rebutia senilis v. *stuemariana* (Backeberg 1935)

The first mention of this plant was in *Der Kakteenfreund* 1932 (p. 131) as a nomen nudum '*Rebutia stuemeri*' and also as the *senilis* variety 'stuemeri' but a valid description complete with Latin diagnosis did not appear until 1935 in *Kaktus ABC* (ps. 278 & 416) as *R. senilis* v. *stuemariana*. The published description is again very meagre, merely indicating the flower colour. The plant is identical with *R. senilis* in external appearance, the chief difference being in the somewhat larger flower (35 mm. long x 45 mm. broad), and the petal (scarlet) and throat (yellow to lilac) colours. The plants are possibly more robust in growth with a somewhat less dense spining, giving the whole plant a more coarse appearance than *R. senilis*.

The last described variety of *Rebutia senilis* is a 'horticultural freak.'

Rebutia senilis v. *semperflorens* (Poindexter 1939).

This plant is a sport, discovered by Poindexter, growing as an offset on a normal plant of *R. senilis*. Every areole on the plant body produces a flower bud, most of which abort (fail to develop) unless the sport is grafted, when normal flowers are produced. The plant is described with a photograph in the *Cactus and Succulent Journal of America* 1939, XI (p. 65-66), without a Latin diagnosis. It is not a monstrose or cristate form (these are known for *R. senilis* and cultivated), but it should be included with these forms as a horticultural variety only.

The main difficulty in the present study of *R. senilis* and its varieties, is that no fresh plants have been imported for many years from their natural habitat, and that many of the plants now available for study have been extensively hybridised and dispersed (perhaps unwittingly by commercial dealers) as the true species or variety. The study and characterisation of individual plants is not helped by the poor and frequently inadequate descriptions that are available for comparison of live material.

A very simple solution to the *senilis/xanthocarpa* problem would be to reduce *R. xanthocarpa* to a variety of *R. senilis* and reallocate all the *xanthocarpa* varieties to *R. senilis*. The differentia separating the two species are very weak, and would never be accepted by botanists as sufficient to warrant specific status for either if these plants belonged to any other family than the Cactaceae! Mr. Taylor Marshall, in fact, has already tentatively suggested that the *xanthocarpa* group should be combined with that of *senilis*, for the same reasons as outlined above. (See 'Cactus' 1948, 14, p. 30). This is certainly the neatest solution and one I would heartily endorse. Assuming this to be the correct answer, then *R. senilis* would have the following varieties :—

v. *aurescens* (Backeberg)

v. *citricarpa* (Backeberg) Marshall n.c.

v. *cana* (Backeberg n.n. ?)

v. *dasyphyssa* (Backeberg n.n.) Werdermann, Marshall n.c. (Backeberg n.n. 1937)

v. *elegans* (Backeberg) Marshall n.c.

continued on page 44

CONOPHYTUM PRAEGRATUM Tisch. spec. nov.

By Dr. A. TISCHER

(Translated by Mr. R. H. J. Ellen)

(*Euconophytum* Schwant. § *Wettsteinai* Schwant.)

Planta caespitosa; corpuscula piriformia, —18 mm. alta, supra visa circulata, —12 mm. diam.; apice \pm convexa, fissura impressa, subrhomboidea, 2—2.5 mm. longa, punctis viridibus cincta; glabra, levia, sordide griseo—vel olivato—viridia, punctis obscuris supra atque in parte superiore corpusculorum non crebris, punctis albis perminutis supra et latere dense notata; flores diurni; ovarium inclusum; calycis tubus 7—9 mm. longus, albus, —2 mm. latus, supra dilatus, segmentis 4, viridibus; corollae tubus —13 mm. longus, leviter compressus, supra ampliatus, inferne albus, superne luteo translucens, segmentis 28—30, spatulatis, 2—3 seriatis, —11 mm. longis, —1.5 mm. latis, roseis; stamina partim exserta, filamentis inferne albis, superne luteis, antheris luteis; stigmata 4, filamentosa, 1 mm. longa, luteo—viridescens, stylus —13 mm. longus; ovarium supra conico elevata, discus luteo-viridis, inconspicuus.

Habitat: Little Namaqualand, near Aneesfontein.

Type in the State Botanical Collection, Munich. *Mesemb.* No. 192.

Plant forming loose clumps; body pear shaped, —18 mm. high, 8—12 mm. in diameter, circular when viewed from above, top \pm convex and only slightly depressed at the cleft, oval to almost rhombic in outline, indistinctly covered with dark green dots, with a darker zone towards the cleft formed by converging dots; surface smooth, bare, ground colour grey-bluish-olive green; on the top and encroaching also on the upper part of the sides are a number of distinct and scattered dark green dots, not raised, between which are a large number of dense little white or greyish white dots formed by the guard cells near the cleft. Flower diurnal; tube 7—9 mm. long, a little depressed, hardly expanded at the top, transparent white, —2 mm. in diameter, with 4 segments, succulent, green, —3 mm. long; corolla 11—13 mm. long, hardly expanded at the top, a little depressed, white, upper part transparent yellow; 28—30 petals in 2—3 rows, —11 mm. long, 15 mm. wide, spatulate, tip notched or sharply rounded, pink magenta in colour, inner shorter and narrower; stamens numerous, rising from the bottom of the corolla, filaments white below and yellow above, anthers jutting from the upper part of the tube to just above it; 4 stigmas, filiform, —1.5 mm. long, yellow, on a style 10—13 mm. long; ovary —1.5 mm. in diameter, ovary wall inconspicuous, low, dark green.

Habitat: Little Namaqualand, near Aneesfontein.

In the colour and shape of its body, *C. praegratum* resembles *C. gratum* (N. E. Br.) N. E. Br. The body, however, is smaller and the cleft is mostly less depressed; the dark green markings—even round the cleft—are more distinct; other characteristics are the heavier markings near the cleft (easily recognisable in the photograph) and the particularly striking dense white marking between the dark dots on the upper side. The flower of *C. praegratum* is bigger, with a larger tube. Another characteristic of the flower of *C. gratum* is the darker magenta coloured flower segments which are always more firmly turned back and the tube juts out only a little from the plant body. Both species come from different places. The name *C. praegratum* was proposed on account of its resemblance to *C. gratum*.

C. praegratum was sent to me long before the war by Herr Herre, Stellenbosch and was, probably, collected by W. Triebner. It is easily propagated by cuttings and develops in a few years to a considerable clump. There are no particular difficulties in its cultivation. Our photograph shows a typical plant; the number of bodies has increased to over thirty since it was taken. *C. praegratum* is one of the more freely flowering *Conophyta* and it most delights the grower in August and the beginning of September with its magnificent magenta coloured flower.

The four parts comprising the first volume of our Journal, which has become so very rare, has become available. Best offer over £5 should be sent to G. B. Erskine, 12 Elliott Road, London, N.W.4.

Miss S. Mumford sends us the following from "Ladies Treasury," November, 1884! "The cactus will bear boiling water, but should be starved in the winter, and be kept in a nearly dark place, and in one temperature; on a staircase, not exposed to much light, is a good place for cactus plants."

REPORT OF THE COUNCIL, 1953

The Council has to report a further considerable increase in membership during the year. The Society now has a larger membership than ever before due to increased activities and the wide facilities it affords its members.

The Council suffered a severe loss by the passing of Mr. W. Denton on 8th April, 1953.

Mr. Clifford H. Rowland resigned from the Council during the year. Messrs. A. W. Heathcote and S. F. Milton were co-opted on the Council.

The monthly meetings at the Royal Horticultural Society's Hall were well attended and consideration may have to be given to finding larger accommodation for meetings. Interesting lectures and discussions were held and every endeavour made to cater for the novice and the "old hand." Suggestions for lectures and members' views will always be welcomed.

The standard of the two Shows held was excellent, and though it is the Society's desire to always put up worthy Shows for the general public at the Royal Horticultural Society Hall, the Council would like more of the members to show. With this end in view arrangements have been made to hold small Table Shows at our monthly meetings in 1954.

The Branches have continued to maintain interest and to encourage new members by holding local Shows of their own and in conjunction with other Horticultural societies. An additional Branch has been formed at North London and it is hoped that further Branches will be formed in the near future. It only needs one enthusiastic member to get started.

The Library still continues to serve a very useful service and books are in great demand. Several books have been added during the year and we wish to thank the donors for same. Any books or other literature on the subject passed to the Society would be greatly appreciated.

A considerable quantity of seed has been distributed to members during the year and we thank Mr. Boarder for his untiring efforts. We should also like to thank those who have so kindly given seed.

The annual trip to Mr. Kenneth Harle's Nursery on 21st June was again successful and we received the usual hospitality from Mr. Harle and his staff.

The Annual Dinner held on 24th October, followed by slides and an account of Mr. Howard Gates' collecting trip in Lower California, read by Mr. Shurly, gave those who attended an enjoyable evening.

The Journal, under the Editorship of Mr. E. Shurly, continues to be produced in a manner which compares more than favourably with any other publication of its type.

We thank all members for their continued support and trust they will endeavour to encourage others in our hobby.

REBUTIA SENILIS (BACKEBERG) AND ITS VARIETIES—continued from page 42

- v. iseliniana* (Krainz)
- v. kesselringiana* (Bewerunge)
- v. lilacino-rosea* (Backeberg)
- v. lutei-rosea* (Backeberg) Marshall n.c.
- v. pallidior* (Backeberg n.n.) Donald n.c.
- v. salmonea* (Backeberg) Marshall n.c.
- v. semperflorens* (Poindexter)
- v. stuemeri* (Backeberg) = *stuemeriana*
- v. xanthocarpa* (Backeberg) Marshall n.c.
- v. violaciflora* (Backeberg) n.n.
- and possibly *v. chrysacantha* (Backeberg) Donald n.c.
- v. hyalacantha* = *Rebutia wessneriana* (Bewerunge)
- v. breviseta* (Backeberg) Marshall n.c. = *Rebutia krainziana* (Kesselring)

The actual description and discussion as to the validity or otherwise of the *xanthocarpa* varieties now included with *Rebutia senilis*, will form part of a similar paper to this one, under the title '*Rebutia xanthocarpa*' and its 'Varieties,' to be published at a later date.

Report from the Study Group for the *Rebutiae* of the British Section of the I.O.S.

The End

THE CACTUS AND SUCCULENT SOCIETY OF GREAT BRITAIN

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Kettering Leader : choose the "water cactus" and not one of its many thousand deadly companions. Lithops grow among pebbles and looks so much like them that it might fool even the cacti expert.

Wolverhampton Express and Star : Some cacti have rather unpleasant characteristics. There is one type which is flesh eating.

Nottingham Guardian Journal : these odd looking plants are known as cacti, yet the authors tell us there is only one true cactus, the cactacepe.

Bournemouth Daily Echo : only recently have collectors formed themselves into an active movement.

Glasgow Herald : the pot should be filled one third full with drainage material. They will thrive in room temperatures from 60 to 70 degrees, but not in the 50 degrees area.

Western Evening Herald, Plymouth : one of the most fascinating of the succulents is the pebble flower, or "living stone." It looks for all the world like a pebble, then it will suddenly split open and produce a tiny flower like a gaily coloured umbrella.

Bury Times : the drier you can keep the air round them the better.

Paisley & Renfrew Gazette : the plants only require a teaspoonful of water each month in the summer.

Sydney Morning Herald, Australia : reported that Harrisia cactus, the new prickly pear threat in Queensland.

Mr. R. Hurlingman, Pieterlen, Switzerland, is the editor of "Cactus Contact" on behalf of Kakteenfreunde, Biel, Switzerland. Its purpose is to bring cacti enthusiasts together for information, exchange of plants, seeds, etc.

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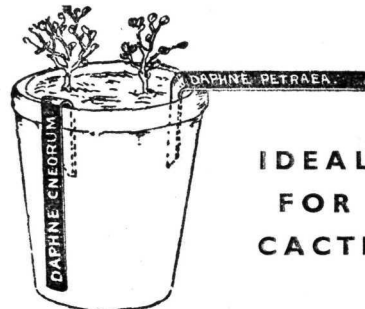
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THE
CACTUS
 AND SUCCULENT
JOURNAL
 OF GREAT BRITAIN

Established 1931

Vol. 16

JULY, 1954

No. 3

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SOCIETY NEWS

1954

July	13th	6.30 p.m.	S. J. Pullen : Succulents other than Cacti. <i>Plants for table Show</i> —Crassulas.
August	24th	7.0 p.m.	Dr. R. T. Craig. Coloured Kodachrome slides and lecture. (Dr. Craig's lecture and slides will be given in the Restaurant, R.H.S. Old Hall).
September	7th		Autumn Show.
		6.30 p.m.	Covent Garden Exchange Evening.
October	19th	6.30 p.m.	Mrs. M. Stillwell : Mimicry Plants. <i>Plants for table Show</i> —Mimicry Plants.

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EDITORIAL

Since the last issue of the Journal we have had our annual holiday and on this occasion we went to Spain. We made it a point to be near Mr. F. Riviere de Caralt's estate which is situated near Blanes, about forty miles north of Barcelona, on the Costa Brava.

Mr. Riviere has only been three years in attaining the really forward condition of his estate which is so evident now. We did not experience much of the usual fine weather experienced in Spain, but the sun and fresh air contribute much to his success. He has literally thousands of cacti and succulents, but we were struck particularly by his very fine collection of *Opuntias*. He has displayed them on sloping terraces, divided into the various sections and it is not until you can see such an extensive collection in surroundings to be found at Pinya de Rosa, Mr. Riviere's estate, that one realises what a beautiful plant an *Opuntia* is. Naturally, *Opuntias* grow to much bigger size there than in this country, but even more noticeable are the many hundreds of flowers and fruits that his plants produce. *Opuntias* and *Agaves* grow wild in Spain, as in the South of France and elsewhere, but these wild plants have not the same quality of those that are cultivated. The wild plants are marred by the mistaken enthusiasm of passing tourists who simply delight in disturbing other people's enjoyment by carving their own names on the pads and leaves of these plants. Norah Andrews and H. H. Finney, London, are permanently recorded in the grounds of Hotel Santa Cristina as vandals with complete disregard for other people's feelings.

It will be found that, in this issue, I have included the lecture by Mr. Boarder on Seed Raising, given by him to the Essex Branch. That the January, 1952 issue is out of print is largely due to his article on seed raising in that number, and so great is the demand it is considered to be of service to readers to have this sage advice from Mr. Boarder given once again.

We are to have the extreme honour of a visit from Dr. R. T. Craig, the famous author of "Mammillaria Handbook." Instead of the lecture by our Chairman, Mr. A. J. Edwards, on August 24th, Dr. Craig is going to give a lecture accompanied by Kodachromes illustrating cacti in their native habitats in U.S.A. deserts and in Mexico, also in gardens in California and Arizona. He will also, in his own words, "give a few of the trials and troubles of a collector in the field in the cactus country as well as some of the rewards of finding new material." The lecture will be given at 7 p.m. in the Restaurant at the Old R.H.S. Hall. This unique occasion is one that must not be missed and the Society extends an invitation to all cactus enthusiasts, even if they are not members of the Society.

CACTUS CULTURAL NOTES

By A. BOARDER

I am writing these notes early in May, and think that a short survey of my greenhouse may be of interest to members. Although it is fairly early in the season there have been many flowers out already especially on the *Mammillarias*. What a grand group they are and with their varied coloured spines, the fruits and flowers ; there is no group in my opinion which can equal them for beauty and interest. The first *Mams.* to flower were the *M. picta*, I have two and they have had several blooms for some weeks and have not finished yet. They were followed by *M. longiflora*, and a young seedling had seven flowers out at once. As the flowers are about two inches across and have a tube two inches long it can well be imagined how fine they looked. Once the middle of April arrived many more *Mams.*, were in flower including : *M. Viereckii*, *M. pilispina*, *M. lasiacantha denudata*, *M. pennispinosa*, *M. elegans* and varieties, *M. pygmaea*, *M. schelhasei*, *M. bravoae*, *M. pottsii*, *M. bombycina*, *M. zeilmanniana*, *M. elongata* and varieties, *M. gracilis*, *M. sanluisensis*, *M. magallini*, *M. bocasana* and a host of others.

The *M. pottsii* flowered for me for the first time and it is quite singular among *Mams.* The flowers were in a ring around the top of the plant and were a fine dark red. What was rather exceptional was that a very large stigma stood out well above the stamens and gave the flowers an unusual look. The *M. bocasana* has almost surpassed itself this season, there were well over a thousand buds showing at one time and when it reached the stage of opening the sight was one not easily forgotten. There are about sixty-six heads to the plant and the centre head alone had over forty flowers. All the others carried from twelve to twenty-four flowers and on a sunny day it was almost impossible to see the plant for flowers. I know that some members do not believe me when I say how many flowers this plant has had, and one prominent member of the Society never fails to say when he sees the plant that it is a pity that when a plant gets to this size the centre always dies and the plant rots. As he has been saying this for some years it does seem rather ridiculous. But I have found there are always some people ever ready to decry the efforts of others. As long ago as 1931, when I showed the members some of my seedling Cacti for the first time, I was told that they would not last the winter. As several were many years old then, this form of reasoning was beyond me.

It is always a pleasure to me to flower a plant for the first time and each year I find a fresh bloomer among my collection. I have noticed a bud on *Trichocereus schickendantzii*, and I do not remember having had a flower on this plant before. The *Echinocereus* are again budding well, and I have ten different ones in bud at the time of writing. For spectacular colours few genera can equal the *Echinocereus* for colour when in flower.

The longer I grow Cacti the more do I realise how varied are the methods used by other members. Every few years someone describes a new method and many people rush to re-plant all their specimens into the new medium. Actually this often brings improvements and the value of the new method is acclaimed. When one comes to consider the position, however, the reason is soon found. Cacti are well known to be long suffering with regard to the treatment they can withstand. The fact that I still have the *Echinopsis* I started with 49 years ago does not mean that I have been a successful grower all the time. The plant has had to put up with many methods of culture which would have killed any ordinary plant. Most plants with leaves are able to indicate almost immediately when anything is wrong with their treatment, the leaves either wither or turn yellow, but the Cacti having no leaves are unable to cry out in distress and can exist for months although not actually growing. When plants have been kept in their pots for a few years they generally take on a neglected look and often cease to make new growth. When the owners of such plants re-pot them into anything fresh they almost immediately buck up and start to grow. Whatever soil has been used is then credited with the marvellous difference in the plant and the value of the new medium is praised.

The longer I grow these plants the more do I realise the importance of re-potting all Cacti each year. The growth of the plants when re-potted bears no comparison with the plants left in the same pots for years. Also this annual check enables you to see whether the plant has healthy roots or not. The spread of root bug can also be controlled by this re-potting. Of course if anyone has a collection of plants which have grown as large as can be housed, it is a fact that by failing to re-pot each year the plants can be kept from growing much.

For some years now I have been using a mixture which closely resembles the John Innes Seed Compost with the addition of the amounts of sulphate of potash and hoof and horn grist to make up the fertiliser content of the J.I. Potting compost. The trouble is that the most important part of the mixture, the loam, can vary not only from district to district, but from year to year. The quality of the loam decides as to whether the mixture will cake down or remain fairly open and also some contain much more natural foods for the Cacti than do others. If I can

get some good Kettering loam I am happy. I then add bacterised peat and sharp sand for my mixture. The necessary lime and super-phosphate is added by mixing it with some of the sharp sand first. I am going to experiment with some compost and shall dissolve the fertilisers, except the hoof and horn, in hot water and then well water the peat with it before mixing with the other material. I have repeatedly noticed that when re-potting a plant the roots have a tight hold of any peat still apparent in the soil. It seems fair to surmise that if the fertilisers were absorbed in the peat there would be a splendid medium for providing almost continuous food.

Many members still do not realise the value of good loam or even what it actually is. A good loam will be the top spit of meadow-land which has been stacked grass down for about six months. It should be nice and fibrous when broken and if it contains some sand it will be all the better. If it is slightly clayey it will not be harmful at all, as some amount of clay is necessary. The loam which is often available is that from a builder's site, but the top turf has often been sold and removed first. You are then getting only the bread, the butter and jam having gone. The sand itself must be very sharp and coarse, when rubbed in the hands it should sound very gritty. A well mixed soil should be porous enough without the addition of any broken brick or other material. The trouble is that most beginners will be sure to overwater and then the plant is lost. By adding some roughage to the mixture the porosity is increased and the novice is more likely to be able to keep the plant alive. In point of fact, every piece of broken brick and every unnecessary crock placed in the pot means that much room less for nourishing soil. In the usual small flower pots used it can be seen how foolish it is to overdo the so-called drainage. Any decent mixture should be porous enough and the only necessity for a crock is to prevent the soil from falling out of the drainage hole.

I wonder if we are ever likely to have enough room for our plants. I thought that when I built my latest greenhouse a few years ago that this would be the lot. However, I soon found that I could not re-pot without having to find more space to take the fresh and generally larger pots. I then considered the possibility of making a frame for the growing of the seedlings. Once thought about I was not long before I started to get to work. And has it been worth? I don't think I have ever worked harder in my life than I have for some months. I planned a frame which would be almost free from upkeep. All the frame-work was to be of pre-stressed concrete spurs and the wooden lights were to be soaked with Cuprinol instead of them being painted. No putty was to be used and the glass was to be kept in place with wooden fillets. So far so good, but by the time I had made the wooden moulds for making the concrete spurs, I thought that whilst making two I could just as easily make four. Instead of the small frame originally visualised I have now made one twenty feet long and six feet nine wide. It has a span roof with six lights a side. There will be a foot of glass all round with more at the ends. This meant making seventy-five different pieces of concrete of about eight different shapes. The long spurs are three foot five long by an inch and a half square. All have a half joint at each end which enables them to be fitted together and a hole in the centre of each joint ensures that an aluminium bolt can be used for fixing. I had intended to place the frame on a concrete base and thought of using some weatherboard to make an edging. The garden had too much slope for me to use this method and so I made a foundation of concrete and built up with several courses of brick. The whole centre then had to be filled and the over-sight concreted. The amount of work involved has been an eye-opener to me, and now I know the origin of the phrase 'Working one's fingers to the bone.' I almost did this, but what cut my fingers more than anything else was when I demolished an old greenhouse and handled the broken breeze slabs. Anyway, I am seeing progress now and the concrete frame is assembled. The lights are made and the next job will be the glazing. I see now that by raising the base on brick work I have saved myself a lot of bending later on. I intend to heat the frame by cable heating, but this has to be dealt with in the future. I suppose in a year or two this frame will be full as well, and then where do we go from there? The frame-work of concrete has the necessary rebate to take the glass which will be fixed in position by special putty. All this work has meant that my re-potting has been greatly delayed and, at the time of writing, I have only finished a small proportion of the plants. The trouble has been that until the new frame is finished I have no room for re-potted plants. I have only to move a plant from a two-inch pot into a two-and-a-half-inch one and it will not go back in the same place and so the whole collection needs to be re-arranged.

At this time of the year most of the Cacti will benefit from a good watering as long as the weather is warm. When watering do see that enough is given to damp all the soil in the pot and then no more water need be given until the soil has dried out. How long this is will depend on the weather and where the plant is kept. If you want something unusual in the flower line, try a *Notocactus haselbergii*. This is a totally different type of plant to the usual *Notocactus* such as *ottonis*, and the flowers, tomato colour, last open for at least a fortnight. The flower is not as large as the usual *Notocactus* bloom but very showy, and I know of few Cacti which can hold the flower so long in an open state.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

This is the month when we expect to get some really hot weather. Make sure that your greenhouse is opened up early. Make that your first job of the day, even before breakfast, as most of the scorching occurs through failure to open the windows and doors soon enough.

While the stemless *Mesembryanthemums* can stand a great deal of heat, all plants are not constructed the same. *Haworthias*, *Gasterias*, and *Aloes* do like a little shade during the summer, or they tend to look rather brown, but never on any account shade your stemless *Mesems*. That is the secret of getting them to flower well. Plenty of sunshine, in fact all the sunshine that is available, the whole year round. They cannot have too much in my opinion. I have flowered most of them with this treatment, and even the rather difficult *Gibbaeum Heathii* obliged this year with an attractive little pink flower which opened every day for over a week. Although these plants can stand all this sunshine, they must have ample fresh air at the same time. I open all vents and the door, over which I place a wire netting frame, to keep out cats and birds, etc. It is quite simple to make just a wooden frame slightly smaller than the door covered with small mesh wire netting and held in place with a wooden button. Arrange your stemless *Mesems* so that no pot is shading another, this is most important where flowering is concerned. There is no secret at all in getting these plants to flower well, it is just a question of getting to know the correct growing and resting periods and paying careful attention to watering, fresh air, and sunshine. Your *Lithops* should now be at their best. The *pseudotruncatella* varieties will be in bud, or most likely out in flower, mine always are in July. It is not advisable to repot *Lithops* after May as it may check the flower buds. You can safely re-pot the *Conophytums* this month and peel off the old dead skins, that is if they are really papery dry. When the new growth pushes through, then you can water. It is advisable to repot every year as owing to the long dry resting period these plants are very prone to root bug. *Pleiospilos* can also be re-potted and watered this month, providing that the bottom pair of leaves have completely dried right up. Let them take their time, and do not force them to take water until they are ready. An over watered *Pleiospilos* will lose a lot of its true characteristics and often the leaves will split. The same thing happens with the *Argyrodermas*. It is very tempting to water generously, and to see those lovely pale green bodies getting larger and larger, but one morning you will be shocked to find that an ugly split has spoilt your plant for the rest of the year. Do play safe with the water. Never mind if your plants are not quite so large as those of your friend, yours will probably be the healthiest.

Succulent seedlings, that were sown in April or before, should now be ready to be pricked out, but if doing well and the soil is still sweet, they can be left a little longer. Do not aim at forcing your succulent seedlings to obtain large plants in a short space of time. To me that is all wrong. Grow your plants carefully and let them take their time, not only will you have hardier and healthier plants, but they will also retain their true characteristics right from the start. I hate to see large sappy green stemless *Mesems* that are too weak to stand up, and are unrecognisable. These are the sort of plants that will not survive the winter. Seedlings that have been grown slowly and carefully will by now be quite firm to the touch and will also have their true colourings and you will have no trouble with them through the winter. Never give any South African succulents artificial feeds, you will only promote an unnatural growth and the true beauty of the plants will be lost.

Stapelias should now be well budded on the new growth. I hope you remembered to take out the old growth when repotting in the spring. They like a little shade. *Huernia hystrix* is a nice little plant with curious spiny flowers, and together with *H. primulina*, which is also very free flowering, make an asset to any collection. They should be watered from the bottom only, as they rot at the base very easily. Closely related to the *Stapelias* are the *Ceropegias*, which will bloom for months from summer onwards. One of the best is *Ceropegia stapeliformis*, with quaint little umbrella like flowers. They like a soil similar to *Epiphyllums*. The vine-like *Ceropegia woodii* can be very attractive if grown generously in a shady spot, or allowed to trail from a shelf or hanging basket. They make huge underground tubers and should be repotted each year as they quickly exhaust the soil and, as a result, the leaves will become smaller and smaller. *C. debilis* and *C. caffrorum* have a similar trailing habit, with very minute flowers. *C. sandersonii* and *C. haygarthii* are said to be the gems of the species, but rather scarce in this country.

For those of you who have a shady conservatory, the *Rhipsalis* would suit your conditions admirably; although these are really Cacti they are more often looked upon as belonging to the succulent world. They appreciate a damp humid atmosphere and will make plenty of growth, and flower well under these conditions. These plants,

with an epiphytic habit, grow mostly on the mossy stems of trees, or on shaded hillsides, so one should try to adopt a similar kind of condition. I have flowered *Rhipsalis salicornioides*, perhaps better known as *Hariota salicornioides*. Dainty little golden yellow flowers borne on the top of the new joints. *R. houlettiana* has pale green leaf-like joints, and flowers of a pale yellowish white borne abundantly from the marginal areoles. My growing conditions, which are rather on the dry side, are not really suitable for these plants, but anyone who has a house that is not suitable for stemless *Mesems*, and other Cacti, would do well to try them. *Lepismium cruciforme* with pinkish flowers, is another closely allied one which I have flowered. They like a rich soil, containing a large part peat, leaf mould and sharp sand. Forgive my lapse into the cactus world, but it is usually in the succulent houses that you will find these plants, as they do not as a rule appeal to the Cacti only lover.

You will probably have *Rochea falcata* out in bloom during the next month. This is a real showy plant with a wonderful scent. To keep a well shaped plant, it really wants starting off again every year from a cutting. After bearing its lovely heads of scarlet flowers, it tends to produce several off shoots from the top. This spoils the appearance of the plant and also makes it rather top heavy. The best thing to do is to remove these and use them for next year's plants. If you prefer it, you can leave them and stake the plant and you will probably have several smaller heads of bloom the following year. There is a white variety *Rochea perfoliata*, and also a pretty pink hybrid. These plants are very suitable for beginners as they will grow quickly and survive under almost any conditions. They will also grow from a leaf placed on some damp sand. Many other succulents will grow from a leaf too, and you can enlarge your collection considerably by begging just one leaf from your friends. All the *Adromischus* grow very rapidly in this way, also several of the *Crassulas* and practically all the *Echeverias* and *Sedums*. Some, of course, are slower and more difficult than others. Place them in a cool spot under the staging on some damp sand. Do not bury them or they will most likely rot. Water with a fine spray daily.

Many of the *Aeoniums* like a rest during the summer, particularly those kinds which close up into a bud-like form, such as *Aeonium undulata*, and the small *Greenovia* species. I think this must be a form of protection from the very hot sun in their native habitat.

I hope you have a few nice plants of *Stomatiums* blooming at the present time. They go on flowering for such long periods and are so easy to grow. They open their flowers in the evening when most other sun loving ones are closed for the night. *Stomatium geoffryii* has the pleasantest perfume, others have an unusual scent hard to describe.

Don't forget to pot up some of the nice bright coloured succulents to grow on, ready to bring indoors for the winter, as I suggested last year. Try and make them surplus to your collection proper so that if they get a bit etiolated, you will not feel you have spoilt a good plant.

Those of you who are lucky enough to have both male and female *Euphorbia obesa* flowering together will, doubtless, have done their best to get some seed. If you were successful and the seed has set, do be careful that you do not lose it. When the seed pod is ripe, it will burst and scatter the seed far and wide. It is advisable to place a cellophane bag just over the crown of the plant, and secure it with a loose rubber band round the body of the plant. Avoid undue pressure and do not have any opening in the top of the bag. You should then be able to harvest your seed without any difficulty. Most *Euphorbias* scatter their seed quite long distances and I have found seedlings coming up in pots several yards away from the parent plant.

Those of you who are entering your plants for show this year, do leave yourself plenty of time for packing. That is the whole secret of successful showing. Never mind if you are the last person out of the hall, as I usually am, refuse to be rushed. If you are staging say, a six foot group you will need a whole day to pack and prepare your plants. Each plant must be gone over carefully, never let one bad plant spoil all the other good ones. Wrap each pot carefully in newspaper, and wedge with further pads of newspaper until it is quite firm and not touching its neighbour. I always make a plan of what went into each box. It saves a lot of time in the long run, as everything will return quite easily to its proper place. If you re-pack haphazardly you will often find you have several plants left over, plus a temper that is mounting higher every minute, and you wonder if it has all been worth it. Just work to a system at all times and you will have a trouble free show and enjoy every minute of it. Always refuse any offers of help when packing your plants, make sure that you yourself have done the job well, and then nothing will come to any harm. Good luck, and may all your plants be prize winners.

The New South Wales Government states that prickly pear has become a pest. Each infestation has been traced to garden grown plants. It spends £32,000 a year to combat the spread of this plant. Large numbers of cochineal insects would be released on Tiger pear.

RICHARD BRADLEY AND HIS "HISTORY OF SUCCULENT PLANTS" (1716—1727)—*contd.*

By G. D. ROWLEY

SUMMARY

By modern standards of classification, Bradley's 50 species of succulents represent 35 genera and 8 families: 8 species come from America, 1 from the East Indies, 1 from Morocco, and the rest from South Africa. They represent a good average cross-section of the succulents, but there is a strong bias in favour of Ficoideaceae, of which no less than 30 are included. All but one of the 50 are still in cultivation today, although some, like *Melocactus*, *Eberlanzia* and *Skiatophytum* are confined to a few specialist collections. The exception is what Haworth named *Mesembryanthemum graniforme*, a curious miniature tree with fusiform leaves that neither he nor any subsequent authority has identified certainly with a living plant⁶.

Bradley laid the foundation of the study of succulents in England, and his influence was felt abroad also. His idea of a succulent tallies exactly with present-day likes and dislikes, whereas 100 years after him "succulent" collections included Saxifragas, Cycads and mesophytes of unrelated habit and cultural requirements. His views on cultivation, too, were mostly nearer the truth than those of his followers, who tried to raise the plants in great heat and drought under glass. And in one final point he is unique: I believe he is the only early cactophile who has not had a succulent of some sort named after him!

ACKNOWLEDGMENTS

In closing I would like to thank Mrs. V. Higgins and Mr. W. T. Stearn for their help and advice, Mr. K. W. Harle for the loan of his books, and Mr. W. T. Marshall and Mr. C. Backeberg for obligingly suggesting identities for the critical cacti.

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1. Part iii (1718) 266-286. I am grateful to Mr. Shurly for agreeing to my suggestion to reprint this in the Journal in 1951, and also the COWELL chapter (ref. 4).
2. See W. ROBERTS "R. Bradley, Pioneer Garden Journalist," in R.H.S. J. LXIV (1939) 164-174.
3. A. H. HAWORTH "Observations on Mesembryanthemum" I (1794) 18-20.
4. Reprinted in this Journal in 1951.
5. W. BLUNT "The Art of Botanical Illustration" (1950) 132-3.
6. See H. M. L. BOLUS "Notes on Mesembryanthemum" II (1929) 128.
7. See W. T. Stearn in *Cac. & Suc. J. G.B. VII* (1939) 74, 80.

GENERAL SOURCES OF INFORMATION

- HIGGINS, V. "An Early Book on Succulent Plants" in R.H.S. J. LXV (1940) 115-17, also in *Cac. & Suc. J. G.B. IV* (1935) 17.
- PULTENEY, R. in *Historical and Biographical Sketches of the Progress of Botany in England* (1790) II, 353-6.
- SPRENGEL, K. in *Geschichte der Botanik* (1817-8) II, 165-6.

COLLATION OF PLATES AND TEXT

		DECADE I 1716		
Relevant Plate page of				
No.	text.	Accepted Name	Bradley's Name*	Selected published identifications
1	1: 1	Cereus hexagonus (L.) Mill.	Great upright Torch-Thistle	<i>Cactus hexagonus</i> L., Willd., Mill, B.M. <i>Cereus hexagonus</i> Mill., Pers., Haw. 1812. <i>Cereus peruvianus</i> Br. & R.
2	1: 3	Selenicereus grandiflorus (Mill.) Br. & R.	Small Six-rib'd Torch-Thistle	<i>Cactus hexagonus</i> B.M.
3	1: 4	Hylocereus triangularis (L.) Br. & R.	Three-rib'd Torch-Thistle	<i>Cactus triangularis</i> L., Willd., Mill., Pers., B.M. <i>Hylocereus triangularis</i> Br. & R.
4	1: 5	Opuntia curassavica Mill.	Pinpillow, or Minion Prickly Pear	<i>Cactus curassavicus</i> L., Willd. Mill., Pers., B.M. <i>Opuntia curassavica</i> Mill., B.M. Br. & R., Haw. 1812.

* To save space, the lengthy latin diagnoses are not given.

5	I: 6	Trichodiadema stellatum (Mill.) Schwant.	Star-pointed Ficoid, or Fig-Marygold, of the Cape of Good Hope	<i>Mesembryanthemum barbatum</i> L., Willd., Haw. 1812 non 1824, D.C., B.M., N.E. Br. <i>Mesembryanthemum stellatum</i> Mill. ⁷ <i>Mesembryanthemum stelligerum</i> Haw. 1824 non 1812 ⁷ .
6	I: 7	Aridaria splendens (L.) Schwant.	Grey Spindle-leav'd Fig-Marygold	<i>Mesembryanthemum splendens</i> L., Willd., Mill., Haw. 1803, 1812, D.C., B.M. <i>Mesembryanthemum fastigiatum</i> Haw. 1803, B.M.
7	I: 8	Lampranthus bicolor (L.) N. E. Br.	Green Spindle-leav'd Fig-Marygold	<i>Mesembryanthemum bicolor</i> L., Mill., N. E. Br. <i>Mesembryanthemum bicolorum</i> Willd., B.M. <i>Mesembryanthemum inaequale</i> Haw. 1812, 1821, B.M. <i>Lampranthus bicolor</i> N. E. Br.
8	I: 9	Drosanthemum micans (L.) Schwant.	Silver Spindle-leav'd Fig-Marygold	<i>Mesembryanthemum micans</i> L., Willd., Mill. Haw. 1812, D.C., B.M.
9	I: 10	Lampranthus tenuifolius (L.) Schwant.	Creeping Spindle- leav'd Fig-Marygold	<i>Mesembryanthemum tenuifolium</i> L., Willd., Haw. 1812, B.M., Mill. (as "1.9.13"), D.C. (as "1.13.9").
10	I: 11	Rhombophyllum dolabriforme (L.) Schwant.	Night-flowering Harts- horn Fig-Marygold	<i>Mesembryanthemum dolabriforme</i> L., Willd., Mill., D.C., B.M. <i>Hereroa dolabriforme</i> V.H.
DECADE II 1717				
11	II: 1	Agave americana I.	Common American Aloe	<i>Agave americana</i> B.M., V.H.
12	II: 3	? Pilocereus royenii (L.) Rumpl.	Great White Torch- Thistle	<i>Cereus peruvianus</i> Haw. 1830. <i>Lemaireocereus pruinosus</i> Br. & R.
13	II: 4	Euphorbia heptagona L.	Long-single-Thorn'd Euphorbium	<i>Euphorbia heptagona</i> L., Mill., Pers., Willd. N.E. Br., W.D. & S., B.M.
14	II: 5	Conicosia pugioniformis (L.) N.E. Br.	Pink-leav'd Fig- Marigold	<i>Mesembryanthemum pugioniforme</i> L., Willd., D.C., B.M. <i>Mesembryanthemum capitatum</i> Haw. 1803, 1812, B.M., Ait. <i>Conicosia</i> N. E. Br.
15	II: 6	Trichodiadema hirsutum (Haw.) Stearn ⁷	Short Star-pointed Fig-Marigold	<i>Mesembryanthemum hirsutum</i> Haw. 1812, B.M. <i>Mesembryanthemum barbatum</i> β ut γ L., Willd. <i>Mesembryanthemum stellatum</i> D.C., B.M.
16	II: 7	Sceletium tortuosum (L.) N. E. Br.	Olive-leav'd Fig- Marigold	<i>Mesembryanthemum tortuosum</i> L. excl. α , Willd., Mill., Haw. 1812, D.C., B.M. <i>Mesembryanthemum expansum</i> ? Mill. (as "II: 16.7").
17	II: 8	Carruanthus caninus (Haw.) Schwant.	Dogs-Chaps, or Tooth- leav'd Fig-Marigold	<i>Mesembryanthemum caninum</i> Willd., Haw. 1812, D.C., B.M. <i>Mesembryanthemum ringens</i> α <i>caninum</i> L., Mill. <i>Mesembryanthemum felinum</i> Ait., B.M.
18	II: 9	Acrodon bellidiflorus (L.) N. E. Br.	Daisie-flower'd Fig-Marigold	<i>Mesembryanthemum bellidiflorum</i> Mill., Haw. 1812, D.C., B.M.
19	II: 10	Cylindrophyllum calamiforme (L.) Schwant.	Onion, or Quill-leaved Fig-Marigold	<i>Mesembryanthemum calamiforme</i> L., Willd., Mill., Haw. 1812, D.C. (as "11.10.9"), B.M., N. E. Br.
20	II: 11	[Mesembryanthemum graniforme Haw.]	Small Night-flowering Fig-Marigold	<i>Mesembryanthemum graniforme</i> Haw. 1812, q.v. ; 1821, B.M., N. E. Br., L. Bol.

(To be continued)

ESSAYS FOR THE OPTIMIST

(i)—WITHOUT A GREENHOUSE—*continued*

Then there is the vertical, columnar kind of which *Cereus chalybaeus* with its coat of blue wax is the most monumental and usually grows with perfect symmetry. This and *Cleistocactus straussii*, on account of its contrasting white spines, are a good pair. A third, perhaps easier to obtain, is *Cereus jamacaru*. More noticeably than the others these incline toward the light and should be turned at regular intervals to preserve a straight growth.

Tree forms and clouds seem far removed from this subject. The first is suggested by *Crassula arborescens*, the jade tree, *C. obliqua* or *C. argentii*, all of which prefer a richer mixture with less sand. The best examples of monstrose or cristate shapes for a window is *Cereus peruvianus*, a thick green cloud, offsetting the skeletal appearance of, say, *Crassula lycopodioides*.

The clustering variety with rosettes include *Graptopetalum weinbergii*, *Sedum pachyphyllum* and species of *Aeonium*. Some of these will display a reddish tint in the autumn.

One or two of the downward curving or semi-pendant types will complete a small collection—*Aporocactus flagelliformis* (the rat's-tail cactus), for example, *Crassula rupestris* and *Zygocactus truncatus* (the Christmas cactus). The last two are almost certain to flower, the latter requiring a richer soil with the addition of peat if possible : otherwise less sand. The plant should not go dry except for the six weeks after the flowers have withered. Here I may mention that the genus *Crassula* alone could give all the variety needed or provide a point of departure to growing other genera more susceptible to adversity. Its species include the miniature trees mentioned above, the scissors plant (*C. falcata*) and what might be termed the 'litter-gatherer's spike' (*C. perforata*) as well as the easily flowering *C. schmidtii*.

I do not intend that what was planned as one of several brief essays, to open the subject to those whose accommodation seemed to exclude them from it, should degenerate into vague blessings upon some plants and warnings upon the cultivation of others, nor be devoted entirely to elementary cultural hints. I should not like to leave this first introduction without at least noticing the question of questions, 'Why grow them at all?' To this I think the most pertinent answers are that knowledge and understanding do not proceed solely from schools and books, and that gardeners (let us include ourselves) usually do what they want to do, but peacefully.

(ii)—'FROM MICHAELMAS TO LADY-DAY'

Since an essay requires a point of departure, I choose as mine a phrase from a rare and valued book by the best known of the early writers on cacti and succulents, whose name, surviving re-classifications, still indicates many of the species he described one hundred and fifty years ago.

In the year 1812 A. H. Haworth had printed for personal sale his *Synopsis Planatarum Succulentarum, cum Descriptionibus, Synonymis, Locis ; Observationibus Anglicanis Culturaque* 'as a more complete enumeration of Succulent Plants, as far as cultivated in the neighbourhood of London, than has hitherto been given to the Public.' In the list of subscribers were Sir Joseph Banks, James Donn, curator of the botanical gardens at Cambridge, Mr. Hatchard, bookseller of Piccadilly, the Horticultural Society, Harvard College in Massachusetts and the Philosophical Society of Philadelphia.

There was never a keener interest in exotic plants than during the life-time of Haworth. The first stirrings of the Romantic Age produced a startling period in English gardening, effecting the transition from the formal, continental design to the extraordinary estates of Beckford at Fonthill, Shenstone at Leasomes, and others celebrated for their 'prospects,' fantastic grottoes and 'Gothick' ruins. Haworth, though not a giant figure, was one of the many gentlemen of culture and inexhaustible energy who gave strength to the mannered times. He represents, with other scientists and men of letters, that faith in observation and empiricism which precipitated the Industrial Revolution. In another sphere he shared the attitude to nature of the poet Thompson, and indeed was also the author of 'Cottingham, an historical poem in Twenty Cantos,' a work which has not outlasted his botany.

The Preface to the "Synopsis" gives general cultural instructions which conform to a surprising degree with the practice of today, but which are written with a quiet, economical elegance no longer practised.

"With respect to culture, Succulent Plants prefer a sandy unmanured soil and comparatively small pots. The coarse red sand of the gravel pits (the freer from loam the better) they are extremely partial to (disliking not its lesser stones) mixed with about an equal quantity, or even less, of common earth for the more succulent species : and with proportionately more earth for those which are less so . . . They must be watered very sparingly, and not often in winter, but in the dry weather of summer require water plentifully, and almost daily, if shrubby ; all the more succulent kinds in their pan only.

'Those marked F should be placed in garden frames, facing the South, from about Michaelmas to Lady-day, defended from frosts and rains ; but in all fair and not frosty weather, should be exposed entirely to the air.

"The Greenhouse kinds may be housed and unhoused at the same time—admitting air freely when Fahrenheit's thermometer is above 40, but not at all when under 35 or foggy. At 32 or 33 in the open air, delay not the least to light the fires—but make no more than are necessary to expel frost ; for fire at best is insalubrious to plants.

"As to shifting these plants, the larger ones require it not oftener than once in two or three years ; but once or twice annually clear away the upper surface of their pots and replenish it with fresh compost. The lesser plants must be moved about the end of August, or as often as their lower fibres form dense mats at the bottoms or sides of their pots, paring off with a good knife the matted part, without breaking the balls of earth. They may be replanted either in the same or larger pots, as discretion dictates : but never cut away any fleshy roots, though matted, but give more pit room. After shifting, water the new earth with a rose pan to settle it.

"All Greenhouse and Frame species in summer should be placed on a south sheltered border, and in winter give the more delicate ones situation as near the glass as possible. Keep the whole from slugs and worms."

What does the book reveal of its author ? Certainly two characteristics are there, which today would be mutually exclusive. One of them is the keen power of scientific scrutiny which Haworth directs upon his subject, and the other the pleasant diffusion or relaxation which is given to this intensity by certain anecdotes strangely like those which form a large part of the history of Herodotus. An example of the latter is Haworth's remark in English under *Agave americana* :—

"This is the plant which is called 'Aloe' by people uninformed in botany, and supposed by them to flower but once in a hundred years, and was formerly said to have made a report louder than a gun when it blossomed. It is nevertheless capable of flowering even in England in three or four score years if properly treated : and in its native climate at about a dozen years old. After flowering the old plant dies, leaving numerous offshoots to succeed it. The tale of its making a louder report than a pistol arose from the rarity of its flowering being more talked of and consequently in that manner making a greater noise than a gun . . ."

The observation under *Stapelia ligulæ* exemplifies Haworth's aptitude for accurate examination and the enthusiasm this scrutiny could produce :—

"Post foecundationem (vel potius in ipso coitu) antherae cum stigmatibus cohaerant ! atque conflunt !"

In Early Romantic literature before the artist and scientist were as different from each other as they are now, the recurrence of certain symbols has been noticed. Typical of these were the Aeolian harp through which the wind breathed, the terrible Upas Tree and, nearer our subject, the awe-inspiring Night Blowing *Cereus*. It is only, of course, the latter that comes into Haworth's survey, and when he comes to describe this famous plant it is with a feeling for the numinous. In the face of so astonishing a phenomenon his sense of plant, person and place lead Haworth to forego the chance of an exclamatory passage and to quote instead the authoritative description of the esteemed Miller, 'our great horticulturist.' Both men may have seen the fine mezzotint of the Night Blowing *Cereus* in Thornton's *Temple of Flora* (1807) where, in a 'Gothick' nightscape, the plant is shown to bloom with terrible magnificence in the foreground while the hands of a distant clock point to five minutes past midnight. Under the picture is recorded 'The Flower by Reinagh. Moonlight by Pether.' The description in the *Synopsis* is as follows :—

"When arrived at sufficient strength this celebrated plant (*Cereus grandiflorus*) will produce many exceedingly large beautiful sweet scented flowers ; but they are (like most flowers of these kinds) of very short duration, scarcely continuing full blown six hours, nor do the same flowers ever open again, when once closed : they begin to open in the evening between seven and eight of the clock, are full blown by eleven, and by three or four the next morning fade, and hang down quite decayed : but during their continuance there is scarce any flower of greater beauty or that makes a more magnificent appearance : for the calyx of the flower, when open, is nearly a foot in diameter ; the inside of which, being of a splendid yellow colour, appears like the rays of a bright star, the outside of a dark brown, and the petals of the flowers being of a pure white adds to the lustre ; and the vast number of recurved stamina surrounding the style in the centre of the flower make a fine appearance ; and add to this the fine scent of the flower which perfumes the air to a considerable distance : there is scarce any plant which deserves a place in the Hothouse so much as this, especially as it is to be trained against the wall, where it will not take up room. The usual season of its flowering is in July ; and when the plants are large, they will produce a great number of flowers, so that there will be a succession of them for several nights, and many of them will open the same night. I have frequently had six, eight or ten flowers open at the same time upon one plant which have made a most magnificent appearance by candlelight, but none of them have been succeeded by any appearance of fruit. . . ."

(To be continued)

DWARF OPUNTIAS

By G. G. GREEN

I have been encouraged to add a few details of culture and description of further species of the low growing *Opuntias*, and I have been rather surprised at the great amount of interest shown in these plants. It seems that many people have never seen an *Opuntia* in flower, whilst others have not been able to induce their own plants to produce blooms, though they have seen blossoms on plants in other collections.

Now I can fully appreciate this interest in the flowering of the smaller *Opuntias*, for whilst the very large species such as *monacantha*, *ficus indica*, *robusta*, *engelmannii*, etc., are very handsome when in bloom, their size prohibits their collection except by a very fortunate few. There is, however, a way in which even these big fellows can be coaxed to bear flowers when only a few inches in height, but I will describe this later.

The *Opuntias* have always been the plants that the uninitiated immediately recognise as Cacti, probably from films of the West, or these plants have spread all over the world, but no other genera can be more interesting or more beautiful, as those who have seen large clumps of such species as *pilifera*, *leucotricha*, *scheerii* or *nigricans* will readily agree. During the months of May and June most *Opuntias* will be in flower and it is then that one should perform the various operations necessary to secure the growth or flowers of certain species.

I described in the last edition of the Journal general cultivation of dwarf *Opuntias*, and there is no need for repetition here, but I think a little detail regarding some of the following species will need emphasising. In these short articles there is little room for long lists of plants, and it becomes necessary to curtail the lists to a few only of what I consider to be the most interesting, though I am quite aware that some people may have other species that are just as fine as those described here.

Indeed, when looking through my own specimens, I found a few that could have been included last time, especially *O. andicola*, a low growing, many branched species from the Argentine. This plant is very handsome when in robust growth, for the short joints, oval and pointed towards the tips, are a rich greenish brown in colour, shining and smooth with strong, bristly, yellow glochids. The short reddish spines have very long centrals, flexible and tough and rather flat, giving a handsome appearance to the plant. It should be grown in a pan so that the joints can root as they lie on the surface.

Very similar in growth is *O. angustata*, though even prettier in appearance as the long twisting spines are a pale yellow colour, the same as *O. soehrensii* which is more compact and has stems that are corrugated or warty.

Most of the plants described have been low growing and prostrate but there are others that grow erect, besides those of the *microdasys* group. Given unrestricted root room, some will, I know, develop into very large specimens in time, but never under the usual conditions.

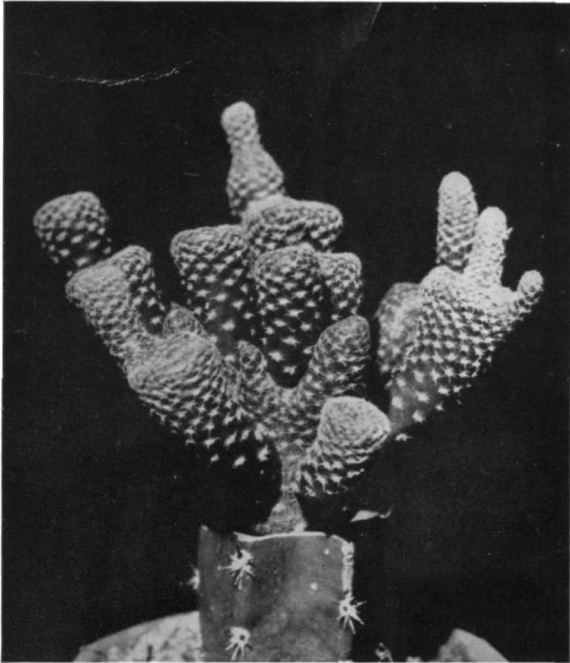
Opuntia parishii is one of these, though I have never seen a very big specimen. It is a very handsome species with oval joints and very strong reddish spines, produced singly from small areoles. Like some of the tall growing, slender stemmed species, such as *tunicata*, *imbricata*, *vestita* and so on, the best method of keeping them down to a reasonable and more attractive size, is to cut the stems about six inches or so from the ground in order to encourage side growth and branches from the basal joints.

Opuntia tunicata, which has some of the most beautiful yet ferocious spine arrangements in the *Opuntias*, is extremely handsome when treated this way. The plant readily sends out branches armed with the sheathed, shining gold spines. The 'Staghorn Cholla,' *O. versicolor*, with other cane chollas is also best treated in this way, and will readily produce the flowers that vary so much in colour on the same plant. This variation is due to several causes apparently, such as the fading in colour of old blooms and the richness of the new. The extreme differences in shade depend to a great extent on the light and the perception of the onlooker, but the effect is certainly very charming, and peculiar, I believe, solely to the chollas.

Under cultivation these differences are not so marked or vivid, but one can often behold such colours as purple, red and orange on the same plant.

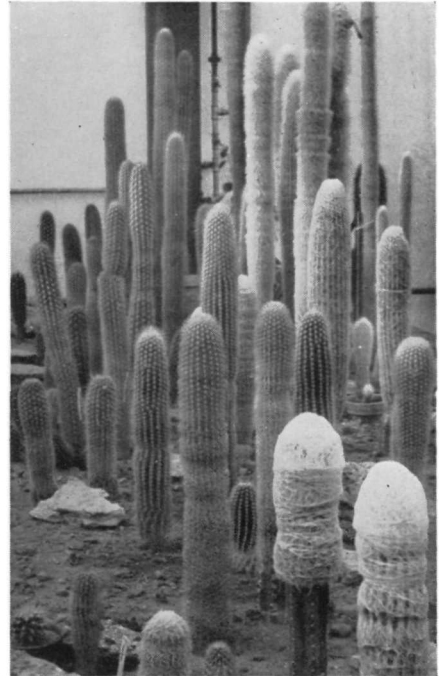
All the above species do very well on their own roots, in the usual compost and in seed pans for the low growing types, with a position in full sun, or as suggested last time, in a frame where the pots can be sunk in sand or clean ashes.

During the daytime on what we hopefully expect to be the hottest part of the year, the glass lights may be



Opuntias clavarioides

G. G. Green

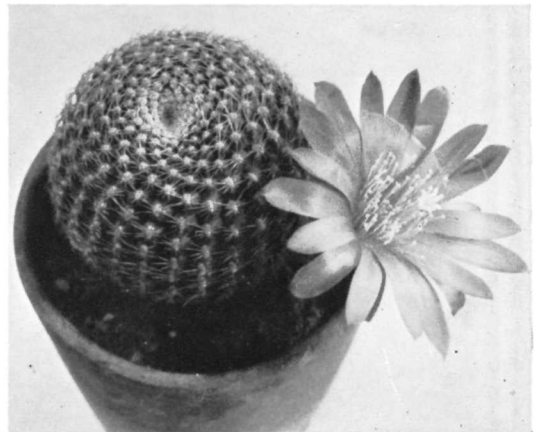


Cerei belonging to Dr. Cullman



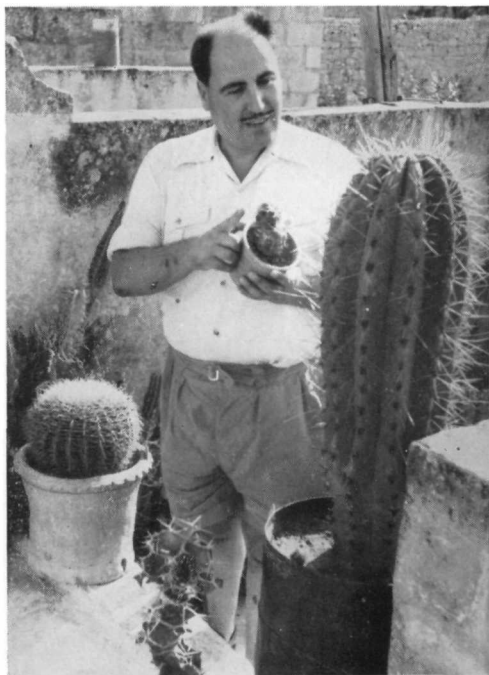
Rebutia xanthocarpa v. elegans

J. D. Donald



Rebutia krainziana

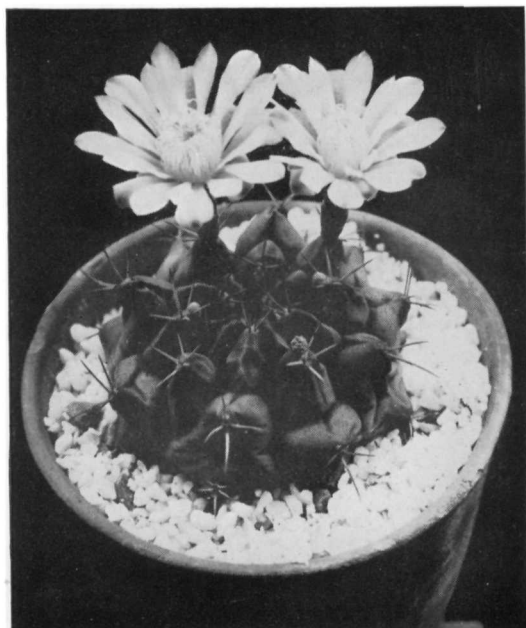
J. D. Donald

*Trichocereus terscheckii*

A. Bugeja

*Astrophytum myriostigma*

A. Bugeja

*Gymnocalycium schickendantzii*

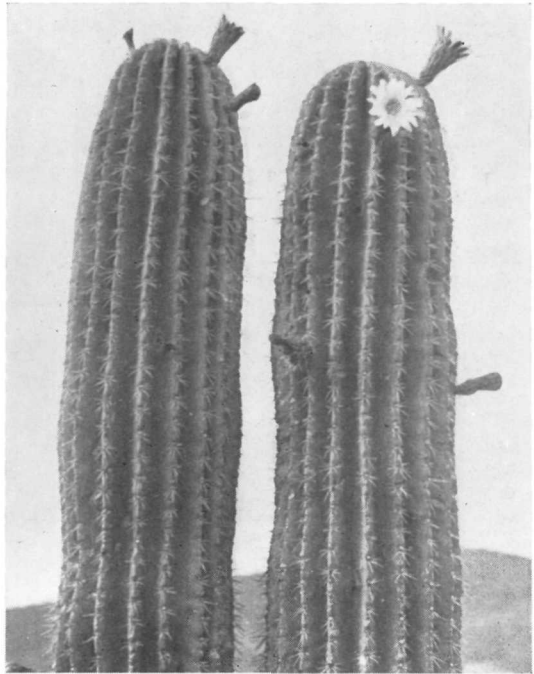
W. Beeson

*Gymnocalycium quehlianum*

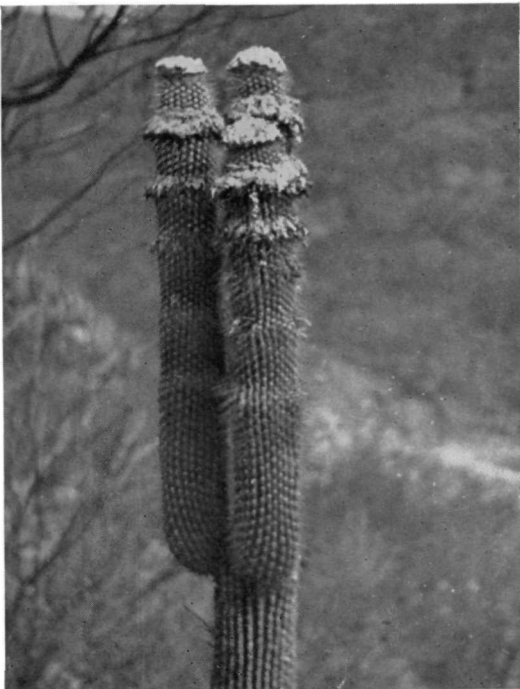
W. Beeson



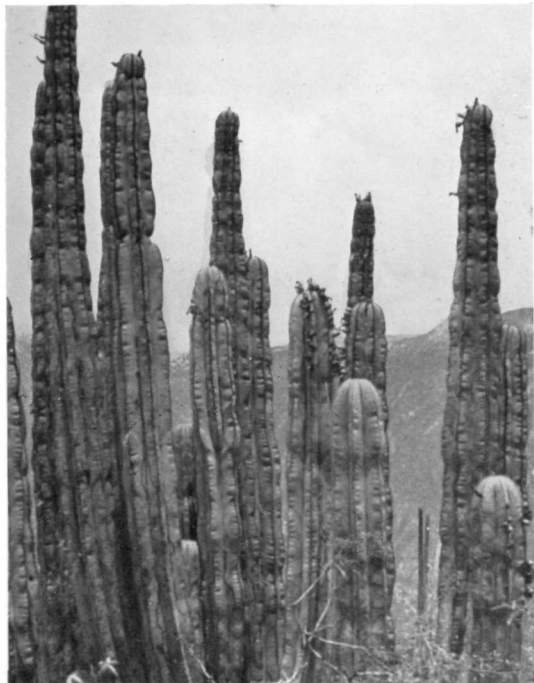
Cephalocereus chrysacanthus, Puebla



Cephalocereus mezcalaensis, Puebla

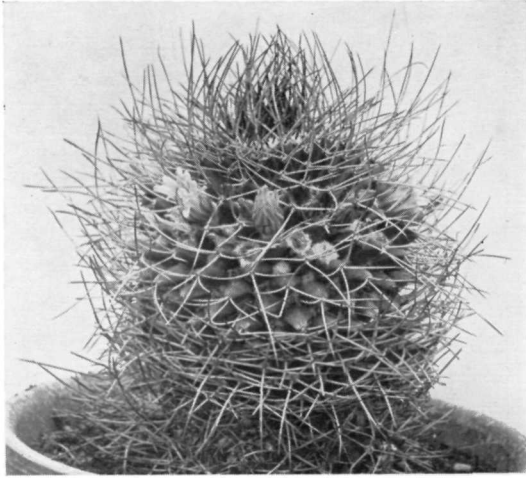


Cephalocereus apicephalum, Oaxaca

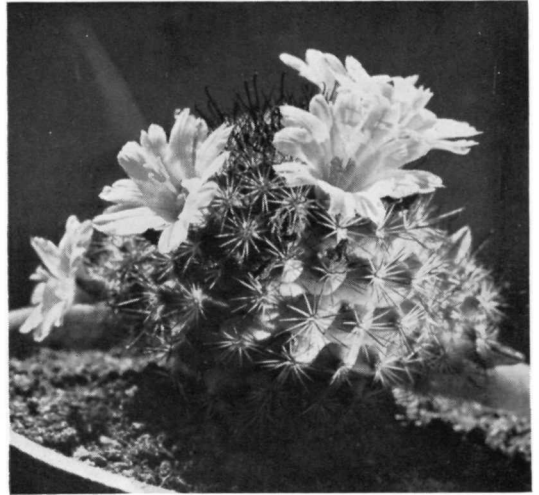


Lemaireocereus dumortieri, Hidalgo

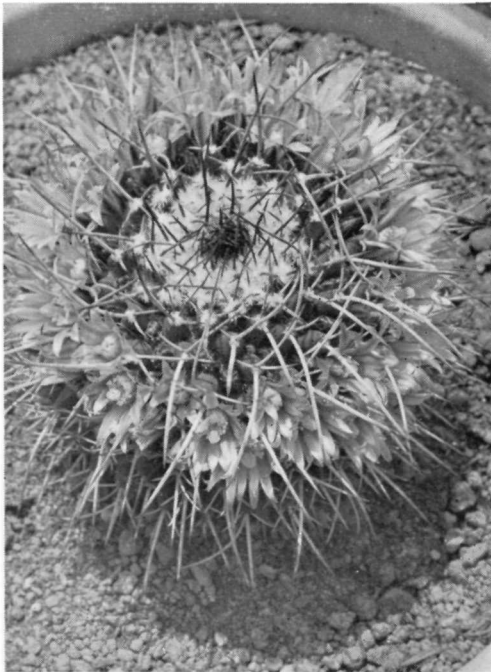
Four photographs by Howard E. Gates.



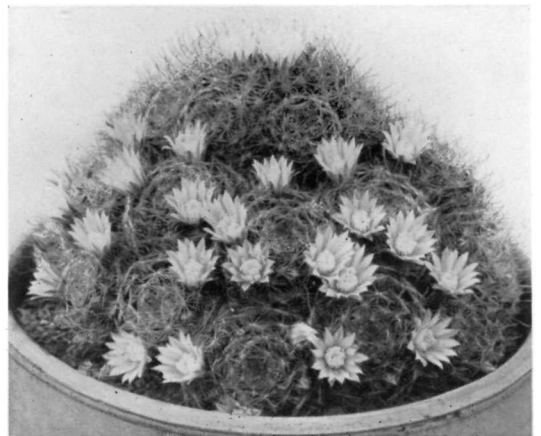
Mammillaria carnea



Mammillaria blossfeldiana



Mammillaria carnea v. *robustispina*



Mammillaria pygmaea

Four more photographs by L. Fuaux.

entirely removed and replaced by a framework of builder's laths, fixed one inch apart on two runners. This will allow plenty of fresh air to circulate, keep off cats and birds and also afford a slight shade when the sun is at its strongest. Other plants may also be included in the same frame.

Now I have mentioned, casually, that some species do better when grafted on to stronger stock, so perhaps a little more detail should be added. The best results, in my opinion, are when *Opuntia* stock is used, though for the more globose species such as *parishii*, *papyracantha* or *diademata*, *aoracantha* and *bulbispina*, a *Cereus* stock is best in order that the biggest possible surface may be obtained for grafting.

When using *Opuntia* stock, species such as *monacantha*, *ficus indica*, *velutina*, or *tuna* should be chosen, as these can be obtained in thick young pads. A sloping cut across the thickest part should be made for the grafting surface, and the sides also cut on a slight taper so that new growth and perhaps shrinkage do not interfere with the joining. A similar cut on the widest part of the scion will then ensure the largest possible surfaces being joined together. Securing can take several forms, one of the best being by means of an elastic band looped over each end of a strong *Cereus* spine that pierces the stock immediately below the cut. A little cotton wool under the band will help to protect the scion.

June is the best time for grafting, and these should be placed in a little shade until the union is complete. Now growth depends on the state of the stock, for if this declines in any way, so will that of the scion, and the aim should be to keep the stock healthy and growing for the greater part of the year. Prolonged drought in the winter, even, will tend to shrivel newly grafted plants, and, perhaps, cause ultimate collapse or a standstill in growth the following season. Thus it is best to keep the roots moist all the time.

Use only the best material and not some plant that is marked or diseased in any way, for success depends on the health of both parts of the operation.

Talking of cutting *Opuntias* reminds me of a curious thing or two that may be of interest. *Opuntia tuna* has a monstrose variety that grows with many small rounded pads, freely branching. These can be propagated fairly easily, but ordinary *O. tuna* can be induced to go monstrose if a pad is rooted and then beheaded, as in the preparation for grafting. In many cases, the new growth that springs from the areoles will be similar to that of the monstrose variety. Some of the larger growing *Opuntias* such as *bergeriana*, *dilleni*, *herrfeldii*, etc., can often be coaxed to flower on single pads two or three years in succession without any other increase in size or growth. This is generally done by rooting a pad from a large plant that is already bearing flowers. The method is to fix the pad in a pot that will just hold it comfortably, and fill round with ordinary rooting compost such as peat and sand.

The flowers will, of course, continue to bloom whilst the pad is rooting, and form seed pods or fruits afterwards. When the cutting is rooted, the compost should be replaced with potting soil and kept moist so that the pad does not shrivel. Do not place in the full sun, for the fruits should not be encouraged to ripen, and within a week or so new flowers will form from the areoles on the fruits themselves.

These will eventually form new fruits also, and again next year, so that the result is row upon row of fruits springing from each other and blooming each year. All other growth, should any develop, must be cut off in order that the flowers receive all the strength from the pad.

Naturally, sooner or later this process breaks down, either by the ripening of the fruits, or failure of flower buds to form, but, whilst it lasts, the effect is most agreeable.

In this number there are two interesting photographs from Mr. A. Bugeja of Malta. The *Astrophytum* will be seen to be variegated, which Mr. Bugeja puts down to the shells of the seed having been completely broken up by rough postmarking. The actual plant is variegated creamy yellow, to salmon and rose. The other photograph of *Trichocereus terscheckii* (the larger plant) was the beheaded part, fifteen years ago, of the small parent which Mr. Bugeja is holding. This mother plant has never been re-potted since being beheaded, but continues to throw offshoots, one of which is seen in the photograph.

If any member can spare their January issues of the Journal for any year, it would considerably help the Society to supply complete volumes to enquirers. Despite extra numbers printed this issue is always short. We particularly want January, 1952 and January of this year. Copies should be sent to the Editor, E. Shurly, 7 Deacons Hill Road, Elstree, Herts.

RANDOM REFLECTIONS

By J. BROWN

"Succulent plants" include some of the most bizarre, and some of the most beautiful plants known, and contain, among their various genera, plants of the most outstanding character. Lovers of these plants usually take great pains to keep the body or foliage in reasonable condition, freeing them from pests and diseases, and keeping them generally clean, but what of the unseen portions? The subterranean parts are of just as much importance as those above, but are, more often than not, the most neglected and abused; so much so, that to see a pot with clean, loose surface, with no incrustation or moss upon it, is the exception rather than the rule. The reason for this state of affairs is sometimes very simple, like the cure, but at times it can present quite a problem. It depends upon a variety of things. These can vary from indolence to ignorance, from hard water to too much water, and so on. If you should have the misfortune to reside in one of the districts noted for hard water, and possess no softener, or pond, then the only way that you can partly alleviate the trouble is to save all the rainwater that you possibly can. I have often wondered if a home-made filter would work. In a district where the water is really hard it is possible to put a crust or film on both soil and plant in a few weeks, as I know to my own cost. The top of the soil acts as a filter, straining the lime and other impurities out, or, where the water evaporates on the plant, it leaves a deposit on the stem or foliage, not only making the plant look unsightly, but clogging up some of the few stomata that such plants possess. I have known an incrustation to attain the thickness of one sixty-fourth of an inch during the summer season, even on fairly open soil.

A plant from an area where drought is the order of the day looks even worse with the top of the pot covered with moss, and points to either bad drainage, poor soil, insufficient ventilation, or gross overwatering, the latter being the usual cause, though it can be a combination of all these. I know that plants will grow nice and fat under these conditions, but this result can be obtained without the attendant risk of rotting or drowning the plant. At the risk of plagiarising all the text-books, I suggest that the drainage of the pot should be the first thing looked at, and if that is in order, direct your attention to the constitution of the soil. I would say that in no other branch of horticulture does the soil matter so much, as in that branch which uses flower-pots. The quantity being so comparatively small, the quality must be high, whatever the texture required may be. It may sometimes happen that a soil that is mechanically perfect when first put in gets choked with roots, and this is not always foreseeable, particularly if the plant is new to you. After the first time, however, precautions should be taken to give them sufficient room. It should be remembered that, on the whole, the greater the amount of voids in the compost, the less likely it is that the plant can be overwatered, or that moss or algae can grow.

On the other hand, however, if the voids are too great, too little water will be retained for the health of the plant, or, you will always be watering. This, too, can cause algae to grow. Another cause of failure is to be found where the soil is too close around the "collar" of the plant, in other words, the soil may be too retentive of water at that point, and so cause rot to set in. Quite often have I heard "I don't know what has killed it, the roots are quite all right," and an inspection of the pot has shown that the soil at the top has been soggy while lower down it has been dry. It rarely hurts to place the base of the plant on a thin layer of sand, and often saves rot setting in, also in many cases promoting the formation of new roots.

There is a great deal to be said for bottom watering, providing, of course, that the same amount of common sense is used as is necessary for the more usual method. The greatest argument, in my opinion, for bottom watering, is the fact that the nutritious salts are not washed away by water draining down from the top of the pot; and the second argument is that you can usually be quite sure that the pot is wet right through when the top of the pot shows wet all over, but be sure that it *IS* wet all over. It is a simple matter to put any soluble fertilizer in the bottom water and let it soak up, and more natural, too. In possibly all the very hot countries it will be found that the soil is very fertile, mostly for the reason that the upward motion of water is very much in excess of the downward motion, but, before attempting to emulate these conditions by stuffing your compost with nitrates, remember that your plant can get indigestion as easily as yourself, with death as the penalty for over eating. The roots will absorb the excess food, but, in bad cases, the plant will show signs of dissolution in a very short time, in some cases looking as though frost has touched it. If you must give fertilisers after the plant has been potted, cut down the water supply at the same time, and make sure that your ventilation leaves nothing to be desired.

I am in some doubt about the creed of "a small pot so that the roots can get to the side," naturally, these plants do not grow potted up out on the veldt or pampas, or wherever they may have come from, and in the light of such advice I am always amazed at the fact that they grow better there than we can ever hope to grow them!

It would appear that they grow towards the pot side (a) because the pot is not large enough for them, or (b) that they choose that place because the shrinkage of the soil allows them access to the air. They could go there for water, as once the soil has shrunk away the water will go rapidly down between the soil and the pot. It is a sad commentary on our growing methods that more often than not our plants do not really begin to grow until the roots have reached the sides! The greater amount of heat may have something to do with it, but I doubt that it plays any very important part, as most collectors have their pots so close anyway that they shade themselves with the exception possibly, of the front row. There has to be a front row, but, despite various warnings from text-books, I have yet to find evidence of burned roots, though I have burned the foliage or bodies of such plants as *Lithops* and *Argyroderma*. If, as I think, roots do go to the sides to get more air, then that would explain why keeping plants dry in the winter causes greater mortality than keeping them too wet in the summer, for the shrinkage of the soil from the side accelerates the dessication of the roots. Again, although the text-books state that the plants in many cases lose their roots during the resting period, in their natural habitat, to cause them to do so does not appear to be so successful here in England. Anyone with the facility for doing so should try growing their plants in beds, studying at the same time the more vigorous root system and the more healthy sturdy plants.

One section of plants that definitely should have a larger pot than would at first appear necessary, are those that produce stolons. Given a pot of reasonable size consistent with their nature, stoloniferous plants will produce typical well-developed offsets, and present a pleasing appearance, but put them in a pot that is too small, and they will be starved and puny, and eventually the pot will be full of tiny caricatures of the real thing. The same thing, of course, will happen to a plant that makes a lot of offsets. Give their roots a fair chance and the stem will respond well enough. Many folk are under the impression that an open soil encourages root pests. To the extent that it facilitates their movements, yes; but why have root pests? Regular repotting and the judicious use of paradichlorobenzene (N.B.—Care should be taken when using P.D.B. that it does not get on to the foliage, as it has an action similar to burning.) in the bottom of the pot when repotting, taking care that the roots are not touching it, will soon control most root pests that are likely to be found in the amateur's glasshouse. Root-bug is the most common cause of decline where succulent plants are concerned, and, wherever found or even suspected, steps should at once be taken to eradicate or prevent it. A plant released from the debilitating effect of this pest will, unless too far gone, show a remarkable improvement in a very short time. Root-bugs, in common with the common mealy-bug, move with an undulating or rippling effect when in a confined space, and the space has to be very minute that they cannot get into. An insect that can do a great amount of damage without coming under suspicion is the very small sciarid fly. This pest can only succeed where the soil is kept constantly damp or wet. Where suspected, the pot should be turned out and the soil destroyed, or, if no damage has been done, all the pots in the house should be thoroughly dried for a week or longer if possible. Another method of control is to use an insufflator and D.D.T. powder, puffing the powder lightly over the tops of the pots wherever the pest is suspected. This will destroy the adult insect, but will not reach the larvae. The larvae is a nearly transparent wormlike object, about three-sixteenths of an inch long, which, under some conditions, leaves a slimy trail in the manner of a minute slug.

I am not satisfied that the insect originally sets out to attack the plant, but think that it feeds on the humus in the soil. Should the soil become rather on the dry side, the larvae would, I think, then attack the roots, or even the body of the plant, in search of moisture. Once a plant is attacked there is every prospect of losing it, for it appears to me that the larvae must aid the dissolution of the plant by the ejection of gastric juices, which partially dissolve the tissues attacked. This view has been strengthened by the fact that I have found plants, cacti mainly, ranging in the state of consumption from only just attacked to nearly hollow, very wet, but with no sign of rot or mould that I could see with a microscope, and with the larvae crawling on the wet surface eating voraciously. (If they ever stop eating I have never noticed it). Possibly the tissue gets eaten too quickly for moulds to get a hold. The pot of soil has been examined, but it has been very evident that the plant has not just melted away and soaked into the soil, for the soil has been perfectly dry. The larvae, when fully developed, work their way to the surface of the soil to pupate, if they have been operating below soil level, and there form a tiny chrysalis under some convenient knob of soil. From this, shortly afterwards emerges the familiar tiny fly, less than an eighth of an inch long, ready to start off a repeat performance. If the weather be cold the fly is easy to catch, being very sluggish, but there are few things in the greenhouse that can move more quickly when the sun is out. I do not know whether the new systemic insecticides control this pest; most probably they do. That they are controllable by using less humus and sharper drainage I have proved, and it is helpful to cultivate an observing eye for minute objects! The issue is sometimes complicated by having plants other than succulents in the same house, the need to keep those plants moist may start an infestation.

(To be continued)

SEED RAISING

By A. BOARDER

A summary of a talk given by Mr. A. Boarder of the Cactus and Succulent Society of Great Britain, to the members of the Essex Branch, on 27th February, and to the Society on 16th March, 1954.

Seeds. Some seeds retain their vitality for a number of years, especially the larger black kinds, whereas some of the smaller brown *Mammillaria* seed does not germinate as well if it is over four years old.

Seed should be free from dust and pod casing which may start a mould on the surface of the soil. Large seeds which are sticky to the touch may be washed in warm water. This stickiness is caused by the pectin-like substance in the fruit.

Seed should be stored in an open tin and never in an air-tight container. Before storing seed must be dry, or mildew will set in.

Plants grown from seed develop better than imported plants.

Pots. Use earthenware pots for seed raising. They are vastly superior to any form of wooden box and with no proneness to disease or warping. Normal pots are rather too deep for seed raising and for this reason half pots of about 4" diameter are ideal. They provide adequate but not too much root room. Before use all pots should be sterilised by soaking in a strong solution of permanganate of potash and be well scrubbed.

Time for Sowing. This depends entirely on the temperature which can be maintained. February is the favourite month if the temperature can be kept within the range of 65° to 75°—not necessarily at a fixed and constant figure, but averaging about 70°.

If no heating is available sow in April.

Do not sow during a spell of sharp frosty weather.

Compost. John Innes Seed Compost is recommended as a good, safe and easily obtained medium. To gain the maximum advantage it is better used fresh.

Using a sieve of perforated zinc sift a small quantity.

Preparing the Pots. Place a large crock over the drainage hole. If a piece large enough to cover the bulk of the bottom of the pot is used, the removal of the plants for repotting is facilitated, as the entire contents of the pot can be pushed out from the bottom without damaging the roots.

Fill to about one-third of the depth of the pot with that part of the compost which did not pass through the sieve. Then add unsifted compost for another third and firm down. Finally, fill to about half-an-inch of the top with the fine siftings.

If there is only a small quantity of each type of seed or if you want to limit the number of pots, divide each into several sections with strips of celluloid labels.

Sowing (1). The seeds are then SPRINKLED on the surface, but make sure they are not too close together. PRESS down GENTLY the whole of the top surface. Many failures are due to seeds being too deeply covered. The seeds will generally germinate quite well if sown close together, but as they develop they will tend to crowd with a consequent forcing up and starving. The closely packed seedlings also make it difficult to decide whether or not the soil needs watering, so that they may be either underwatered when they will stop growing, or overwatered when they will surely rot off.

Pass a small quantity of sharp sand through the perforated zinc sieve and then sift it again through a fine tea strainer. This will leave in the strainer a quantity of very tiny stones. Spread these evenly over the soil to a depth of one of the tiny stones. Leave part of the soil, where there are no seeds, uncovered, so that dryness may be gauged by sight. These stones perform the useful functions of helping the soil to retain its moisture, preventing the formation of algae, keeping light off the seeds and of holding them down and giving the roots a chance of working down instead of forcing the seedling out of the ground. Additionally if watering is done by spray it prevents the seeds being shifted.

Sowing (2). The pots must be now carefully watered. This may be done with a fine spray but the following method is recommended. Place the pots in a shallow container with sufficient warm water to come to about an inch of its top.

Tap water which has been allowed to stand is safer than rainwater because of the likelihood of algae developing. When the soil is well damped the water should be siphoned off. This avoids the draining out of valuable and necessary minerals if the pots are lifted out.

Sowing (3). The pots should then be placed in the propagating frame. This can be anything from a biscuit tin to a heated frame. In fact anything in which a temperature of about 70° can be maintained.

Mr. Boarder has a frame in his greenhouse 6ft. x 18in. and about 6in. deep. This has two three-foot electric tube heaters, rated at 60W. per foot, in the base over which are stood a number of fairly large baking tins. These are packed with peat, which is always kept damp, to about half way up the pots. The peat should be initially soaked with hot water as this is absorbed quickly and completely, whereas to soak it with cold water is extremely difficult.

The pots should then be covered individually with pieces of glass in order to promote the humidity necessary for germination. Brown paper can be used instead and it has the advantage of being opaque and avoiding the danger of dripping moisture. This, in fact, is not such a danger as may be, at first, imagined, for the danger only becomes pregnant after the seeds have developed into the tiny plants. By then the individual covers have been removed.

Mr. Boarder has a thermostat inside the frame which is kept fairly close until germination has taken place. The frame cover is of sloping glass, and this, as may the individual covers, should be shaded with whitewash or similar, as it is imperative that strong sunlight does not reach the germinating seeds. For the first few days the whole frame can be covered with newspaper.

Frames can be improvised quite easily, simply and cheaply. A 25W. lamp will provide sufficient heat for germination, as will even a nightlight under a biscuit tin, if draughts are excluded.

Sowing (4). Whilst the seeds are germinating the soil must not be allowed to dry out, but it is as important to see that the soil is not always really wet. There is a great deal of difference between dampness and wetness and success is not likely to be consistent until this difference can be recognised. The three important factors required for germination are AIR, MOISTURE and WARMTH.

Germination. Is likely to be in from four to ten days but depends on the genera. Because of this keep the contents of each pot to the same genera. It is unusual for many days to pass without some signs of life showing. In three or four weeks 95% of the seeds should have germinated. Whilst waiting for the seeds to germinate, and whilst the cover glasses are still in position, it will not be necessary to water very often, if at all.

Overwatering can often prevent germination and cause the seeds to rot.

After Germination. Once any seeds in a pot have germinated it is essential that the pot cover glass be raised to allow air to get to the seedling. If they are kept too close they will probably rot off.

When the plant proper begins to form, i.e., when the spines begin to appear, and all the seeds have germinated, dispense with the cover glass, and lift the frame glass to give plenty of air. Keep in the shade, however. When the plants have developed to this stage they may be kept drier.

Subsequent Watering. Use a fine spray from overhead—but always test the spray first and away from the plants and so avoid dropping large globules on them. Also, do not use so much force so as to shift the seeds. Keep the peat damp and let it neither become completely dried out nor too wet. It is better to use warmish water as this is absorbed quicker and also keeps the plant temperature steady. Raise the frame cover glass each day.

If there are any signs of mildew spray with a fairly strong solution of permanganate of potash. This should appear as beetroot colour. This spray can be used with advantage once a fortnight even if there is no sign of mildew.

If you use water from a tank or water butt keep the container covered to reduce the chance of the action of the sun inducing the promotion of the algae which will, in turn, develop on the soil in the pots.

As the weather improves reduce the temperature.

Damping Off Disease. This disease, also known as Black-leg, is not difficult to prevent, but is almost impossible to cure. It can happen overnight and lack of air and excessive dampness are the main factors which accelerate the trouble. Once it has developed remove the affected pan.

Development. Once the plants appear and look to be growing well it is not so important to keep them damp, and it is possible to treat them as mature plants once the plant proper is forming well.

Checks. Aim at a steady and uninterrupted rate of growth, as once a seedling gets a bad check it will be a long time before it starts to grow again. These checks can be caused by excessive dryness and also from over-

dampness, but whereas a seedling which has received a check through dryness will pull round eventually, if the cause has been excessive dampness it may never recover. If the seedlings are subjected to strong sunshine they may also be checked. The plants will turn red and once this has happened it may be a long while before growth recommences. In severe cases the plant will not recover.

Pricking Out. When this is done depends on the type of plant and the rate of growth. If they look healthy, leave them. When most of the cotyledon has been absorbed, by about June or July, they may be pricked out to about a half to three-quarters of an inch apart. At this early stage the plants have only a single hair-like root, which thickens up after the cotyledon has been absorbed, and damage is very likely if moved. If, however, the plants look unhealthy or are too crowded, do so. Do not use tiny pots, prick out into concrete boxes or pans.

Use the same compost as before, but add to each bushel three-quarters of an ounce of sulphate of potash and an ounce and a half of hoof and horn grist (equals John Innes Potting Mixture in fertilizer). Sort out some of the larger pieces and place at the bottom, firm down but do not ram tight. The soil should be evenly damp and not wet. It should be crumbly to the touch and not soil the hands. At this stage make sure that the plants are correctly labelled. The plants are now ready to leave the frame, but are not ready for full sun. Place them in partial shade with a little warmth and not too much water. Keep the plants growing.

The First Winter. At the approach of winter the plants should be a fair size and pricked out. They should be kept on the dry side but not bone dry. If it becomes necessary to water during the winter do so only when the temperature is about 50°.

Potting On. When potting on do not disturb the ball of soil round the roots. Place the plant on a base of soil in the pot and filter compost round the ball and firm gently.

Full Sun. After the spines have developed fully—maybe in the second year—the plants may enjoy full sunshine.

Records. To get the full benefit and the maximum of efficiency from seed raising take the trouble to keep full records. Give each type of seed a number, record this in a notebook and on a piece of label in the pan. Note the date of sowing and the stages of development. Use the same notebook each year until it is filled. When the plants are pricked out give each a label. The notebook will become a permanent record which will not forget interesting details by the time the next year comes round.

A Don't. Do not raise seeds in an airing cupboard, or the like. They will most likely germinate, but, unless they are removed immediately on germination, they will become weak, pale and spindly, and as such very prone to damping off. It is far better to use a sunny indoor window sill.

LISTS RECEIVED.

Wheldon & Wesley Ltd., 83/84 Berwick Street, London, W. 1; large list of second-hand books for sale, with over 30 pages of botanical works including a page and a half of books specially on cacti and succulents.

H. Winter, Frankfurt A.M.-Fechenheim, Germany; 22 paged printed, illustrated list of cacti seeds.

F. W. Lealan & Son, Bridgnorth Road, Shipley, Pattingham, nr. Wolverhampton; four-paged printed list of cacti and succulent plants.

Ins. Consetto Distefano, Via Stagno 20, Catania, Italy; 5½-paged mimeographed list of plants and seeds for exchange.

E. H. Hepworth, 142 Ellison Road, Streatham, London, S.W.16; 12-paged printed list of cacti and succulent plants, seeds and sundries.

R. Gosset, 13 Boulevard Rabatau, Marseilles, France; 2-paged mimeographed list of seeds of cacti and succulents.

Worfield Gardens, Bridgnorth, Shropshire; sixteen-paged printed list of cacti and succulent plants.

H. Cork, 73 Queenswood Road, Forest Hill, London, S.E. 23; eighty-eight paged printed catalogue of books containing a large number of books on cacti and succulents.

T. N. Blackburn, Woodplumpton, nr. Preston; twenty-two paged printed list of cacti and succulents.

D. Neumann, Jr., 3066 Georgia Street, Oakland 2, California, U.S.A. A twenty-four typed paged booklet with well over 300 items of cacti and succulent literature. One of the largest collections of books in one cover that we have seen for a long time.

REPORTS OF MEETINGS

April 13th, 1954 ; C. E. L. Gilbert ; Culture of Cacti and other Succulents.

While basing his comments on his professional experiences, he was also a very keen enthusiast and preferred to carry out his own research rather than rely on recorded information. Growing cacti he considered most important and worthy of serious study. He had met specimens not very much better than the neglected plants he exhibited for illustrative purposes, but, fortunately, that standard was not general although it was not really high enough. Even neglected plants could be vastly improved, or used to propagate good specimens.

A *Cephalocereus senilis* bore little resemblance to the snowy headed plant that is so familiar. It had been beheaded and the decapitation was rapidly assuming healthy characteristics and was already of a greater diameter than its unlamented trunk. A *Mammillaria bombycina* appeared more like an ossified human hand with faintly cactus like growths at the finger tips. One of these tips had been removed and was now a healthy example of the species. An attenuated and murky *Mammillaria candida* was developing nicely at the crown, having been re-potted in good compost. It was nearly ready for decapitation and re-rooting. A *Notocactus leninghausii* and a *Mammillaria pseudoperbella* were similarly attenuated and corky. The same treatment was expected to yield the same result.

He gave a demonstration of knocking out and preparing a plant for re-potting. For tools he used a piece of wood two inches wide, a quarter of an inch thick and twelve inches long, loosely nailed to any convenient object at an angle of 45°; brushes of the size of an artist's mop, not necessarily camel hair, with the handle end pointed. The bristles were burned off at the tips; a watchmaker's glass with a piece of elastic affixed to hold it in place over the eye, for inspecting roots. His methods caused some amusement, but were undoubtedly effective. The plant was knocked out of the pot and the soil shaken off the roots, which were then draped down the piece of wood. The remainder of the soil was then brushed out of the roots, down the wood and into a container. Remaining pieces were broken up with the pointed end of the brush. The plant was then re-potted in fresh compost. He considered the addition of weathered breeze to John Innes Compost removed the tendency of the soil to clog and had a surprisingly beneficial effect on growth. A *Mammillaria stella aurata*, the lower part of which had some chance of survival, but which refused to root in the normal media was, quite by chance, potted into a mixture containing one third of breeze. The next spring it was found that during the winter it had gained a fine root system nine inches long and one inch of new growth at the crown.

By breeze he did not mean the fuel of that name, but the constituent of breeze blocks, which is usually crushed boiler clinker. It was taken from a heap of blocks which had crumbled and were, therefore, useless for building purposes.

His compost formula, based on many experiments, was as follows :—

- Six parts by volume good clean loam
- Three parts by volume granulated peat.
- Two parts by volume breeze.
- Two parts by volume red builders' sand.

to which is added one handful of hoof and horn grist to each two gallon bucket. The whole is then passed through a quarter-inch sieve. The larger pieces of breeze are used as crocks. Lime haters (as *Euphorbias*) should not be put into this compost.

When re-potting use dry compost, tap pot to shake down and then water.

In his opinion plants were generally over-watered or watered at the wrong time. Delay commencing to water until outside temperatures become stable, not ranging from 60° to freezing point over the twenty-four hours of the day. He said that the slightest watering of *Ariocarpus* at the wrong time will kill the plant.

May 4th, 1954 ; P. V. Collings ; *Cereus* and *Echinocereus*.

Mr. Collings commenced his talk by outlining the sub-divisions of these genera.

A very interesting species, *Carnegiea gigantea*, provides the state flower of Arizona and is a protected plant. It is slow growing, taking many years to reach maturity. It will reach to a height of forty feet or more, but will probably take two hundred years to do so. It bears flowers profusely when mature, these being cleistogamous (the flower does not expand).

For the sheer beauty of its flowers, *Heliocereus speciosus* is worthy of cultivation and is a very desirable species.

A plant with an inquisitive habit is the "Creeping Devil," *Machaerocereus eruca*, its prostrate stems layering themselves in all directions, thereby becoming a "mobile" plant by the dying out of the parent plant. If it is situated in poor soil, it can soon establish itself in a better medium by this means.

For perfume one must grow *Nyctocereus serpentinus*. As its name reveals, it is serpentine in habit ; a climber with thin stems. It bears flowers which are attractive, but they only open at night. Amongst the many night flowering cacti there is *Hylocereus triangularis*, a three-winged plant which bears enormous flowers, probably the largest of all cactus flowers. It is a wonderful sight to watch these nocturnal blooms open and on one occasion a *Selenicereus grandiflorus* (Queen of the Night) was due to open, it was observed. From the bud stage, twenty minutes elapsed and in this brief interval the flower had expanded four inches. After an hour had passed this truly amazing flower had unfolded its intricate petals to a spread of fourteen inches. It is a great pity that such splendour is short lived.

Again touching on size, *Pachycereus pringlei* is a monster, the largest of all cacti. It is a truly monumental species ! *Pachycereus marginatus* is a well known plant in our collections, but it is variable in habit. Whereas some plants are columnar with no branches, others branch freely, even when fairly young.

Another of the well known favourites is *Chamaecereus sylvestrii*. This low growing plant is very accommodating in many ways. It is, however, very prone to red spider and one must be careful in handling the plant as its stems come adrift at the slightest disturbance. The flowers are quite large for the plant, and pretty, and thrown in some profusion. It is a monotypic genus, but there are several horticultural varieties, such as variety *boedeckerii*, which has stems slightly larger in diameter. One must also note varieties *calvinii*, *haagei* and also the yellow form.

The sub-genus, *Cephalocereus*, includes many attractive plants, both in flower and form. A typical example is *C. palmerii*. This plant has the woolly apex or cephalium and has very beautiful flowers, these having a mother of pearl sheen. The flower fades and when the petals have dropped, a knob of wool is left. Some of the *Cephalocerei* are completely enclosed in long wool. A great favourite is *C. senilis*, the "Old Man" cactus. This plant may get very dirty and grey looking, but it can be shampooed with any detergent of the Tide class. This, however, does not apply to all woolly plants as there is sometimes difficulty in restoring the wool to its former hoariness. Another plant, known as the "Old Man of the Andes" is *Oreocereus celsianus*, which is a very desirable species.

It is said of many cacti that they have a sculptured look about them. Doubtless they do, as their surroundings are often sculptured by sand and dust storms, as well as torrential rain. But the sculptured effect in cacti is often caused by fasciation and this gives rise to such varieties as *Lophocereus schottii* var. *monstruosa*, which may be more commonly known as the Epstein Plant.

As a result of questions asked, it must be noted that the columnar *Cerei* require a rich soil. An interesting experiment with the columnar types reveals that good cuttings have been struck with the result that no branching appears to have taken place. A suggestion has also been made that root space may influence habit.

Amongst the many desirable cacti we grow are the *Echinocerei*. They include many pleasing forms and the beauty of their flowers is a delight to the eye. The flowers are large and often they are borne on comparatively small plants. The colours are vivid, with the metallic sheen which is known in many cactus blossoms.

An unusual species is *E. knippelianus*, which has no spines. *E. de laetii* is a species which has long wool not unlike that of the "Old Man" type of plant. For really delightful flowers, *E. longispina* is outstanding.

In reply to questions, it was pointed out that many of the *Epiphyllums*, *Aporocactus* and similar types have often become unsightly or overcrowded. Very often growth is poor and there are no flowers. These plants may be carefully pruned, or even divided, taking care that all diseased and dead material is removed and that all cut surfaces are adequately dried. *Stapelias* will also respond to this treatment.

! ! !

Wolverhampton Express and Star : the meadow cactus, which had developed an unbelievably extensive system of surface roots estimated to be miles long.

London Free Press : How could he keep cacti seed at a steady temperature of 70 degrees ? He put them in the top of the refrigerator !

Auckland Star, N.Z. : The small amount of attention, a little sun and a very little water, needed by cacti had made them an easy hobby.

Eastern Daily Press : these plants need to be watered every day from early April until late July. Mammillarias are an exception. These flower by the end of March or the beginning of April, so in February they need more water than the others. Care must be taken to prevent water from lodging on plants in full sun. Each droplet can act as a burning glass. Overpotting will often delay flowering.

Leicester Mail : When flowers appear, suspend the spraying. My aloe vaijata, or mackerel aloe.

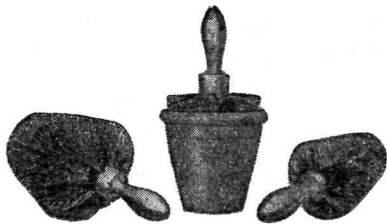
Bradford Telegraph and Argus : contains a drug which, when the plant is eaten, causes one to see visions in colours of brilliant hues and eventually leads to full confession of all sins.

Leicester Mercury : all cacti are eatable. They taste like strawberries, plums and cherries.

Nottingham Guardian : water it only three times a year and even then the water is not allowed to touch the plant.

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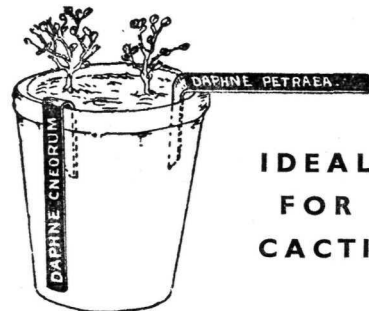
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THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 16

OCTOBER, 1954

No. 4

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SOCIETY NEWS

1954

October 19th 6.30 p.m. Mrs. M. Stillwell : Mimicry Plants. *Plants for table Show—Mimicry Plants.*
November 16th 6.30 p.m. Epidiascope. Members own photographs.
December 7th 6.30 p.m. K. W. Harle : Raising plants from seed and Film Show.

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ESTABLISHED 1931

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EDITORIAL

With this issue we say goodbye to the sixteenth volume, and to a season the like of which we hope will not be experienced again. The wretched weather has been responsible for a very bad flowering season.

But with the ever surviving optimism of the cactus enthusiast, we look forward to the season of 1955 with hope. If, however, we are to obtain the best results from what we trust to be a better season, now is the time that we must prepare. Weather forecasters tell us of an old adage that fog in August foretells a cold, hard winter. If that turns out to be correct, the care and preparation you make now will receive its reward in the new season, so go carefully over your plants and greenhouses and be sure there are no pests, draughts, drips, etc., and that your plants are as cosy and cared for as possible.

It is with regret that I have to, owing to lack of space, leave over to January an article by Dr. Tischer, describing a new *Conophytum*. It is extraordinary how few photographs accompany contributions these days. I have had to draw upon what was a large collection of my own and this is becoming thin. Contributors are asked to provide photographs where possible, and readers are invited to send in suitable photographs of their fine plants, in flowering state always preferred.

Every member is requested to renew his subscription to the Treasurer, Mr. E. W. Young, 35 Castle Drive, Ilford, Essex, promptly on or before 1st January. It has been decided that seed distribution will begin again then, but only to members who have renewed their subscription, and Mr. Boarder has quite a considerable amount for distribution. Further, the January Journal will only be sent to those who have renewed. Owing to the early date of publication, it has been the custom in the past to send the January issue to all who were members during the previous year. This has caused this issue to become exhausted, notwithstanding extra copies having been printed and new members have not been able to obtain the full volume.

We have just received No. 4 of the *Repertorium Plantarum Succulentarum*, published by the British Section of the International Organisation for Succulent Plant Study. It consists of 13 pages, and cover, and records references of all cacti and other succulent plants described since No. 3. It is essential to all seriously interested in our plants, and saves a considerable amount of time in research work. It costs 10/-, postage 6d. extra, and copies can be obtained from the honorary secretary of the I.O.S., Mr. J. D. Donald, Villetta, Wicklands Avenue, Saltdean, Sussex.

The Society's Annual Dinner will be held at La Coquille, St. Martins Lane, London, W.C., 7 p.m. for 7.30 p.m., on the 20th November. This is the social occasion of the year for all members. Members desirous of obtaining tickets should send 14/- per head to our Hon. Treasurer, E. W. Young, 35 Castle Drive, Ilford, Essex.

CACTUS CULTURAL NOTES

By A. BOARDER

The lack of sunshine throughout the summer has made the growing of cactus plants a rather difficult task this year. Fortunately, the early part of the year was not too bad and many flowers opened on the *Mammillarias*. It was the later flowering species, however, which suffered. In my own greenhouse I noticed that many plants held buds for many weeks, some for months, waiting for the sun. I have two varieties of *Astrophytum capricorne* which showed flower buds many months ago. I wondered whether the flowers would ever penetrate the mass of strong, twisted spines on the top of the plant. Nothing happened until early September, when the long awaited sunshine caused the buds to develop at a fast rate. By the third of the month, one bud had forced its way through the spines and was showing the yellow colour. This is a four-year-old seedling and has an exceptional amount of strong, well-formed spines, equally as good as any I have seen on an imported plant.

Another plant which has waited for the sun is a last year's seedling of *Notocactus ottonis*. The bud has been showing for so long that I had almost given up all hopes of it ever opening, but it is doing so at last. Many cactus growers are not aware that it is possible to get *Notocactus* in flower the year after sowing the seed. I have often described the numbers of *Mammillarias* which I have flowered in the year following that of seed sowing. I have also done this with some *Rebutias*, but I must admit that it is not often that a *Notocactus* will flower when so young.

Is there any reason why many of my seedlings flower so early in life? I believe it is due to the fact that I try to keep the seedlings growing without a bad check at any time. This can be a tricky business as, if one tries to force the growth too much, over-watering may cause decay and the plants will die. I have noticed repeatedly how soon seedlings of *Thelocactus* will rot off when very small if the amount of water is too much. There always seems to be a scarcity of these plants, as seedlings, offered for sale, and so I expect that the reason is that they are not very easy to raise commercially.

I have noticed that this year's seedlings have grown exceptionally well, and although only sown in February, some are large enough for potting into 2½-inch pots at the beginning of September. During my journeyings up and down the country, lecturing and judging, I have seen many seedlings which are no larger at eighteen months of age than they should have been at six months. The soil in the pans has appeared foul and, where such conditions prevail, it is impossible to expect the seedlings to grow as well as they should do. Where any seedlings seem to stand still I advise that they be moved into some fresh soil. Also it is no use placing these small plants in the strong sun. This will surely give them a bad check from which it may take them many months to recover. This is not only true of very young plants but, even with seedlings of a year or more, it is a fact that if they have stopped growing, the transplanting into something good and fresh will mean that within a month they can double their size.

I have often remarked how we can be forever learning something more about our plants, and this statement has been proved to me this year. In 1931 I raised some seedlings of a so-called *Mammillaria ocamponis*. The plants flowered fourteen months after the sowing with grand flowers quite an inch-and-a-half across with a tube, about as long as the width. When the photograph was published, Mrs. Vera Higgins suggested that the plant was not *M. ocamponis*, but *M. longiflora*. I wrote to the German grower of the seed and he said that the plants were the genuine *M. ocamponis*. It has taken me until this year to be able to say for sure whether this was so, as last year I was able to procure some seed of supposed *M. ocamponis*. First appearances appeared to show that the plants were alike, but, once the flower buds formed this spring, I was soon in no doubt that the plants I had under *M. ocamponis* were nothing like *M. longiflora* as far as the flower was concerned. Instead of a fine flower, all I got was a quite small almost colourless bloom, very similar to that of *M. decipiens*. It has, therefore, taken me 22 years to find out that *M. longiflora* is quite different from *M. ocamponis*.

Each year I try to make comparisons with certain of my seedlings. When I get plants from seed from a certain source and I am in some doubt as to the correct naming, I wait until I can get some more seed of the same species from a totally different source, and I am then able to make a re-check with the published descriptions to see which is right. At the moment among well over three hundred different *Mammillarias*, I have a few which are un-named and some which I have doubts about. In time, I hope to be able to name correctly all of the plants.

Some members may remember that I have written of the difficulty of growing certain types of *Mammillarias* and, although some kinds can be raised fairly easily from seed, the plants just fade out when three or four years old. I have tried again and again with some types and always find the same thing happen. At the very fine lecture given by Dr. Craig recently to our Society, I was interested to see that many of the cacti with which I had had difficulty were found growing at altitudes of 12,000 to 16,000 feet about sea level. Even at this height the sun was shining brilliantly, and it seemed very hot. I had been at the summit of Mt. Snowdon only ten days before attending the

above lecture, and had been struck with the extreme cold and dullness there, and this was only 3,500 feet above sea level.

It is, therefore, apparent to me that many of the plants we try to grow in this country will never succeed for long as they never appear to get used to the varying air pressure conditions. We can try all we know, but I doubt if we shall ever be able to imitate the actual conditions similar to those enjoyed by many Cacti in their native habitat. The varying barometric pressure may be more than we can deal with. When one considers the clear air in which many Cacti grow, and the large amount of sunshine prevailing, it is a wonder that we are able to get any Cacti to grow, let alone flower, in this comparatively sun-less climate. We can do a good deal to increase the amount of light the plants can get by seeing that the glass of the greenhouse is kept as clean as possible. One week without rain will mean quite a deposit of dust on the glass which can shut out much of the necessary sun-light.

At the end of October, all plants should be prepared for the coming winter. Every plant should be examined, and a good plan is to make a small space at one end of the house and then take each plant in turn and, after treatment, see that it goes in the space provided. In this way all plants can have that essential autumn cleaning. Start by removing all the top surface of the soil with the aid of a wedge-ended stick. Do not go too deep or you may damage the roots. When the whole top layer has been removed, examine the base of the plant carefully. If any mealy bug is seen it must be dealt with at once, and a pointed stick dipped in a solution of one part nicotine to forty parts methylated spirits will be found effective. Any moss or weeds which have grown up close to the spines must be cleaned off, and when the base of the plant appears quite clean, a little fresh soil can be added so that all looks neat and tidy for the winter. At the same time, any labels which have been broken or defaced can be attended to, so that there is less to do in the spring re-potting period. The drainage of the pot can also receive attention as sometimes the hole in the pot base gets clogged up. This may be through ordinary watering or by a worm or other pest which has been working there. See, therefore, that the hole is quite clear.

This cleaning is best done when the main watering for the year has ceased. Not that it may be necessary to cease watering altogether, as during the winter months if the temperature is right an occasional drink may do no harm. This winter watering must not be overdone. It is one thing to give an occasional watering to save any shrinkage, and another to give sufficient water to encourage the plant into active growth. This must never be done. A complete rest is necessary for the production of many flowers the following year, but at times the temperature of the greenhouse may be in the lower sixties, even during December. At such times a small watering will do no harm.

Whilst judging several shows this year, I have been struck by the many fine Cactus plants exhibited. It is apparent, however, that some people attach too much importance to the supposed rarity of a plant. This is not as significant as many believe and, although a plant may be rare, it must also be in very good condition before it can be awarded full points. I have often over-looked when judging, such imported plants as *Astrophytum asterias* or *Ariocarpus*. Many of the plants seen are obviously newly imported specimens and have not grown an inch in the possession of the exhibitor. They have had bad scars at the base or have other signs of damage, and so I have not awarded them prizes. At one show in the Midlands this year, I surprised many people by awarding the prize for the best succulent other than Cacti to a well grown, flowering common specimen. I had great difficulty in finding an extra special plant for this award, as although there were some excellent Cacti at the show, what good sized succulents present were badly scarred and damaged. The fact that a plant may be rare is not enough, it should also be in perfect condition and show signs of having grown recently. I am of the opinion that a good exhibition plant should show plenty of signs of having been grown in this country or at least show that it is alive. I am sure that some of the specimens I have seen this year are so newly imported that they have had no healthy roots at all, and my bet is that they are on their way out.

Besides showing healthy growth, if a plant shows signs of having flowered, it can gain many points for condition and cultivation. When more than one plant is called for in a class, it is always better to try to show as varied a collection as possible. For instance, when three Cacti are called for it is better to show three different genera if possible. Providing other features are equal, the more varied group might get the award. Some exhibitors fall down over cleanliness. This includes not only the actual plant, but the pot and label as well.

Those members without a greenhouse who keep their plants in a sunny window, must realise that it may be much warmer in this room than in the average greenhouse during a severe spell. I consider that a temperature of 40 degrees is quite safe for all Cacti over a year in age and, with such a temperature, the need for any watering is remote. However, the plants kept in a living-room may be subjected to 65 degrees or more for fairly long periods, and if the plants receive no water at all throughout the winter, many may suffer, and even die. Any temperature over 50 degrees is a growing one, and unless plants get a small amount of water under such conditions, they are

continued on page 89

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

October and the following autumn months are some of the most enjoyable for the growers of succulent plants, for it is at this time of the year that they are really at their best. Many develop most beautiful leaf colouring, while the stemless *Mesembryanthemums* are a riot of colour, or should be if given sufficient light and all the sunshine available. This year has been so lacking in sunshine that many have budded very late, and some not at all. *Lithops* and *Conophytums* should be in flower, the latter having beautiful shades of pink up to magenta flowers, besides the usual yellow. *Lithops* have just the two colours, white and yellow. Go on watering *Lithops* once a week until November and then rest until the following May. *Conophytums* can be watered carefully until December and then rested.

There is a statement I made in my last notes that I should like to correct. While most stemless *Mesembs* are very subject to root bug, *Conophytums* seem to be free of all pests. They do, in some cases, tend to get smaller with age owing to the base of the plant getting very woody. This will be particularly noticed in imported plants. The latter should be broken up to re-root, and cut back to the point of growth, and all the old dead skins removed. It is possible to tell the approximate age of an imported *Conophytum* by counting the dead skins—one for each year. Stop watering *Pleiospilos* as soon as the second pair of leaves appear, also the *Argyrodermas*.

A beautiful plant well worth looking out for is *Notonia grandiflora*, it belongs to the *Senecio* family, and produces beautiful orange composite flowers with a delightful scent that persists even when the flower fades. Some very interesting succulents are to be found among the *Kleinias* and *Senecios*, and they deserve more popularity. One of the earliest plants a beginner acquires is usually *Kleinia articulata*. It was the first succulent I possessed, and I have always had a soft spot for it. *Kleinia pendula*, known commonly as the "inch worm," has all the beautiful markings and appearance of a snake's body, it requires careful watering as, together with its near relative *Kleinia stapeliiformis*, it rots very easily from the base if kept too wet. *Kleinia repens*, if grown in full sun and a rich soil, develops a rich blue colouring that is most striking in any collection. This is a plant suitable for beginners. *Kleinia radicans* has very prolific trailing habits and will root very easily from cuttings.

I hope you have rooted a number of cuttings during the summer to make some miniature gardens for Christmas presents. They are always a delight to one's friends and often result in a new member for our Society. Small ones can be made very cheaply from perforated zinc cut to the required size and the edges turned up and the whole being cemented over and large stones or pieces of broken concrete embedded round the sides. The centre can be left showing the zinc to provide drainage. Small gardens about eight inches by six would make ideal Christmas gifts. They should be presented with a cork mat to prevent the damp damaging the furniture or window sill where it is to be kept. It is often possible at Christmas time to buy little red gnomes for cake decorations, one of these added to your garden will give it just that extra finish. For boys, a realistic desert can be reproduced with *Opuntias*, etc., with the addition of a few cowboys and Indians.

Make sure all your more delicate succulents are well away from the glass before the frosts start, and make sure all heaters are in good order. This year's seedlings should be well advanced if planted in April, or before. They should be watered carefully during their first winter, but not forced into unnatural growth. Try to keep the true characteristics in your seedlings. It is safer to have them small and hardy during the first season.

Many of the autumn and winter growing *Gibbaeums* will soon be showing new growth, many are in bud in January, and should be carefully watered when the weather is favourable. *G. shandii* and *G. pubescens* with me are usually in bud at the end of December. *Dinteranthus* should be flowering about now, they need the same treatment as *Lithops* and are some of the most beautiful plants of the whole genus. They require a very open soil with plenty of limestone grit and sharp sand. For correct growth, each little body should have just the one pair of leaves, but some do tend to make a second pair during the season. *D. pole evansii* does this with me most years. Unlike the *Lithops*, which are sessile, the yellow flowers of the *Dinteranthus* are borne on a short thick stalk. *Ophthalmophyllums* are well worth cultivating; I find the best way to show them to advantage, is to plant several kinds together in a pan. It is then you can compare the plants one with another and see the flowers to better advantage. They must be watered very carefully as they tend to split from top to bottom if kept too damp. The delightful little pink and white flowers last for days, and many are delicately scented. They need a long resting period until about June, or until the old dry skin splits and the new body emerges. The time to start watering depends a lot on your own particular growing conditions. *Ophthalmophyllum dinteri*, *O. schlechteri* and *O. friedrichiae* are some of the best and fairly easy to obtain. They are naturally very small growing and should not be forced in any way, especially the seedlings.

Any plants that have been left outside during the summer should now be safely back in the greenhouse. It is one of those things that always gets put off, mainly due to the fact that other plants have taken their places for the summer months and now space is lacking to accommodate the plants in their original places. Make an effort to bring them in today, if you have not already done so. Who knows, tonight might bring a really sharp frost and, even though it may not actually kill your plants, it will most likely spoil their beauty.

For those who want a quick growing, very free flowering succulent, I would suggest *Delosperma sutherlandii*. The beautiful appearance of the plant in the sunshine with the very fine papillae on the leaves and the large pinkish white flowers, make it an asset to any collection. It will take plenty of water in the summer, but in winter the plant will die down, leaving the bulbous growth, which will send out a fresh lot of leaves in the spring.

Take some of the offsets off of the *Gasterias* and *Haworthias*, they tend to get too overcrowded and, as a result, the plants get smaller and smaller. Concentrate on a good central growth of flowering size. The same applies to many of the *Aloes*. If you have a *Sedum sieboldii*, place it up on a hot dry shelf for the latter part of the summer and water only about once a month. It will turn a beautiful strawberry pink and makes a fine table decoration for the late autumn. All this old foliage will die and can be removed, when it will be seen that next year's growth is already sprouting from the base.

Aim at having a large pot of *Crassula lactea* in bloom for Christmas. *Trichodiadema densum* is another plant I always have in bloom in December. This year, for the first time, I was successful in flowering *Pedilanthus macrocarpus*. A member of the *Euphorbia* family with the red slipper flowers. It has attained a height of nearly three feet six, and I had almost given up hope of flowering it, but this year I shifted its position to the far end of the greenhouse where it gets unrestricted sunshine, and it seemed to appreciate it. It will take plenty of water in the summer and makes plenty of new growth from the base. Water should be gradually withheld on the *Euphorbias* at this time of the year, they do not like a chilly damp atmosphere, particularly the globular types, *E. obesa*, etc. I have always found the *E. meloformis* types most susceptible to damp, in fact, I have lost several during the winter months. It is advisable to keep all *Euphorbias* bone dry through the winter, with the exception of *E. splendens* which likes an occasional drink to prevent shrivelling. I think most *Euphorbias* really need a certain amount of warmth during the cold weather to be really successful with them.

Take off any ripened seed pods now and packet up the seed ready for sowing next year. Stemless *Mesembryanthemum* seed is better stored in the pod. Wait until the long pods of *Stapelias* split and disclose their seed before removing. *Ceropegias* will seed in the same way as *Stapelias*, being of the same family. A good way of growing the trailing *Ceropegias* is to tuck in each new shoot as it appears; in this way you get a compact pot full of growth, rather than a lot of long trails that are difficult to manage. *Ceropegias* require a similar soil to *Epiphyllums* and damp conditions during the growing season. The trailing varieties do better if slightly shaded. They should be re-potted about every second year, if in smallish pots, as they make a tremendous amount of root and the tubers increase rapidly in size and in numbers. This year, as an experiment, I grew a plant of *Ceropegia woodii* in a bed of damp sand under the staging. The leaves double themselves in size and the white marbled effect became very prominent, in fact, the result was a very handsome plant, compared with the one grown on the staging in the normal way. I have read that the African natives find these tubers very tasty and, as a result, some of the larger types are somewhat rare. *Ceropegia stapeliiformis* should be a *must* in every collection, owing to its curious flowers. It is said there are over a hundred different species of *Ceropegias*, unfortunately, there are not a great many available in England, other than the common, well-known trailing varieties, although, occasionally, one is lucky enough to come across one in pre-war collections.

Many people find difficulty in growing *Kleinia tomentosa* successfully. I have no trouble in the summer when it grows to perfection in full sunlight and, given plenty of water, but it does tend to shrivel and drop its leaves badly in the winter. Here I think is another of those plants that appreciate a little extra warmth in the winter months, if it is available, if not, remove as far from the glass as possible and away from draughts. In the spring you will probably find, owing to the bottom leaves having dropped, your plants have a very leggy appearance; in this case, it is better to cut these down to the base and use as cuttings; you will soon find plenty of new shoots springing up from the base. Cuttings will root very well in damp sand, but may take a little longer to get established than some other succulents.

Spend your winter evenings checking up on correct naming and, in general, learning all you can about these fascinating little plants; it is far more profitable than hours spent glued to the television set.

We learn that Lieutenant-General Sir Oliver Leese, of North African fame, and so well known to us in cacti, has been appointed to deputise for Field-Marshal Lord Alanbrooke as Lieutenant of the Tower.

RICHARD BRADLEY AND HIS "HISTORY OF SUCCULENT PLANTS" (1716—1727)—contd.

By G. D. ROWLEY

DECADE III 1725

21	III: 1	Haworthia margaritifera Haw.	Small Pearl'd Aloe	<i>Aloe margaritifera</i> Willd., D.C., B.M. <i>Aloe margaritifera</i> α major Haw. 1804, Mill. <i>Aloe margaritifera</i> v. <i>media</i> Bot. Mag. 815. <i>Aloe margaritifera</i> γ <i>minima</i> Bot. Mag. 1360. <i>Aloe pumila</i> var. <i>margaritifera</i> L.
22	III: 3	Stapelia variegata L.	The small creeping thick leav'd Cape Fritillary	<i>Stapelia variegata</i> L., Mill., D.C., B.M. <i>Orbea variegata</i> Haw. 1812.
23	III: 5	Stapelia hirsuta L.	The larger thick leav'd Cape Fritillary	<i>Stapelia hirsuta</i> L., Mill., D.C., B.M. <i>Stapelia hirsuta</i> γ <i>patula</i> N. E. Br.
24	III: 6	Glottiphyllum latum N. E. Br.	The smaller dwarf Tongue leav'd Fig- Marygold	<i>Mesembryanthemum linguiforme</i> L.* <i>Mesembryanthemum longum</i> Haw. 1803, ? 1812, B.M. <i>Mesembryanthemum lucidum</i> Haw. 1821, B.M. <i>Glottiphyllum</i> ? <i>latum</i> N. E. Br.
25	III: 7	Sceletium expansum (L.) L. Bol.	The large Silver Olive Fig-Marygold	<i>Mesembryanthemum expansum</i> Haw. 1803, 1812, Willd. (as "Pl. 16"), L., Mill. (as "III.16.7"), D.C. (as "III.7.35"), B.M.
26	III: 8	Ruschia perfoliata (Mill.) Schwant.	The larger perfoliated Fig-Marygold	<i>Mesembryanthemum perfoliatum</i> β <i>mona-</i> <i>canthum</i> Haw. 1803, D.C. <i>Mesembryanthemum uncinatum</i> L., Willd., Mill., D.C., B.M. <i>Mesembryanthemum uncinatum</i> var. <i>mona-</i> <i>canthum</i> (Haw. 1821), B.M.
27	III: 9	Ruschia uncinata (Mill.) Schwant.	The smaller perfoli- ated Fig-Marygold	<i>Mesembryanthemum uncinatum</i> L., Willd., Mill., D.C., Haw. 1803, 1812. <i>Mesembryanthemum uncinatum</i> var. <i>majus</i> (Haw. 1821), B.M. <i>Mesembryanthemum uncinatum</i> var. <i>mona-</i> <i>canthum</i> B.M.
28	III: 10	Euphorbia neriifolia L.	The Oleander leav'd Euphorbium	<i>Euphorbia neriifolia</i> L., Willd., Mill., B.M., D.C. (as "III.10.8"), V.H.
29	III: 11	Mammillaria mammillaris (L.) Karsten	Small African Melon-Thistle	<i>Cactus mammillaris</i> L., Willd., D.C., B.M., Mill. (as "II.29.11"). <i>Neomammillaria mammillaris</i> Br. & R.
30	III: 12	Haworthia arachnoides Haw.	The Little Clustered Aloe	<i>Aloe arachnoides</i> Bot. Mag. 756. <i>Aloe arachnoides</i> var. β Willd., B.M. <i>Aloe pumila</i> var. <i>arachnoidea</i> L.

DECADE IV 1727

31	IV: "1"	Aeonium arboreum (actually p. 7) Webb & Berth.	The Tree Houseleek, with a Yellow Flower	<i>Sempervivum arboreum</i> L., Mill., D.C., B.M. <i>Aeonium arboreum</i> Praeg.
32	IV: 9	Melocactus communis Link & Otto	The Turk's Head, or Turk's Cap, so called in America, or with us the true Melon-Thistle	<i>Cactus melocactus</i> L., Willd., Mill., D.C., B.M. <i>Cactus intortus</i> Br. & R. <i>Melocactus communis</i> Haw. 1831, B.M.

* L. Hortus Cliffortianus, based on Boerhaave's diagnosis ; Bradley not cited directly.

- | | | | | |
|----|--------|--|--|---|
| 33 | IV: 11 | Aloe saponaria (Ait.)
Haw. | Common-spotted
American Aloe | <i>Aloe perfoliata</i> var. ι Willd., B.M.
<i>Aloe saponaria obscura</i> Haw. 1804, (See note
in Haw. 1812). |
| 34 | V: 17 | Aridaria geniculiflorus
(L.) Schwant. | The Rosemary-leav'd
Fig-Marygold | <i>Mesembryanthemum geniculiflorum</i> L., Willd.,
Mill., Haw. 1812, B.M., D.C. (as "IV.12.
34"). |
| 35 | IV: 13 | Drosanthemum striatum
(Haw.) Schwant. | The Hairy Spindle-
leav'd Fig-Marygold,
with a pale Purple-
Flower | <i>Mesembryanthemum striatum</i> L., Willd., Haw.
1812, ? D.C., B.M.
<i>Mesembryanthemum hispidum</i> var. γ L. |
| 36 | IV: 14 | Lampranthus emarginatus
(L.) N. E. Br. | The Purple-flower'd,
Spindle-leav'd Fig-
Marygold | <i>Mesembryanthemum violaceum</i> Haw. 1803,
B.M.
<i>Mesembryanthemum ? deflexum</i> Haw. 1812. |
| 37 | IV: 15 | Lampranthus glaucus
(L.) N. E. Br. | The upright Triangu-
lar-leaved Fig-Mary-
gold with a yellow
Flower | <i>Mesembryanthemum glaucum</i> L. Willd., Haw.
1812, D.C., B.M. |
| 38 | IV: 16 | Disphyma crassifolia
(L.) L. Bol. | The Club-leaved
Creeping-Fig-Mary-
gold, with purple
Flowers. | <i>Mesembryanthemum crassifolium</i> L., Willd.,
Mill., Haw. 1812, D.C., B.M. |
| 39 | IV: 17 | Eberlanzia spinosa
(L.) Schwant. | The Thyme-leaf'd
Thorny-Fig-Mary-
gold | <i>Mesembryanthemum spinosum</i> L., Willd., Haw.
1812, Mill. (as "IV.39.41"), B.M. |
| 40 | IV: 18 | Cephalophyllum
diversiphyllum N. E. Br. | The creeping Cluster-
leaf'd Fig-Marygold,
with a Yellow-
Flower | <i>Mesembryanthemum corniculatum</i> L., Willd.,
D.C.
<i>Mesembryanthemum corniculatum</i> β <i>diversi-</i>
<i>phyllum</i> Mill., Ait., B.M.
<i>Mesembryanthemum diversifolium</i> Ait., Haw.
1803, B.M.
<i>Mesembryanthemum dubium</i> Haw. 1812.
<i>Cephalophyllum diversiphyllum</i> N. E. Br. |

DECADE V 1727

- | | | | | |
|----|--------|---|---|--|
| 41 | V: 18 | Crassula tetragona L. | The Arborescent
White-flower'd
Cotyledon | <i>Crassula tetragona</i> L. (as "V.18.t.11 f.41"),
Haw. 1812, D.C., Schönl. (as "V.18.11"),
Mill. (as "V.18.50"), B.M. |
| 42 | V: 9 | Lampranthus falcatus
(L.) N. E. Br. | The Thyme-leaf'd
Fig-Marygold | <i>Mesembryanthemum falcatum</i> L., Willd., Mill.,
Haw. 1812, B.M. |
| 43 | V: 10 | Machairophyllum albidum
(L.) Schwant. | The Dwarf-Triangular
White-leaf'd Fig-
Marygold | <i>Mesembryanthemum albidum</i> L. (as "V.
20.43"), Willd., Mill., D.C., Pers., Haw.
1812, 1821, B.M. |
| 44 | IV: 12 | Mesembryanthemum
umbellatum L. | The White-flower'd
Sweet-scented Um-
belliferous, Fig-Mary-
gold | <i>Mesembryanthemum umbellatum</i> L. (as
"IV.12.34"), Willd., Mill., D.C., Haw.
1812 q.v., B.M. |
| 45 | V: 12 | Euphorbia tridentata
Lam. | The Large White
flower'd African
Spurge | <i>Euphorbia caput-medusae</i> β L.
<i>Euphorbia anacantha</i> Willd., B.M.
<i>Euphorbia tridentata</i> N. E. Br.
<i>Euphorbia ? inermis</i> V.H. |
| 46 | V: 13 | Ruschia callifera
L. Bol. | The Thorny Perfoliated
Fig-Marygold | <i>Mesembryanthemum perfoliatum</i> Haw. 1803,
1812, 1821, B.M.
<i>Mesembryanthemum perfoliatum</i> var. <i>uncinatum</i>
Willd., B.M. |

				<i>Mesembryanthemum uncinatum</i> D.C.
				<i>Mesembryanthemum uncinatum</i> β L.
				<i>Mesembryanthemum uncinatum</i> β <i>perfoliatum</i> Mill.
47	V: 14	Skiatophytum tripolium (L.) L. Bol.	The Daisy-leav'd Creeping-Fig-Marygold	<i>Mesembryanthemum tripolium</i> L., Willd., Mill., Haw. 1812, B.M.
48	V: 15	Cryophytum crystallinum (L.) N. E. Br.	The Diamond Fig-Marygold	<i>Mesembryanthemum crystallinum</i> L., Willd., Mill., D.C., Haw. 1812, B.M., V.H.
49	V: 11	Senecio ficoides (L.) Sch.Bip.	The Ficoid-leaf'd African Groundsell	<i>Cacalia ficoides</i> L., Mill., D.C., B.M. <i>Kleinia ficoides</i> Haw. 1812. <i>Othonna tenuifolia</i> B.M.
50	V: 7	Rochea coccinea D.C.	The Scarlet-flower'd African Cotyledon	<i>Crassula coccinea</i> L., Mill., D.C., Bot. Mag. 495, B.M. <i>Crassula coccinea</i> v. <i>alba</i> Haw. 1821, B.M. <i>Larochea coccinea</i> β <i>floribus albis</i> Haw. 1812.

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KEY TO ABBREVIATIONS

- Ait.=Aiton, Hortus Kewensis 1810-3.
 B.M.=British Museum MSS. notes.
 Bot. Mag.=Curtis, Botanical Magazine.
 Br. & R.=Britton & Rose, Cactaceae 1919-23.

- D.C.=De Candolle, *Plantes Grasses 1799-? 1837*, and *Prodromus 1828*.
- Haw.=Haworth. 1803 *Miscellanea Naturalea*.
 1804 *Genus Aloe*, in *Trans. Linn. Soc. VII*.
 1812 *Synopsis Plantarum Succulentarum*.
 1821 *Revisiones Plantarum Succulentarum*.
 1830 *Phil. Mag. N.S. 7*.
- L.=Linnaeus, ex Richter, *Codex Botanicus Linnaeanus (1835)* and Petermann, *Index Alphabeticus (1840)*.
- L. Bol.=H. M. L. Bolus, *Notes on Mesembryanthemum II, 1929, 128*.
- Mill.=Miller, *Gardeners' Dictionary Edn. VIII, 1768*
- N. E. Br.=N. E. Brown in *Flora Capensis, Flora of Tropical Africa, Gardener's Chronicle 1925-32*, and *Kew MSS.*
- Pers.=Persoon, *Synopsis Plantarum 1805-7*.
- Praeg.=Praeger, *Sempervivums 1932*.
- Reyn.=Reynolds, *Aloes of S. Africa 1950*.
- Schönl.=Schönland, *Crassula in Trans. Roy. Soc. S. Afr. XVII, 1929*.
- V.H.=V. Higgins in *Cac. & Suc. J. G.B. IV, 1935, 17*, and *R.H.S. J. LXV, 1940, 115-7*.
- W. D. & S.=White, Dyer and Sloane, *Succulent Euphorbiae of Southern Africa, 1941*.
- Willd.=Willdenow, *Species Plantarum 1797-1810*.

POSTSCRIPT

Since the above was written, Mrs. H. M. L. Bolus has identified a number of wild-collected Ficoids with *Mesembryanthemum graniforme* Haw. (see pp. 54, 55), and has referred them to the modern genus *Rhinephyllum* as *Rhinephyllum graniforme* (Haw.)L.Bol. Thus the last of Bradley's fifty species has been rediscovered. Full particulars appear in the latest part of "Notes on Mesembryanthemum," now in the press, by Mrs. Bolus, to whom I am most grateful for sending advance proof sheets.

THE SCIENTIFIC APPROACH TO SUCCULENTS INSTALMENT VIII

(April, 1953)

Amendment to page 41

Through carelessness in drawing up the first table, I have omitted the base fertiliser from the recipe for Compost No. 3. As this mixture is proving popular with some nurserymen and sundriesmen, I give the corrected formula in a simplified form for those who wish to make up quantities :—

					Parts by volume
J.I. Potting Compost No. 1	...	...	...	...	8
(including base fertiliser)					
Crushed brick	...	...	...	...	1
Granulated charcoal	...	...	...	...	1
Bone meal	...	...	...	...	$\frac{1}{4}$

Both brick and charcoal are screened through a $\frac{1}{4}$ " mesh sieve, and as much of the fine dust as possible is excluded from the mixture.

This is a satisfactory "safe" mixture for beginners, although advanced growers will find it too porous, necessitating frequent waterings in dry weather.

What an enthusiastic branch we have in Essex! On the 12th June they held their second Annual Show. It was even better than that of 1953 with entries considerably up. Mrs. Stillwell and the Editor were the judges and their opinion was that the plants showed very great improvement in cultivation. Congratulations to the Chairman, Mr. E. W. Young, the Secretary, Mr. A. Heathcote and all the other helpers who contributed to the undoubted success of the Show.

THE ECHINOACTANAE

By G. GILBERT GREEN

This has been a bad season for most of us with regard to the flowers produced on the Cacti, and, more especially, on the stemless *Mesembs*. The quantity of bloom certainly has been much below last year's standard, and it seems that the seed harvest will be very meagre indeed, which is a great pity as there is enough difficulty in obtaining good seed, legitimately, already.

However, whilst the weather has kept down the number of blooms on the "old faithfuls" that we expect to see flower every year without fail, there have been one or two surprises amongst the *Ferocactus* and *Echinocactus* groups, where some have flowered for the first time. One of these, *Echinocactus horizontalis*, has had two large, bright pink flowers produced from the centre of growth, but they withered away without forming the seed berries. Now, although the much older plants of this species have flowered, this one is but five years old from seed and indicates that there are some species amongst this family that will flower when young.

Apart from the flowers, however, many of these plants are extremely beautiful in shape and in the colouring of the spines which vary a great deal in construction and arrangement. Most of the *Ferocactus* group are fearsomely armed with a strong array of straight or curving spines, extremely strong and very colourful, and in some species, ringed all along their length. It has been thought by some that one can tell the age of a plant by counting these rings as in the case of trees, but this is false, as very young seedlings of less than a year in age, will have as many as eight or ten rings on the spines. Seedlings of both *Ferocactus* and *Echinocactus* are generally very beautiful, as the colour of the spines is bright and fresh, in reds and bright yellows, which are lost to a great extent in adults, except in the centre of growth.

It is interesting to note that the districts and countries wherein most of the *Ferocactus* are to be found, Arizona, Texas, California and Mexico, have some of the hottest and driest climates of all the Americas, and this is indicated very forcibly in the shape and form of the plants themselves. All are rounded or barrel shaped, with many deep ribs which increase the surface area a great deal, yet reduce the amount exposed to the sun's rays in direct proportion, so that excessive transpiration is curtailed during the hottest part of the day.

The very nature of its construction then, demands that a plant so built to resist the almost overpowering strength of the unshielded sun, should, under cultivation, receive as much as possible, especially in our country, and be placed in the brightest position in the greenhouse. Otherwise, the plants will either stop growing and become hard and malformed, or lose all their natural colour and appearance, and rot at the base during the winter.

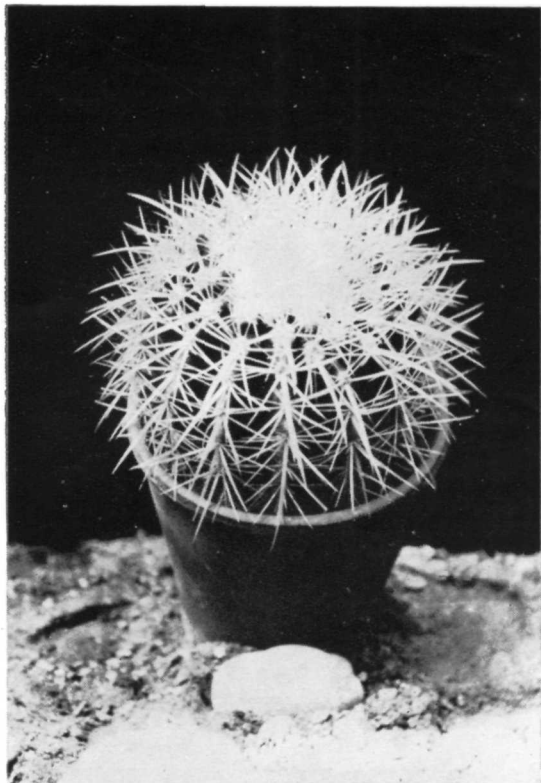
The sunshine will promote good growth during our short season and ripen it at the same time, so enabling the plants to endure the longer rest and resist the cold and damp.

Exposure to the sun will deepen the colouring of the ribs, turning some species a lively reddish tint and encouraging the free production of flowers. If the plants have to be kept in a greenhouse for the summer, make sure that the pots are not exposed to the sun for any length of time and that the soil is always moist. Plants cannot be expected to thrive if the soil is cooked by the sun all day, and the roots, half baked, deprived of the necessary moisture for long periods. I can imagine some readers asking "What about the plants in their natural homes—are they not exposed to the sun all day without water?" This is, of course, quite true, but it should be understood that there is a vast difference between a plant living out of doors, and one that is in a pot in a greenhouse.

In the natural state, the greater part of Cacti live where other vegetation, not succulent, will also grow. Annual flowers, grasses, shrubs and trees such as the Palo Verde tree, Mesquite, the Yellow poppy and other wild flowers grow on the hillsides and in the valley floors where also the cacti thrive, and as such plant life cannot exist without water, it follows that there must be some there at times, and enough to support these plants for a considerable time.

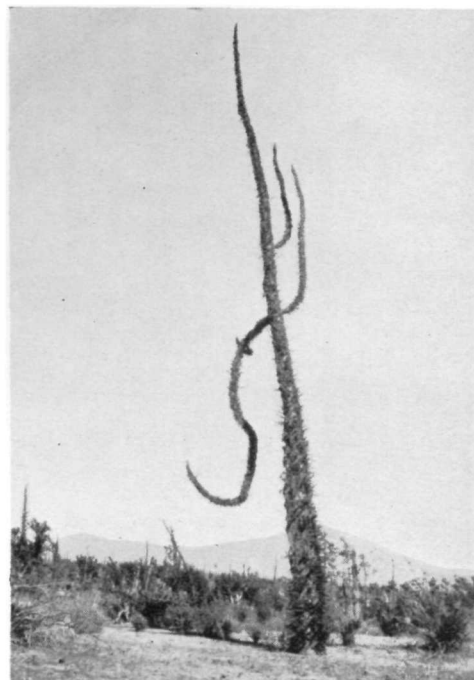
The roots of the Cacti are deep in the cooler earth beneath the surface, not being cooked in a pot, and the nights are often wet with dew that replenishes the moisture lost during the day by evaporation. It is true that rain may not fall for months on end, and the shallower rooted wild flowers may die from lack of water, but the long roots of the Cacti search down into the soil and into crevices to find the moisture hidden beneath the surface. Besides using it to build new cells, some water is stored for the winter resting days, when even in Arizona, snow often covers the ground for weeks.

And so, with our own plants, pots plunged in sand, gravel or ashes out of doors for the summer, in an open frame



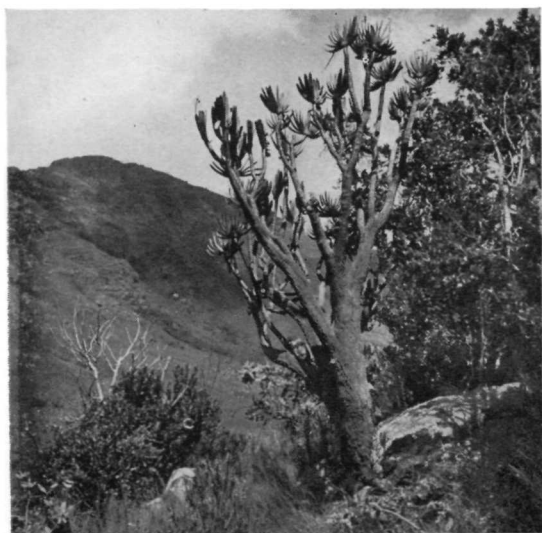
Echinocactus grusonii

G. G. Green



Idria columnaria

W. Horne



Aloe plicatilis

H. Hall

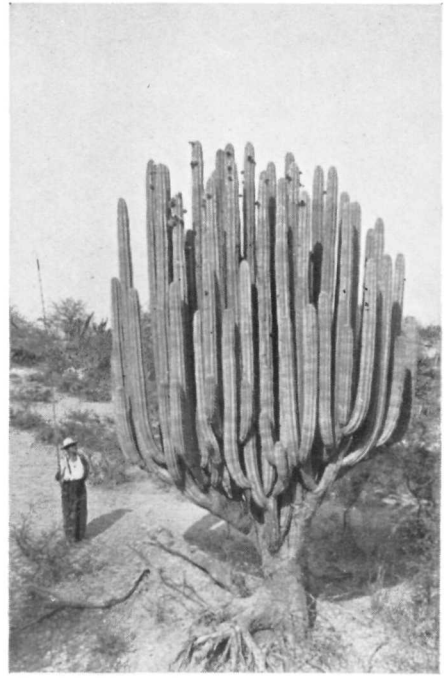


Aloe haemanthifolia

H. Hall



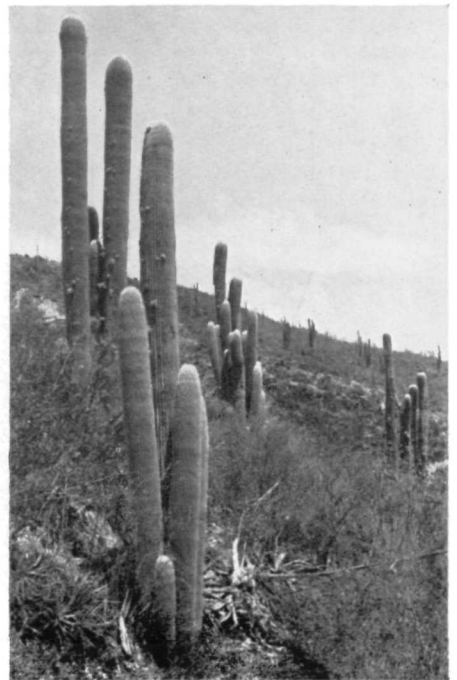
Cephalocereus mezcalaensis and *Cephalocereus tetetzo* (branched)



Lemaireocereus weberi and Howard E. Gates

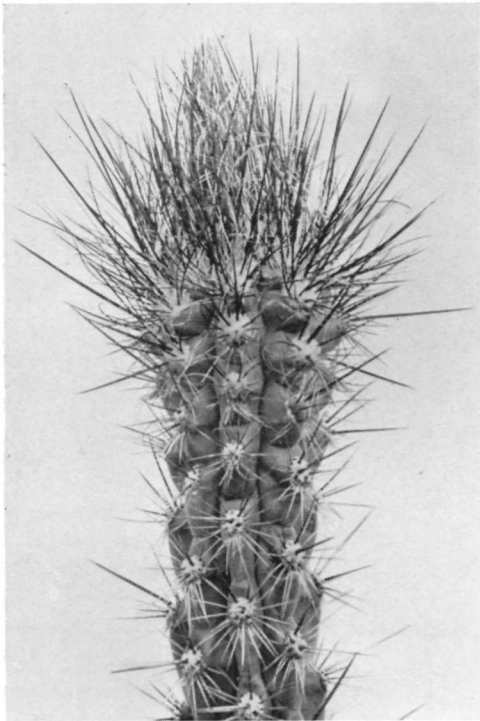


Cephalocereus (Pilocereus) in fruit

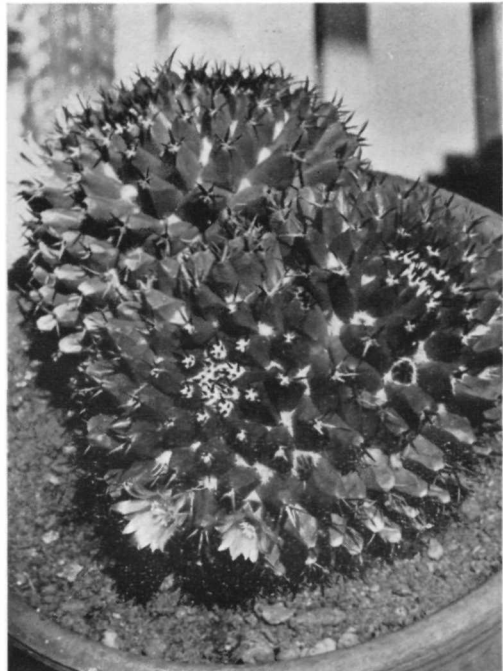


Cephalocereus senilis

Four photographs by Howard E. Gates



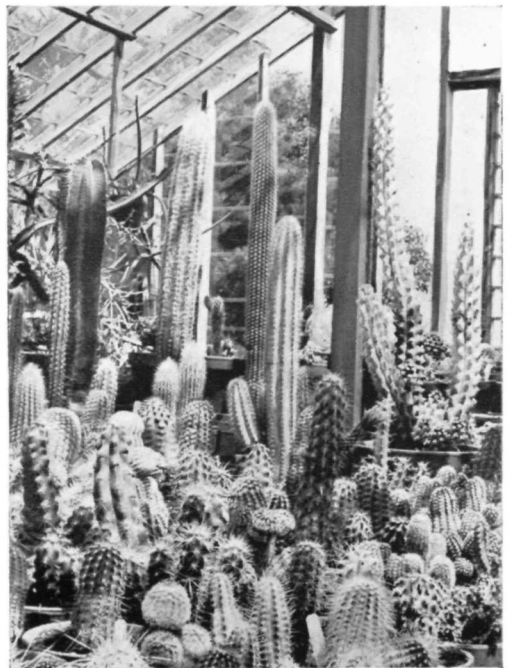
Morawetzia doelziana



Mammillaria praelii ?



Mammillaria zeilmanniana

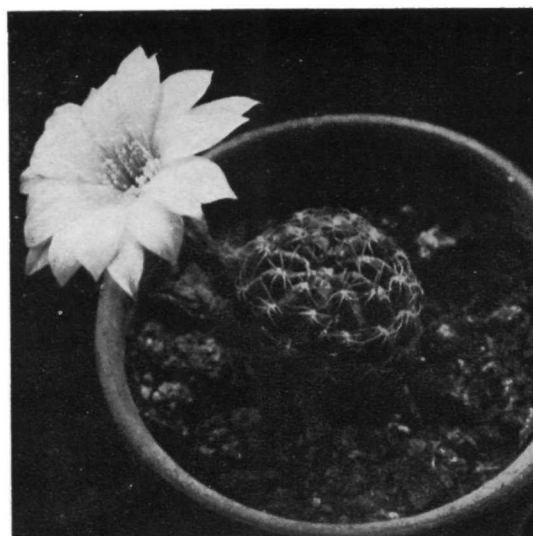


Section of greenhouse

Four photographs by L. Faux



Gymnocalycium quehlianum



Lobivia wrightiana



Mammillaria magnimamma



Lobivia famatimensis var *setosa*

Four photographs by W. Beeson

will encourage them to grow much better than those left on a dry shelf or staging in the greenhouse, unless those, too, can be plunged into moist sand, etc. As I have said many times before, and make no apology for repeating again, constant moisture at the roots will give better results than periodic drying out and watering as is recommended by so many misguided beginners.

The *Ferocactus* likes a fairly rich soil with a fair proportion of leaf mould and gravel, and some limestone chippings or crushed oyster shell incorporated in the mixture, with a pot as big as possible in relation to the size of the plant. In other words, give them plenty of root room. Of the thirty odd species in this particular tribe of the *Echinocactanae* some stand out as being particularly interesting and beautiful, apart from their flowers. *Ferocactus steinesii* is, perhaps, the best with its reddish green body and deep ribs that bear the scarlet and yellow spines, with white hair-like bristles surrounding the areoles. Green if kept in slight shade, the plants should be given full sun to bring out the reddish colouring of the ribs.

F. wislizenii has a shiny, dark green body with a darker stripe running from the areoles. The strong central spines are yellowish brown and hooked at the tips.

F. recurvus is a species that flowers rather freely, and looks handsome with the flattened spines, yellow and red, on the prominent ribs. The flowers are on hairy tubes, bright pink in colour.

Some other species of attractive appearance are as follows :—

F. latispinus, sometimes called *F. corniger*,

F. echidne, which has, in adult plants, a distinct dark stripe running transversely from the areoles,

F. glaucescens with a pale green body and amber spines,

F. melocactiformis, or *F. electracanthus*, with yellow tipped spines.

In the *Echinocactus* tribe are just a few plants that differ from the *Ferocactus* in so far as the spines are never hooked, and the flowers are all yellowish in colour.

The most common and best known species is, I believe, *E. grusonii*, or the "Golden Barrel Cacti," from Mexico, and which needs no further words of mine to describe its appearance. Young plants, however, differ vastly from mature specimens as there are no ribs, but only conical protuberances or warts ending in the yellow spines. These warts gradually form into ribs as the plant grows. They need to be fairly old before flowering, and require some shade from the hot sun during the summer. This can take the form of white muslin or tissue paper hung up from the spars in front of the plants. A handsome species, *E. Grusonii*, can be bought in almost any size to suit the pocket.

The most freely flowering species is *E. horizontalonius*, as I mentioned at the beginning. It is very good looking, differing greatly from the preceding as the body is much flatter and of a greyish green with very broad, rounded ribs, few in number, and bearing thick spines that lie flat on the surface, green brown in colour. The central spine is much thicker and at the growing point, the pink flowers are protected by a ring of these. This species, like *E. ingens* and *E. palmerii*, will withstand full sunshine. These two latter species are very much alike in appearance, though *palmerii* is better looking with its yellow spines and long crossing centrals.

As for *Ferocactus*, the *Echinocactus* needs a fairly rich porous soil with gravel and leaf mould, and crushed limestone or its equivalent. As mature specimens are very difficult to handle, it is wise when re-potting to give them as big a pot as possible and to ensure that the soil is good enough for them. Many years may elapse before they are re-potted so it is better to take the above precautions. If the bases of the pots are kept moist, not wet, all the time, then the plants should grow well and develop into handsome specimens.

It is with deep regret that we learn of the passing of Mr. S. A. Elmes, Chairman of the West Kent Branch, and whose funeral took place on the 27th August. He was a keen and enthusiastic member of the Society and his loss is a considerable one for the Society and for the West Kent Branch. He gave a talk to the Branch on the 12th of August even though he was ill at the time.

The *Auckland Star*, New Zealand, gives us some new information about mescaline, the drug obtainable from *Lophophora williamsii*, of which so much has been written, and about which Aldous Huxley wrote his book. They tell us that the natives call it hikuli and that it protects them from bears, deer become so tame they can easily be killed, Christian natives make the Sign of the Cross when coming near the plant, the Tarahumare Indians say the plant sings to them so that they can find it.

RANDOM REFLECTIONS—*contd.*

By. J. BROWN

Another enemy of succulents is the vine weevil, *Etiorrhynchus sulcatus*, whose larvae bore into the larger roots and stems of such plants as *Echeverias*, *Sempervivums*, *Faucarias* and similar plants. They systematically eat their way up and down the plant, leaving only the skin filled with brownish frass, and most often the first sign of the attack is the dying of the centre of the plant. These pests burrow down the pot to pupate, and can usually be found two to three inches below soil level. On emerging as adults they have a habit of eating off the more tender leaves, but do no more damage to the stems. I understand that D.D.T. incorporated in the soil, or an emulsion of B.H.C. watered in will control them.

The behaviour of roots in different soils deserves more attention than it would appear to have had. Naturally, every type of root does not show the same amount of variation over a range of soils, but the constitution of the soil mechanically (forgetting for a moment its fertility) can have a great influence on the health of the plant, inasmuch as if an otherwise good soil holds water too long the roots may grow for a time, but will soon die back for lack of air. Rooting media for cuttings can have much the same effect; if they have plenty of air in them the chances of success are many times greater than if they are close and clammy. I once read that cuttings root easier if they are stood on a layer of some neutral material, such as sand, and practice has borne this out. Exfoliated mica was at one time greatly in favour as a rooting medium, and takes a lot of beating, but for succulents it should be used with care, and the roots only started in it. Mica has no food value, and if roots are allowed to become long, as they will if the cutting is left any length of time, difficulty will be experienced in establishing the cutting in the potting compost. In many cases the roots will die back, leaving the plant in a debilitated condition, and, in consequence, harder to root the second time. It would, then, appear more sensible to incorporate some type of feed in it, such as fertiliser or a percentage of compost. This can be done, but there is one objection to the addition of compost. The mica is capable of holding water for a long time, and the tendency is for the mixture to go sour. In any case, once the roots are showing there is no point in leaving the cutting in the mica, fertilised or not, whereas if it is struck on grit or coarse sand over compost it can be left to grow on if necessary.

The normally fat roots of some plants show startling changes when grown in close soils. *Gasterias*, for instance, which grow rather stout roots under good conditions, develop thin, miserable travesties in a cold clammy soil, half rotten before they are half developed. The roots of *Haworthias*, too, show a distinct liking for an open compost, and greatly resent a close soil. The whole question of healthy roots is tied up with the amount of air that they can obtain. Strong, fat, healthy roots do much to ensure a healthy plant, which in turn is more resistant to disease and pests, and, even if an open soil is overwatered, little harm can follow. Naturally, there are different degrees of openness, as there are different degrees of root size. Even for such fine-rooted plants as *Conophytums* I prefer a soil that will dry out in twenty-four hours in normal weather, it often makes the difference between a turgid plant and a burst one!

I expect that nearly all collectors have at some time or another come across a plant that just will not grow. The best piece of advice that I ever received on this matter was to "agitate their roots," even to the point of cutting them all off (if any) and starting them again. There is a lot in this, for I hold the view that in some cases, the root, while appearing sound, is actually incapable of absorbing food, though it may absorb moisture. I have no scientific basis for this view, but derive it from the fact that I have had plants that have stood for two or more years without growing, remaining turgid and with apparently sound roots (even when cut) and have been potted up with even more care than the sound plants; which, when induced to produce new roots, have immediately gone ahead. Had this happened to me alone, or just once or twice, it would not have been noticed, but now it has become more or less standard practice. These remarks apply only to cacti. I have read somewhere that certain cacti, *Cephalocereus senilis* for instance, secrete oxalate of lime in the lower portion of their stems, which, I gather, inhibits the induction of moisture to some extent. I think it quite possible that there are other mineral salts that may have a similar action.

It is noticed that there are some plants that develop adventitious buds on exposed roots, and the assumption is that light is the stimulus which leads to their production, coupled possibly with the artificial conditions of a greenhouse. It occurred once on the root of *Euphorbia caput-medusae*, but possibly that should not be wondered at, as I have for a long time now considered that species to be rather unstable, being given to producing queer

growths on its branches at times. Contrary to common belief, it is quite easy to propagate from *E. caput-medusae* and produce representative plants. Given a branch of the plant, root it, and induce it to branch in turn. Take this secondary branch and root it in turn, and as soon as possible put it out-doors in order to stop it from drawing up. Even if it does draw up a little, it will soon fill out when put outside, and will quickly sprout branches all round. The whole operation should not take more than two seasons; by the end of the second there should be a nice little plant, equally as healthy and much more advanced than a seedling of the same age. It should be noted that once the plant has assumed its correct form it will not again tend to draw up, but will stay short and stumpy. If the original branch does not show signs of shooting, the growing tip should be removed, it will then sprout several. Without this treatment it will often grow on and on for several years, flowering, possibly, but not branching. The secondary branch, if kept in a more or less shady place, will tend to run up before branching, and I often wonder if the illustration of *E. caput-medusae* in *Praeludia Botanica*, 1703, is of one of these secondary branches allowed to run right up. A reproduction of this picture is shown in the *Succulent Euphorbiae*, page 353, fig. 348. All my *caput-medusae* originated from one stock, which may explain my success with them.

CACTUS CULTURAL NOTES—continued from page 75

likely to suffer. Some *Opuntias* can lose pads if kept too dry and warm in the winter. Care must be taken to see that only enough water is given on rare occasions to keep the plants plump but not enough to encourage new growth. A good winter's rest is essential for the promotion of many flowers in the next period.

So many new members have joined our Society during the last couple of years that I feel I must mention that I am only too pleased to deal with any growing problems sent to me, through these notes. I am generally too busy to write long letters to enquirers, and would prefer to deal with them here so that others may benefit from the information. If, however, anyone has an urgent problem I will do my best to deal with it direct, but do, please, send a self-addressed stamped envelope.

Those members who were unable to attend the open days at Worfield Gardens missed a treat. Sir Oliver and Lady Leese put on a grand show in the grounds of their lovely house. A fine group of large plants were set out in one corner of a lawn, and a large collection of rare smaller specimens were housed in a marquee. Another large marquee had many plants for sale, all clearly marked with the price. A large refreshment tent was available, and on the Sunday a highly qualified brains trust gave splendid entertainment and advice to the hundreds of visitors. If a similar show is put on in future, I advise all who can to make the effort to attend. I had the privilege of being present the two days and met many friends old and new.

I hope that many members have had success with raising seedlings from the seed distribution this year, and I hope that many more will take advantage of the offer of free seeds for members next January.

A new book has been published. It is "Kakteen," by Hans Barschus, the editor for the German Cactus Society. For those who read German it is an extremely useful book of 103 pages with 53 illustrations and 14 drawings. It covers practically all points about cactus, their home, uses, morphology, biology, cultivation, including a chapter on winter hardy plants, diseases and pests, propagation and, finally, a brief description of the genera and some species. It costs two marks and is obtainable from Albrecht Philler Verlag, Herzog Ferdinand Strasse 12, Minden Westf, Germany, or it can be ordered through a bookseller handling overseas publications, and for this purpose we would refer the reader to our advertisement columns.

Fortunate is the reader who is able to read German as we have received another new book, "Freude mit Kakteen" by that very well known authority, Walther Haage. It is a book of 232 pages, 76 of them devoted to cultivation of cacti, the remainder a very comprehensive coverage of the deeper side of the subject. This section is not abstruse as it deals very simply with the various genera and species. With all the changes that have been made, such a book is extremely welcome. There are 215 reproductions of photographs. It is to be obtained through any bookseller handling overseas publications, or from Neumann Verlag, Dr. Schmincke Allee 19, Radebeul 1, Germany.

ESSAYS FOR THE OPTIMIST

(ii)—'FROM MICHAELMAS TO LADY-DAY'—*continued*

By E. B. CHAMPKIN

So much for the qualities of a plant famous in its day, but now banished from the genus *Cereus* and hardly to be seen. Perhaps its place has been taken by the orchid.

Passing to *Mesembryanthema*, Haworth tells us that *M. lacerum* "might be worn in the hair, being sufficiently succulent to bear pinning to the hair and stay for many hours without withering or fading. The warmth and the light of the ball-room would show them off with considerable effect. Perhaps that vegetable diamond, the Ice Plant, might be advantageously combined with them, especially by candlelight."

Haworth's later work, the *Supplementum* was published in 1819. In the Preface he writes, referring to the earlier *Synopsis* :—

"Since the completion of that compilation, the restless hand of Time has rolled away seven long and busy years : during which the thrones of Europe have exchanged the fearful catastrophe of a most eventful war for the more stable advantages of an universal peace. This happy period of tranquility, so favourable to the advancement of all the pacific sciences, has not proved unuseful to that which elucidates the business of succulent botany.

"Hence it is, the great gardens of the Continent and the celebrated botanists who have so successfully described them have been able to communicate with those of our own country to the mutual advantages of each, and to manifest advancement of the common cause."

It seems likely, from references in the *Supplementum*, that Haworth exchanged correspondence with the owner of the gardens at Dyck, the Prince de Salm Dyck, author of the *Plantae Succulentae Dyckensis* (1816) and the *Catalogue Raisonné des espèces et variétés d'Aloes* (1817). Further material for the *Supplementum* came from Burchell's tour of the interior of the Cape of Good Hope 1811-1815 bringing many new additions to the then vast genus of *Mesembryanthemum* which at that time included some two hundred and fifty species. Haworth's first observations on the genus had appeared in 1794, but he was humbly aware of the essential incompleteness of his and other labours in this field, remarking, "When the great traveller Masson (who traversed the Cape countries for twenty years) was asked whether he had sent all the *Mesembryanthema* to England, his emphatic answer was 'No : nor half of them.'"

The subject of the ensuing extract from the *Supplementum* is, in fact, the treatment of plants in October ; yet that need not concern us as much as the attitude of mind the words reflect.

"... For, at this enlightened period, it requires but a moderate share of philosophy to allow that air and exercise, and a due supply of warmth and food, are all essential requisites towards the healthful support of every organized being, whether of the animal or vegetable kingdom. And air and the rustling winds are the exercises of plants ; and humidity and water are at least the vehicles which convey their food ; and warmth the medium which adapts them to receive it in a salutary way. Although the degree of warmth actually requisite is as different for the different species as the differing climates over which the Creator has been pleased to dispose them—by no means at random but all in harmoniously beautiful order. And those which it has pleased their great Architect to place in equinoxial latitudes appear to be more adapted to the reception of nutrient above ground by absorption from the air, in the dry places of their nativity, than those whose absorbing orifices are less capaciously expanded in more temperate countries ; or in those still more chilly regions which approach the confines of continual snow. There the great business of nutrition appears to be from the root alone."

Haworth's work was done in the spirit of service : he looked upon it as his task to describe a fraction of the beauty God, 'the great Architect,' had first caused, and he, like the Psalmist he quotes, stood in amazement before it.

"O Jehovah in sapientia ea fecisti."

Lord, in Thy wisdom hast Thou made them.

(A third essay will appear in the January, 1955, issue.)

ALOE PLICATILIS MILL. AND ALOE HAEMANTHIFOLIA MARL ET. BRGR.

By H. HALL

Aloe plicatilis is fairly well known, although it is far from common in collections. Most botanic gardens possess good specimens, however, although it does not flower except under favourable conditions. It has been known in Europe for about 250 years and is the first *Aloe* to be figured in Curtis Bot. Mag. in 1799. It is best remembered for its smooth, strap-like, unarmed leaves which are arranged fan-wise. For this reason it is commonly called the "Fan Aloe." It is a vigorous grower, appreciates a rich, well drained soil with a generous amount of humus. Its dichotomously branching habit from a very early stage makes it a useful plant for providing cuttings which root quite well during the warmer months. Seedlings show unusually vigorous behaviour and are attractive from very early stages. The flower spikes are sturdy, always unbranched, never more than one spike emerging from a leaf cluster or young stem. The individual flowers are a deep red in colour, rather stout and fleshy, the fruit being almost globular and dull green. In its native home it flowers in July which is the height of the rainy season and, as it inhabits mountainous areas in the Western Cape, often on precipitous rocky slopes where the rainfall may be up to sixty inches per annum, practically all of which falls in the winter months, this species is one of the exceptions to the popular belief that all succulents come from arid regions. This is far from correct, anyhow.

In the wild state the plants are frequently misshapen, but there are many factors responsible; competition with other plant forms, steepness of the terrain which allows many to lean over with their own weight, scarring due to bush fires, etc. On the other hand, in cultivation here in Kirstenbosch, they are much more sturdy, forming a denser branching habit than I have seen in the wild. Furthermore, unlike so many other species both in the wild and in cultivation, this species seems to be rarely affected by scale pests. The photograph enclosed of *Aloe plicatilis*, which was taken in February of this year, illustrates a very old specimen some 15 feet in height, its trunk at the base being about 18 inches in diameter. As this area has been ravaged by mountain fires on several occasions, it is very probable that some of the surrounding bush, that may have protected and encouraged its upward growth, has been killed off in the past. This specimen was one of a number of fine old plants growing on a grassy and stony slope at about 2,500 ft. near Stellenbosch.

Aloe haemanthifolia was not discovered until the early part of the present century (by the late Rudolph Marloth in 1904) and also inhabits one or two areas in the mountains of the Western Cape. As will be described, it occurs within a few hundred feet of the specimen of *Aloe plicatilis* mentioned above. It is, however, a much rarer species and is now protected by law. Essentially a plant of high elevations, found only at about the 3,000 to 4,000 ft. level, it forms dense clusters of strap-shaped, unarmed leaves which are greener and, in summer, somewhat brownish green. It is a strictly stemless species and the leaves are also very distichous in their arrangement, about three to four inches wide and a foot or more in length. The dried and withered leaves are distinctly fibrous which is a feature I have not observed in any other species. This interesting species grows on almost inaccessible rock ledges, in grassy tufts at very steep angles and between rocks, usually on the cooler sides of the crags. Again, all this suggests that a very well drained situation is needed for its successful cultivation. Owing, however, to the fact that it is protected, to its inaccessibility and, strangely, a goodly tramp from the roads amongst these mountains, it is not likely to ever become a common plant in cultivation. In all probability it will prove to be intolerant of conditions at sea level, like so many other "alpine" plants.

On the day that I photographed the *Aloe plicatilis*, my companions and I were actually climbing to look for specimens of *A. haemanthifolia* and, at some 500 feet above the last of the "Fan Aloes," we saw the green clusters poking from tufts of grass, tilted out at odd angles in hummocks of humus and moss overlying rock faces and, still higher up, in between clefts of weathered rock on the escarpment. The geology there is all Table Mountain Sandstone. The specimen herewith, about the only plant I could get near without risk of a broken neck, shows a fairly vigorous plant some two feet across. From examination of quite a number of smaller plants, it would seem to have a comparatively poor root system. As, however, they are all well protected by the roots of grass, reeds and rocks, they are well anchored to their situations, and thus adequately protected from exposure during the copious winter rains. Fortunately, they grow somewhat above the areas where the mountain fires sweep through the thicker vegetation below, for it is when these devastating fires destroy the cover that erosion takes its terrible toll of many of our rarer plant forms. *A. haemanthifolia* is well named and when not in flower (flowering season is October) resembles several Liliaceous plants such as *Haemanthus*, a genus with beautiful flowers.

SHOW RESULTS

29th and 30th June, 1954

- Class 1. Three *Echinocactanae*.
1, R. H. West ; 2, P. V. Collings ; 3, Mrs. D. F. Shurly ; V.H.C., H. J. Aylott.
- Class 2. Three *Coryphanthanae*.
1, P. V. Collings ; 2, A. J. Edwards ; 3, R. H. West ; V.H.C., H. J. Aylott.
- Class 3. Three *Cereanae*.
1, R. H. West ; 2, P. V. Collings.
- Class 4. Three *Echinocereanae*.
1, R. H. West ; 2, Mrs. D. F. Shurly ; 3, H. J. Aylott.
- Class 5. Three Cacti.
1, R. H. West ; 2, Mrs. D. F. Shurly ; 3, P. V. Collings.
- Class 6. Specimen Cactus.
1, A. J. Malin ; 2, P. V. Collings ; 3, R. H. West.
- Class 7. Seedlings.
1, Mrs. J. A. Luty Wells ; 2, R. H. West ; 3, C. G. Devin.
- Class 8. Three Cacti.
1, Miss M. A. Sparks.
- Class 9. Miniature Garden.
1, Mrs. J. A. Luty Wells ; 2, Mrs. M. Stillwell ; 3, Mrs. E. B. Pryke Howard.
- Class 10. Three *Mesembryanthemums*.
1, Mrs. M. Stillwell ; 2, P. V. Collings ; 3, Mrs. D. F. Shurly.
- Class 11. Three *Haworthias*.
1, Mrs. M. Stillwell ; 2, Mrs. D. F. Shurly ; 3, P. V. Collings.
- Class 12. Three *Gasterias* or *Aloes*.
1, Mrs. M. Stillwell ; 2, Mrs. E. B. Pryke Howard ; 3, Mrs. D. F. Shurly.
- Class 13. Three *Euphorbias*.
1, Mrs. D. F. Shurly ; 2, E. Shurly ; 3, Mrs. M. Stillwell.
- Class 14. Three Succulents.
1, Mrs. M. Stillwell ; 2, Mrs. E. B. Pryke Howard ; 3, Mrs. D. F. Shurly.
- Class 15. Six Succulents.
1, Mrs. M. Stillwell ; 2, Mrs. E. B. Pryke Howard ; 3, W. Woodhouse ; V.H.C., H. J. Aylott.
- Class 16. 4' by 3' Group.
1, Mrs. E. B. Pryke Howard.
- Class 17. Six South African Succulents.
1, Mrs. M. Stillwell ; 2, R. H. West.
- Class 18. New and unusual plants.
1, Mrs. M. Stillwell.
- Class 19. Juniors' Class.
1, M. Simms ; 2, R. Sanderson.
- S. J. Pullen Cup for Miniature Garden :
Mrs. J. A. Luty Wells.
- " Amateur Gardening " Silver Bronze Medallion :
Mrs. E. B. Pryke Howard.
- " Amateur Gardening " Award of Merit :
Mrs. M. Stillwell.

7th and 8th September, 1954

- Class 1. Three *Echinocactanae*.
1, P. V. Collings ; 2, R. H. West ; 3, E. Shurly.
- Class 2. Three *Coryphanthanae*.
1, R. H. West ; 2, E. Shurly ; 3, Mrs. D. F. Shurly ; 4, S. Reeds.
- Class 3. Three *Cereanae*.
1, P. V. Collings ; 2, R. H. West ; 3, E. Shurly.
- Class 4. Three *Echinocereanae*.
1, R. H. West ; 2, E. Shurly ; 3, A. J. Malin.
- Class 5. Three Cacti.
1, R. H. West ; 2, P. V. Collings ; 3, A. J. Malin ; 4, Mrs. D. F. Shurly.
- Class 6. Specimen Succulent.
1, Mrs. D. F. Shurly ; 2, Mrs. M. Stillwell ; 3, P. V. Collings ; 4, E. Shurly.

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- Class 7. Three *Faucarias* and *Stomatiums*.
1, E. Shurly ; 2, Mrs. M. Stillwell ; 3, V. J. Watson.
- Class 8. Three Stemless *Mesembryanthemums*.
1, Captain H. J. Dunne Cooke ; 2, Mrs. M. Stillwell ; 3, P. V. Collings ; 4, W. Woodhouse.
- Class 9. Three *Haworthias*, *Gasterias*, *Aloes*.
1, Mrs. M. Stillwell ; 2, Mrs. D. F. Shurly ; 3, Captain H. J. Dunne Cooke ; 4, Mrs. A. E. Tanner.
- Class 10. Six *Euphorbias*.
1, Mrs. D. F. Shurly ; 2, Mrs. M. Stillwell ; 3, W. Woodhouse.
- Class 11. Three *Crassulas*.
1, S. J. Pullen ; 2, Mrs. M. Stillwell ; 3, K. H. Walden ; 4, G. W. F. Davis.
- Class 12. Three *Echeverias*, *Cotyledons*.
1, Mrs. M. Stillwell ; 2, J. H. Cheale.
- Class 13. Three Succulents.
1, W. Woodhouse ; 2, Miss A. M. Pilcher ; 3, Mrs. A. E. Tanner.
- Class 14. Succulent seedlings.
1, E. Wyman ; 2, R. H. West ; 3, Mrs. M. Stillwell ; 4, Mrs. A. E. Tanner.
- Class 15. Three *Stapeliads*.
1, Mrs. D. F. Shurly ; 2, Mrs. M. Stillwell ; 3, R. H. West.
- Class 16. 5' by 3' Group.
1, Mrs. E. B. Pryke Howard.
- Class 17. Six South African Succulents.
1, Mrs. M. Stillwell ; 2, Captain H. J. Dunne Cooke ; 3, R. H. West ; 4, K. H. Walden.
- Class 18. New, unusual Plants. Mrs. E. B. Pryke Howard Cup :
1, Mrs. M. Stillwell. Mrs. M. Stillwell.
- Class 19. Junior Class. P. V. Collings Cup :
1, M. Simms. Mrs. D. F. Shurly.
- Evelyn Theobald Cup : Juniors' Shield Trophy :
Mrs. M. Stillwell. M. Simms.
- Sir Wm. Lawrence Cup : " Amateur Gardening " Bronze Medal :
R. H. West. Mrs. M. Stillwell.
- R. S. Farden Memorial Cup : " Amateur Gardening " Award of Merit :
Mrs. E. B. Pryke Howard. Mrs. E. B. Pryke Howard.
-

Still another suggestion to grow cactus from seed. The Edinburgh *Evening News* says " It is easy to grow cactus plants from seed, but you must have the right moisture. First get a deep, round tin lid and punch lots of holes in the bottom of it. Sink this to the brim in a bowl filled with clean, small pebbles. Now the lid itself is filled with sifted soil, containing little crumbs of charcoal, if possible, and a good amount of sand. When the seeds are set, the bowl of pebbles is filled with water. Over the tin lid, fit a glass tumbler, upside down, resting on four higher pebbles so that air can get in underneath it. Do not water again until the soil is quite dry."

LISTS RECEIVED

Succulenta Nurseries, Suvla, Mountain Road, Hout Bay, Cape, South Africa : a single printed page of South African succulents and on the back advice as to cultivation.

F. Haage Jr., Erfurt, Germany : twelve printed paged list of cactus and succulent seeds, plentifully illustrated.

Wheldon and Wesley Ltd., 83/84 Berwick Street, London, W.1 : a second-hand natural history book list of 2538 items, over a thousand of them on botanical subjects, 38 of them exclusively devoted to cacti and succulents.

We regret that space in the July issue prevented announcing that Mrs. M. Stillwell won the Sherman Hoyt Trophy in the competition held in the R.H.S. New Hall on the 15th June, 1954, with a very choice collection of plants, and fully deserved her win.

Just a reminder ; if you have not yet sent your donation to the Denton Memorial Trophy, please send it at your early convenience to the treasurer, E. W. Young, 35 Castle Drive, Ilford, Essex, so that the Council can make an early decision.

REPORTS OF MEETINGS

June 29th, 1954 ; Panel, Diseases.

The members of the Panel were Messrs. Collings, Pullen and Shurly.

A very lively meeting was experienced, with the audience ever ready with questions. Many interesting points were raised, the most interesting were :—

Brown marks on Opuntias. This was considered to be due to lack of water, but some material in the soil could be responsible. The remedy was never to let *Opuntias* get bone dry and they needed some water during the winter. *Opuntias* need, like *Epiphyllums*, much more water than other Cacti. Rust marks could not be cured, but if cut out and the place dusted with flowers of sulphur, the spread of the disease could be halted.

Gymnocalycium roots dead. More than one cause could be responsible. Starvation through lack of water, too much water causing mildew, need for warmer treatment. If the roots were shrivelled and bone dry it indicates lack of water, if mushy then too much water, especially if mildewed.

Lack of spines on Ferocactus and Coryphantha. Causes could be mealy bug, also low temperature, moisture settling on the areoles. Spine formation needed all the sunshine possible, as well as light as separate from sunshine. Frost settling on areoles could also be a cause.

Black spots on Stapelias. A well known problem with this genus. Could be caused by damp and cold conditions. Cutting out spots and dusting with flowers of sulphur only cure. Take cuttings not affected can ensure the continuance of the plant in the collection.

Mammillaria erythrosperma and multiformis rotted inside. Sciara fly could be responsible. Soft spined *Mams* have a tendency to rotting inside. Underwatering could cause the plant to die backwards from the roots.

Scab marks on lower Opuntia pads. This is a natural growth. *Opuntia* naturally form bark in age as this is nature's way of providing support for the plant, many of the species are naturally tall growing.

Opuntia vestita dying at the top in winter. Various causes were advanced : lack of water, knock, cold draught and mealy bug. Cure was obvious from the cause.

Nopalea dejecta pad splitting. Could be too much water, or too little then a great quantity being given, rich soil causing overgrowth.

Causes of starvation. One member of the panel gave it as his opinion that we have been growing our plants in too poor a soil and watering insufficiently. Cacti need much more water and more nutritious soil than has been the practice, and, in this respect, our methods of cultivation must be improved.

13th July, 1954 ; S. J. Pullen ; Succulents other than cacti.

Mr. Pullen continued the alphabetical list of succulents which he previously gave. *Gasteria* ; the most outstanding were *armstrongii* and *decipiens* ; *Graptopetalum*, an offshoot of *Echeveria. amethystinum* with its lovely colour and *weinbergii* were in nearly every collection. *Greenovia*, likes shade, best known species *aurea* ; *Haworthias*, require very coarse soil, not too much water and not full sun, some have horny leaves, some have windowed leaves and some very glaucous and tender looking leaves. The windowed types were *retusa*, *turgida*, *truncata*, *maughanii*, *pilifera*, while *bolusii* is fluffy ; *Kalanchoe, blossfeldiana* has a good nurseryman flower, bright red. *Bryophyllum*, the plant with the plantlets on the edge of the leaves has been separated from *Kalanchoe* ; *Kleinia, articulata*, the so-called candle cactus with yellow flower and *pendula* with bright red flower ; *Senecio, scaposus* with yellow flower, *stapeliiformis* red flower ; *Stapelieae*, innumerable species and genera, *Piранthus* likes being very dry, but plenty of water if kept in the shade, should be dark red, not green ; *Urbinia*, formerly *Echeveria, agavoides* is the best known species.

24th August, 1954.

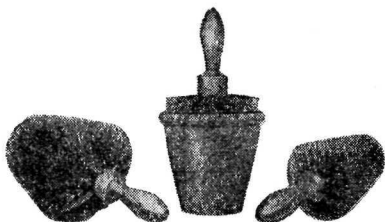
Mr. Edwards was down on the programme to give a talk on *Euphorbias*, but the visit of Dr. R. T. Craig to England caused this talk to be abandoned, as Dr. Craig was willing to show some of his coloured Kodachromes, together with a lecture. We did not think it would be possible to record the lecture, given necessarily in the dark, but Mr. A. W. Heathcote, the secretary of our Essex Branch, has sent me a résumé which so captures the imagination that, although we have no space in this issue, it would be a disservice not to print it, and it will appear in the January Journal. We so thoroughly enjoyed Dr. Craig's visit and lecture that it was certainly the highlight of the season.

7th September, 1954 ; Exchanges.

These Covent Garden evenings have become so popular that the room was overcrowded. Mr. Boarder made a short report on the Show, and then the members gathered round the plants that were there for exchange. A brisk time ensued during which innumerable plants changed hands, and the evening closed after another extremely pleasurable time. Our meetings have increased so much in attendance that the Council has had to take measures for the 1955 season, announcement will be made in due course.

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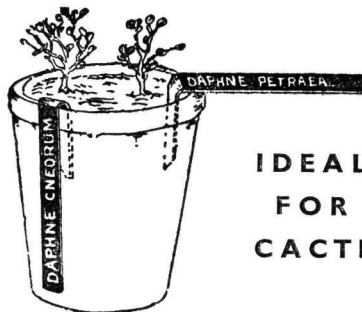
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