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THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 20

JANUARY, 1958

No. 1

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*Published Quarterly by the Cactus and Succulent Society of Great
Britain at 7 Deacons Hill Road, Elstree, Herts.*

Price 2/6 Post Free 2/10



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Seed Distribution : G. L. Hedges, 16 Buck Lane, Kingsbury, London, N.W.9.

Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6 p.m. for 6.30 p.m.

Annual Subscription—21/-

SOCIETY NEWS

1958

January	No Meeting.
February 18th	Annual General Meeting (7 p.m. Restaurant, Old Hall).
March 4th	Lecture Hall. Repotting and Containers. A. Boarder. Table Show : Mammillarias.
April 1st	Lecture Hall. Cacti for Flowering. Ladies' Panel. Table Show : Rebutias and Lobivias.

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

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HOWARD E. GATES

It is with the deepest regret that we have to record the passing, on the 5th October, of this great character in the world of cacti. He was taken ill on the 4th October and passed on the next day.

For some years he had been deteriorating in health, but the last two had meant a more severe deterioration and for some time before his passing he had to transport himself about his gardens in a self-propelled wheel chair. But deterioration in health does not necessarily mean the dire news that came as such a shock to me when I received a letter from our mutual friend, Dr. George Liridsay, acquainting me of his passing.

The American Society, in particular, has lost one of its most colourful and efficient characters. He was a Past President of their Society, he had organised several of their Conventions and his efficiency and competence meant much to their Society's activities. Only a very short time before his passing he had undertaken to be the National Delegate for America to the International Organisation for Succulent Plant Study (I.O.S.), but his death prevented him from being able to give evidence of his really wonderful powers of organisation.

Howard Gates was the most generous of men. Our American friends are famed for their generosity, but Mr. Gates' generosity was a surprise to so many in this country. We cannot forget the generous gift of slides and lectures that he made to our Society, and in so many other ways he was a genuine friend to all who are interested in our plants.

During his lifetime he made many trips into Lower California and he made that territory his speciality and many of his numerous descriptions originated there. His name will always be remembered as the describer of so many *Mammillarias*. Few collectors and explorers in the field could approach him in his knowledge of Lower California, and his many writings gave us many an interesting moment and a very distinct increase in our knowledge as well as showing us the hazards collectors in the field have to face.

I do not remember any separate publication for which he was responsible, other than "A Personal Tale," a narrative of his travels in Baja California. At the same time, his contributions to the American Journal and to our own are very numerous and, without exception, every contribution he made in any Journal was always of the greatest interest and always aided the increase in our knowledge.

Everybody in the cactus world has lost a very real friend and his loss will be felt for many years to come.

E.S.

CACTUS CULTURAL NOTES

By A. BOARDER

Another year has started and most Cactus growers will be looking forward once again to fresh fields to conquer, either trying to raise new kinds from seed or flowering a difficult subject. I often think that we are like anglers, forever optimists. No matter what misfortunes have befallen us in the old year we anticipate nothing but success in looking into the new year. Having been writing the cultural notes ever since the Journal was started again after the war I feel that I have covered most aspects of cactus growing, and I do not want these notes to be just a repetition year after year. Fortunately there is always something new happening among the collection, and so even if a little repetition does creep in now and then I trust that readers will forgive me in the interests of new members.

Seed sowing should be the first object in view and even if one is not yet ready to actually sow there are plenty of tasks awaiting the seed grower. All pans should be soaked and thoroughly scrubbed ready for use. Do not place these out of doors once cleaned, but keep under cover away from pests and dirt. A supply of labels and pieces of celluloid for dividing pans can be got ready. Seed compost can be ordered and when delivered see that it is stored under cover. The ordering of any necessary seeds should then be seen to. This is a grand adventure as anyone ordering for the first time will soon find out. The seed catalogue presents a glorious vista of dozens of new discoveries and many old friends so often difficult to obtain. With high hopes one sits down and goes through the list. Copious markings are made and the total arrived at. The actual cost if they are from the continent has to be worked out carefully, the number of Swiss or German marks to the £, etc.

The order is eventually sent off and all one has to do is to await patiently for the seeds to arrive. When they do arrive I hope that you will be more lucky than I usually am. When I send I usually require a few special kinds, but to make up a decent sized order I include many kinds I do not particularly want. I always find that the very ones I needed most do not arrive but substitutes are sent of kinds I have in my own collection. I am still waiting for eight kinds of seeds ordered from Germany over three years ago.

Apparently I am not alone in this as I had a letter the other day from a member in the U.S.A., who asked me if I could supply him with some seeds of a particular *Mammillaria* which he knew I had. He said that he had been trying for years to get this seed and mentioned a seed dealer in America who always listed it but was never able to supply him. He also said that if he got 40 per cent. of the seeds he ordered he was fortunate. It seemed strange to me that an American should have to send to this country to get seeds of an American plant. However, it is apparent that one must not be too optimistic when ordering from dealers' lists from abroad. It seems that they keep the same list going year after year but often have only a few of the kinds described. Still, it is all a great gamble and one never knows when the rare or difficult to obtain are going to turn up.

I am not going to give any further advice on seed sowing here except to wish all growers a successful season, and to offer the advice of an old hand at seed raising by repeating that it is often the small points which are more important, but which are often overlooked by the novice.

After your seeds have been sown the next task is repotting. The frequency of this task is often open to debate and all kinds of advice is given by the expert (?) writers of books on the subject. I now view the term 'Expert' with a certain amount of suspicion as, either in the press or on the radio, anyone who speaks on any subject is hailed as an expert. Having heard some of these people whom I know to be veritable beginners I now take little notice of the word expert and trust that the term is never applied to me. I would far sooner be referred to as an experienced grower. Which reminds me of a funny incident at one of our meetings. We had been treated to an 'expert's' lecture on a certain type of cactus and I hope all who heard understood perfectly all about it. After the lecture the audience was invited to ask any questions, and the first one was: "How do you grow them?" The reply was: "I do not know."

It is when one can compare actual results with repotting or not that one is able to make actual statements on facts and not on hearsay or written evidence. I have just been going over many of my plants to give them their winter treatment. I am writing on November 21st, 1957, and as I have examined some of my *Mammillarias* I have been struck by the fact that many look dull and as if they had not made much fresh growth. On looking at the backs of the labels I find that practically all the plants were last repotted in 1955. I prefer to repot all the plants each year, but owing to pressure of work with the seed distribution my whole collection had to be neglected. Every now and again I came across a plant which looked very healthy and growing and then found that this particular plant had been repotted more recently. There was no doubt in my mind then that to keep the plants growing well it is imperative to repot each year, at least where fairly young growing plants are concerned. So obvious

did the point become that I was able to say for certain before looking at the label whether a particular plant had been recently repotted or not. I have given my reasons for fairly frequent repottings several times before, but I have had an object lesson in a very practical manner as to the advisability of this. I have made up my mind that come what may, all my plants will be repotted during the early part of 1958. I shall commence in late February and go through all the plants as soon as can be managed.

I sometimes see the point raised as to what encourages a plant to flower, sometimes the weather is given as the main cause, at other times the amount of sunshine the plant had the previous year. This is all very nice conjecture but let us see what actually happens in practice, not theory. All the *Mammillarias* flower at the axils, not the areoles as stated in a recent book, and once a flower has appeared at a certain axil another never appears in later years. Many *Mammillarias* flower at every axil mature enough to produce a flower. Unless the plant makes plenty of fresh growth each year the amount of flower the following year is certain to be small. The plant which can make four or five dozen fresh axils each year is going to have that number of flowers the next year. If little or no fresh growth is made then the number of rings of flowers will be lessened considerably. There may be just an odd flower right at or very near the growing centre. An experienced judge can always tell whether a plant has grown well by the number of rings of flowers.

All cacti are not the same with regards to the production of flowers, but one which will demonstrate my point more plainly perhaps than the *Mammillarias* is the genus *Astrophytum*. These plants will never produce a flower from a low down old areole. All flowers appear at the areoles as they develop. A healthy growing *Astrophytum* will have a flower bud at every areole as the plant grows and the better the plant grows the more flowers will be produced. You just cannot get a good crop of flowers on any *Astrophytum* unless the plant is growing well. Although perhaps these results are not quite as apparent on some of the other genera it is a fact that the plants which are healthy and growing well generally produce the most flowers.

Even among seedling plants it will be noticed that the plants which flower first are those which have grown the best. I hope that I have made my point as to the necessity of a repotting once a year if flowers and healthy growing plants are required. The soils you use are again a matter for debate, but I do not think that most cacti are very fussy except that the soil must be porous and not remain wet and mucky long after watering. I saw a lady member's plants a short time ago and was struck by the healthy appearance of them, as I knew that most of them had come from me as seedlings not long before. I asked what they were potted in and the lady replied: "Woodman's cactus potting compost." This is made up from a basis of the John Innes Potting compost with extra grit and roughage to make it more porous with added fertilisers to make up for the added bulk.

Whatever soil is used see that all the old soil is discarded. The practice of knocking a plant out of its pot and dropping the whole into a larger pot with a little extra soil is of little value if the plant has been growing in the same soil for a year or more and must have taken out all the soluble nourishment.

When removing the old soil there is no need to be too fussy about whether a few fine roots are broken off. The plant will soon make fresh fibrous roots once it is in clean new soil. See that the potting soil is just damp but not wet enough to soil the hands. If any repotting is done very early in the year there may be no need to water for a week or two. It depends a great deal on the weather and according to any signs of fresh growth on the plants. Remember the tip I have given before to use a large crock at the bottom of the pot. By doing so you will make it far more easy to remove the contents of the pot another time.

You may have to start watering some of your plants in February. If any plants are seen to be growing or producing flower buds they may be watered. Be careful with the first watering as the plant may not have made many fresh fibrous roots since the winter's rest. While any bad frosts last out of doors be careful with any watering as the plants will take a long time to dry out. I usually find that *Mammillaria picta* is one of the first to flower each year, and a February never goes by without this plant obliging. As a matter of interest two of my plants of this species are already budded.

Look over your water cans before the growing season is well under way, and deal with any leaks. It is quite a simple matter to seal off a leak in any container even an enamel one. Get a little "Selastic" and squeeze a small spot on the hole. Then apply a small piece of greaseproof paper on each side of the hole and press lightly. A small film of the material will then be spread about each side of the hole and a complete seal will be effected. It is a good plan to paint all cans inside and out with aluminium paint to prevent rusting.

I recently took fifty pots of *Lithops* to demonstrate a talk I gave to a society. Several had from ten to sixteen heads and the audience was surprised to see that I had these plants as it was thought that I was only a *Mammillaria* man. I have about sixty different *Lithops*, all of which I have raised from seed, and although I do not suggest that they are anything out of the ordinary I treasure them as I have raised them from seed. I was surprised in the

Continued on page 5

CULTIVATION OF SUCCULENTS

By M. STILLWELL

What better time than the start of the New Year to look back upon our past successes, not forgetting our failures, those plants that for some unaccountable reason fail to flower or grow to perfection. Now is the time to study our books, and to find out more about these more difficult plants, such as the type of locality where they are found and the conditions under which they grow and, above all, their correct watering times. It is worth experimenting with different soil mixtures each year until a suitable one is found in which these plants respond. I personally prefer to have all my soil ingredients to hand and to mix them as I go along, so that individual plants can be planted in that most suited to them. It may take a little longer, perhaps, than mixing up about a bushel at a time, but I am quite sure it pays dividends. As to our successes, what better than to take our own coloured slides of these wonderful plants in full flower.

At the time of writing these notes, which is the end of November, I have many of the winter flowering succulents either out or in bud. *Gibbaeum molle* and *G. pilosulum* make a nice splash of colour with their dainty mauve flowers. Others in bud are *G. album*, *G. perviride* and *G. pubescens*. These plants will need a little water about once a week when the weather is suitable as their growing period will continue until late spring.

I also have large clusters of buds on my *Senecio medley woodii* which is another plant not too easily flowered. It is an attractive silver grey felted leaf plant and this is the first time I have flowered it. Growing next to it and making a nice companion plant is *Senecio fulgens* also in bud, but not for the first time. This has quite a large orange composite flower and attractive farinose leaves.

Although many of the *Euphorbias* appear to continue growing through the winter, particularly *E. schoenlandii*, it is safer to completely withhold the water until all danger of frosts is past. This year, unfortunately, I lost the seed from my *Euphorbia obesa*, entirely through my own fault. One day I saw it was about ripe and I removed the pods from the plant and placed them on the staging until I could find a small envelope for them. Unfortunately, they were left there until the following day when, to my great surprise, they had disappeared and all that was left were the empty seed cases several feet away sitting on the top of a nice pot of *Mammillaria plumosa*. If I am as lucky as Mr. Boarder, they may germinate in one of the pots. This is characteristic of all *Euphorbias*, their seeds are blasted to great distances from the parent plant and so ensures successful propagation of the species.

I was fortunate recently in purchasing a fine plant of *Cephalophyllum* with a very large dark red flower. These plants are said to be some of the showiest of all the *Mesembryanthemum* flowers, but it is the first time I have ever seen one in flower in this country. I think the chief reason for this being that we do not get sufficient hours of daylight at the latter end of the year when this plant is due to flower. Although I cannot take any credit for flowering it this year, I am hoping that next year it will oblige again.

The *Fenestrarias* flowered well during the past year, and I think I have at last obtained some seed pods on both *F. aurantiaca* and *F. rhopalophylla* by cross pollination; every year I have tried, but hitherto without success. My large plant of *F. aurantiaca* badly needs repotting, as the heads seem to have got a lot smaller, but I have never before seen it have so many flowers all out at once. These plants resent root disturbance, but this year I did repot the *F. rhopalophylla*. It has made a lot of new growth, but only produced two flowers. I consider it is only necessary to repot these plants about every third year.

Conophytums and *Lithops* seem to be quite happy in the same pot or pan for five years or more, as being slow growing they can exist in much poorer soil with the minimum of water at all times.

Haworthias do better if potted annually and not allowed to get too dry during the winter, always providing a little heat is available.

I do not have a lot of success with *Stapeliads* as many of them tend to rot off at the base during the winter. I feel that this may be due to growing them too lush and in a shady spot during the summer. I now feel convinced that, in this country, they are better if grown in a good sunny position near to the glass, to enable them to get really hard and ripened off for the winter. They will also probably flower much more freely, although the plants themselves may not present such a pleasing appearance. I find *Duvalias* and *Huernias* are very prone to root bug and should be repotted at least once a year for this purpose alone and, not only that, these plants seem to thrive better if split up annually.

In my last notes I mentioned *Pedilanthus macrocarpus* with the red slipper flower on tall reed-like stems. I now have been told there is a much more compact variety of this plant bearing leathery green leaves which drop in the winter and is named *Pedilanthus carinatus*. It is a native of the West Indies and has the same type of attractive flower, but on a more shrubby form of plant. This should be well worth trying to obtain.

A dainty little plant which never fails to produce a few magenta coloured flowers for me from December to January is *Calamophyllum cylindricum*. It is an almost stemless little *Mesembryanthemum* found on Cape Province. It rests all the summer and is best repotted in the autumn, just at the commencement of its growing period. I like to concentrate on some of these winter flowering plants as it keeps the interest going all through the year. Many people, who have a collection of cacti only, often leave their greenhouses shut tight for weeks at a time during the winter resting period. A few of these little flowering plants I am sure would also keep them visiting the greenhouse daily and so giving the cacti a little fresh air and a watchful eye for any pests that may appear.

Many people have that quaint little bulbous plant *Bowiea volubilis*. It should, of course, be grown above the soil and never buried as with ordinary bulbs. It should be kept quite dry until the little green shoot appears from the growing point, usually in late spring. This very prolific vine-like growth can then be trained on a little miniature trellis or a few bushy twigs placed round the pot. It has tiny little green flowers which can almost escape notice as they blend so well with the greenery. I have also had it set seed quite freely. It must be dried off as soon as the foliage starts to turn yellow and die away.

As soon as we start to get some really nice spring weather, start off with a really good spring clean in the greenhouse. Remove everything from the staging, if possible, and wash down the shelves, etc., with some hot soapy water to which has been added some Jeyes fluid. This should kill off any pests hiding in the crevices. Take the opportunity of giving the glass a good clean at the same time. I know many of us who have large plants are always loathe to move them all, just for the sake of cleaning the glass. Try and choose a good sunny day for these operations and do not have too much water flowing to cause a lot of condensation if the weather is already damp outside.

With this 'Do it yourself' craze imminent, it would be a good idea to get the handyman of the house busy on some wire netting frames to fit the greenhouse doors, to enable them to be left wide open during the summer months without fear of cats and birds, etc., entering and doing damage. It is also advisable to have the window lights also protected by wire netting if it can be arranged.

Order all potting materials in good time so that they arrive in plenty of time for the commencement of the potting season, not forgetting a stock of new plant labels. A complete new set of labels, all to one uniform size, can give a collection such a smart finish, and there can be no danger of losing the name of a particular plant through erasion.

CACTUS CULTURAL NOTES—Continued from page 3

summer when a man called at my house and said that he was from Rhodesia. When he went in my greenhouse I tried to stand in front of my *Lithops* as I thought that he would belittle them as they were like weeds out in South Africa. However, he sensed that I was hiding something and when he got near enough his jaw dropped and his eyes boggled. I thought he was going to ridicule my plants, but instead he was amazed that such plants could have been grown in this country. When I suggested to him that they were only weeds where he lived he became indignant and said that he would have to make a 1,500 mile car journey to the nearest place where any grew. He also said that some of the plants I had were bigger clumps than he had seen before and that there were only very small patches in Africa where certain kinds had ever been found and that today it was almost impossible to come across a single specimen in those areas after days of searching.

Most visitors from abroad are of the opinion that it would be almost impossible to grow the sun-loving plants in this country which they think has mostly rain and fog. I can well remember the growers from the continent who visited the I.O.S. show a few years ago. They thought that my large group of seedling *Mams* were all grafted and could hardly believe that not one of my plants is not on its own roots.

Another visitor was quite indignant when I refused to break him off a piece of my *Mam. plumosa*. This plant has ninety heads as far as I can count, some small, but the whole clump is a grand sight. Some people must have a very poor idea of what constitutes a good specimen if they think that the owner of a fine group is going to break it up just to please him. It may take many years to get a real good specimen of one of the cespitose plants and so I advise all members to refrain from breaking up a good plant.

Remember to give as much fresh air as possible to the plants on all suitable days. You can close up the house fairly early in the afternoon. If you have to water any plant see that none is allowed to lie about the floor of the house or drop on to a plant which does not need any water yet.

THE FOURTH CONGRESS OF THE I.O.S.

THE HAGUE, AUGUST 26th-30th, 1957

By G. D. ROWLEY

The fourth Congress of the International Organisation for Succulent Plant Research took place in the beautiful India Room of the Palais Noordeinde at the Hague, Holland, at the invitation of the Dutch Section, and was made possible by the able support they received from the Dutch Society, Succulenta, and the amateur and professional succulent growers of Holland. The following countries were represented :—Holland, B. K. BOOM, A. F. H. BUINING, H. W. DE BOER, J. A. JANSE, A. J. A. UITEWAAL; Germany: W. CULLMAN, J. HUBER, G. SCHWANTES, W. WESSNER; Great Britain: J. D. DONALD, G. D. ROWLEY; Spain: J. PANELLA, F. RIVIERE DE CARALT; Austria: F. BUXBAUM; Italy: DISTEFANO CONCETTO; Monaco: L. VATRICAN; North Africa: J. GATTEFOSSÉ; Switzerland: H. KRAINZ. Guests, mostly from the Dutch Society, attended the open sessions. Mr. J. A. JANSE was elected Congress Chairman and his charm, efficiency and masterly command of languages made him an ideal choice. Mr. F. RIVIERE DE CARALT supported him as Vice-Chairman. Ten new candidates were elected to membership of the I.O.S. Three belong to countries not previously represented, and consequently become new national delegates: Prof. BOUILLENE for Belgium, Prof. CASTELLANOS for Bolivia and Mr. H. OKU for Japan. The papers and discussions are summarised as briefly as possible below.

1.—Prof. LANJOUW : **The International Association for Plant Taxonomy.**

The I.A.P.T. came into being about the same time as the I.O.S., although the idea had been put forward in 1930 for a bureau to cope with urgent taxonomic problems on an international basis. It is financed through the I.U.B.S., which in turn is sponsored by UNESCO. Publications include the periodical "Taxon," a series of separate major works under the title "Regnum Vegetabile," and the "Index Nomina Genericorum," a card index of all generic names of plants which is issued in packs of 1,000 cards. It was decided to raise the annual subscription of members of the I.O.S. to five dollars so as to cover joint (individual) membership of the I.A.P.T., which would not only keep members in touch with developments in plant taxonomy and nomenclature, but could offer facilities for publication—e.g. of the "Repertorium Plantarum Succulentarum."

2.—Prof. F. BUXBAUM : **A phylogenetic subdivision of the Cereoideae.**

3.—Prof. F. BUXBAUM : **The method of phylogenetic research in Cactaceae.**

Dr. Buxbaum felt he had reached a point in his studies where he could sketch out a family tree for the Cereoideae based on concepts of common ancestry and indicating what he considered the primitive and advanced characters in each line. This was presented to us in the form of diagrams, the second lecture reviewing the methods of comparative anatomy and morphology on which his evidence is founded.

4.—Mr. G. D. ROWLEY : **Habitat pictures of succulents in South Africa, taken by and shown on behalf of Mr. H. HALL.**

108 beautiful colour slides covered all the main families of indigenous succulents as well as the varied landscapes among which they grow. Although the North American deserts are familiar to us through slides and magazines, this is the first time the succulent regions of the Old World have been surveyed and presented pictorially. The Congress voted especial thanks to Mr. H. Hall for this unique contribution.

5.—Dr. B. K. BOOM : **Nomenclature of cultivated varieties of succulent plants.**

A special Code of Nomenclature exists for cultivated as distinct from wild plants, and this was a timely reminder that many of our succulents are unknown in the wild and hence not entitled to latinised botanical names. Far better they should receive cultivar names in popular form like *Crassula* 'Morgan's Beauty.' While good hybrids have a place in amateur collections, botanical gardens should follow the example of California University and retain only plants known to have been collected in the wild, rejecting all others.

6.—Prof. J. HUBER : **Sempervivum.**

For the hardy houseleeks Dr. Huber recognises two genera, *Sempervivum* L with 30 species and *Jovibarba* Opiz with 5. These he reviewed in relation to allied genera of Crassulaceae by means of a key and synopsis and 20 slides.

7.—Prof. CONCETTO DISTEFANO and

8.—Mr. F. RIVIERE de CARALT made our mouths water and our eyes goggle with slides of their outdoor collections basking in Mediterranean sunshine.

9.—Mr. G. D. ROWLEY : **Habitat pictures of Far Eastern succulents, taken by and shown on behalf of Dr. R. V. MORAN.**

Japan and Korea have a number of interesting hardy succulents in the genera *Sedum*, *Orostachys* and *Meterostachys*. Some are well-known in gardens (as *Sedum sieboldii*, *S. spectabile*), some deservedly ignored, and a few, like the showy monocarpic *Orostachyses*, merit more attention. Dr. Reid Moran has travelled widely and made a special study of these : his excellent slides show that the humblest weed can reveal amazing beauty when photographed in close-up. The Congress asked for a special message of thanks to be sent Dr. Moran for contributing these 60 slides.

10.—Mr. J. D. DONALD : **Further progress in the study on the Rebutinae.**

Two major publications during the past two years affect the *Rebutia* specialist : Y. Ito's "Explanatory Diagram of the Austro-echinocactinae" and C. Backeberg's "Descriptiones Cactacearum Novarum." Both were reviewed by Mr. Donald and came in for scathing criticism in the discussion that followed. Mention of several other topical taxonomic problems revealed the wide popularity of the Rebutinae today, and the fanatical interest of their champions.

11.—Dr. W. CULLMAN : **The genera *Haageocereus* Backbg. and *Peruvocereus* Akers.**

Dr. Cullman has successfully grown and flowered many species of both these genera, and showed striking colour slides of details of the flower form of each. He is led to conclude that no constant differences separate the two genera, which must therefore be united as one under the former name.

12.—Dr. W. H. DE BOER : **The culture of *Lithops optica* var. *rubra*.**

Too little is known of the genetics of succulent plants. By raising over 2,500 seedlings of the famous red *Lithops* over two and three generations Dr. De Boer has confirmed that the red colour is due to a single dominant gene, heterozygotes (as in the wild) being almost if not quite as red as homozygotes (c.f. Nat.C&S.J. Dec. 1952: 61-2). Over 100 seedlings have been returned to S. Africa where the variety is still very rare.

13.—Mr. G. D. ROWLEY : **Variiegated succulents.**

Variiegation is a local absence of chlorophyll from the normally green parts of a plant. It may be infectious (due to virus) and transmissible by grafting or by aphids, or temporary, as caused by light or mineral deficiencies (chlorosis), but the common and horticulturally interesting type of variiegation is non-infectious, "permanent" and genetical in origin. Such plants are chimaeras—that is, mechanical mixtures of two different true-breeding tissues. The peculiar problems of their origin, stability, breeding behaviour, propagation and garden use were outlined.

14.—Prof. F. BUXBAUM : **My recent visit to the United States of America.**

A long series of slides of the cactus regions of North America, the universities and botanic gardens, and the well-known personalities of the succulent world there, rounded off the lecture programme for the week very satisfactorily.

Organised excursions took place during the week to the nurseries of Mr. MANTEL near Aalsmeer, Mr. EDELMAN at Reeuwijk and Mr. JANSEN at Loosduinen. What we saw there would form an article by itself—and demand something new in superlatives. Cactaceae are obvious favourites and are imported in vast numbers for rooting up and then re-exporting to England, America and elsewhere. The soil used is dark, porous and peaty, not unlike that of the bulb fields with added grit. Grafting is also indulged in on a grand scale. We also saw the famous flower auctions at Aalsmeer, and, in lighter vein, enjoyed a memorable display of fireworks at Scheveningen. For those of us visiting Holland for the first time this has been an impressive introduction to Dutch hospitality, Dutch scenery and architecture, and Dutch cooking !

The sixth edition of the booklet has been completely exhausted and this means that over 50,000 have been sold. The seventh edition is now available. This booklet is of the same size, but there are no advertisements and in their place are two articles by Mr. Boarder on Seed Raising and Indoor Culture. Retail price 1/3, post free 1/5. Quantities of not less than one dozen can be supplied at wholesale rate, viz., 10/- per dozen, post free.

OPUNTIA AURANTIACA IN SOUTH AFRICA

By Hy. HALL

It might interest *Opuntia* enthusiasts who cherish specimens of this plant in the safety of glasshouses, secure in the knowledge that they cannot escape, to learn that in a recent issue of "Farming in South Africa" attention is drawn to the serious problem of its eradication from farm lands.

Regarded as having been introduced as a rockery plant about one hundred years ago it has now spread far and wide. It is estimated that more than two million acres are now infested with the "Jointed Cactus," as it is known here; mainly in the eastern regions of the Cape Province, but it is also reported from parts of the Transvaal, the Orange Free State and Natal. It is rather low growing and the small, somewhat narrow, all too easily separable joints, readily adhere to the wool of sheep and the skins of other animals. As soon as these joints reach the soil they promptly take root. Tolerating all types of soil, widely varying amounts of rainfall, altitudes and other climatic factors, enduring long droughts without turning a hair, it is certainly one of the toughest of *Opuntias*.

A vigorous attempt to finally eradicate the pest by modern hormone weedkillers is planned and it is hoped that the day is not far off when the last joint of the "Jointed Cactus" in South Africa is destroyed. A point of interest to some readers, an important point to South Africans, is the statement that people who have specimens in their "gardens or hothouses" are liable to a fine of £50.

Having seen one or two badly infested areas I must admit to a feeling of intense dislike of this, and for that matter, any other plant which gets out of control. The fact that the barbed spines inflict intense pain and discomfort to the animals, their mouths and noses suffering most of all, add to their unpopularity.

A few weeks ago, when exploring in Southern Rhodesia, I saw some enormous specimens in a garden. The region was the Sabi Valley, with very high summer temperatures and warm, dry winters. Each plant was about six feet in diameter, no more than one foot high, consisting of countless hundreds of narrow brown joints, much more heavily spined than any specimen I knew in England. Naturally I gave them a wide berth, but several minutes later I found one joint clinging to my shoe-lace! It was eventually removed by the use of the other shoe but not before it had tried its hardest to remain on the sole of the said shoe.

In the Darrah Collection in Manchester *Opuntia aurantiaca* occasionally obliged with a few very showy orange flowers but it never became so heavily spined as it does out here.

SEED DISTRIBUTION. As in previous years, we are pleased to be able to issue free to our members, both at home and abroad, seeds of Cacti and other Succulent plants. This involves a considerable amount of work to be done by a willing band of helpers. About 100,000 seeds have to be packeted and with, say, ten seeds to a packet this means that 10,000 packets must be numbered, sorted and despatched, all in about a month. Should there be some delay in your receiving your quota it will only be due to the overwhelming demand. Please remember, as in latter years, no correspondence can be entered into regarding the raising, and culture of the seeds. Do not forget to send a self-addressed stamped envelope of a fairly strong texture and the postage will be 3d. All seed applications, with membership number, to be sent to G. L. Hedges, 16 Buck Lane, Kingsbury, London, N.W.9.

LIBRARY. In order to assist our Librarian, Mr. P. V. Collings, would members kindly repeat their requests for books from the Society's library. Owing to the great demand during the past year some members have not yet received the books for which they asked. The waiting list will be brought up to date, those members with standing orders will, of course, receive priority.

CONOPHYTUM ELLIPTICUM Tisch. Spec. nov.

By Dr. A. TISCHER

(Fam. *Ficoidaceae* Juss. em Hutch., Gen. *Conophytum* N. E. Br., Subgen. *Conophytum* (*Euconophytum*) Schwant., *Carruicola* Schwant., Subser. *Wettsteinia* Schwant.).

Planta caespitosa corpusculis non dense aggregatis internodiis ad 1 mm. longis ; corpuscula obconita ad 15 mm. longa, 8–12 mm. diam., apice leviter convexa, supra visa circulata vel elliptica, fissure leviter impressa ad 4 mm. longa ; levia glabra sordite viridia vel cinereo—viridia, supra maculis atro—viridibus distinctis non dense aggregatis notata, fissura papillosa zona viride cincta ; flores diurni ; calycis tubus ad 9 mm. longus, superne leviter ampliatus ad 1.5 mm. diam. albus, segmentis 4–6 ad 2 mm. longis carnosus brunneis ; corollae tubus ad 12 mm. longus superne leviter ampliatus, albus, segmentis 30–45 spatulatis 2–3 seriatus ad 15 mm. longis ad 1.8 mm. latis luteis ; stamina multa exserta filamentis albis superne luteis ; stigmata 5 ad 2 mm. longa lutea vel aurea, stylo ad 14 mm. longo ; ovarium ad 2.5 mm. diam. superne conicum, discus inconspicuus atro-viridis.

Habit. South Africa (Little Namaqualand?).

Type in Botanische Staamssammlung Munich Mes. Nr. 214.

Plant not forming very dense cushions, internodes c. 1 mm. long ; body obconical, c. 15 mm. long, c. 12 mm. in diameter at the top, slightly contracted below the upper side (Type 17 of the Type Schedule according to Tischer), somewhat convex on top, circular or elliptical in contour when seen from above, fissure slightly depressed, c. 4 mm. long ; surface smooth and bare, basic colour dark green to somewhat grey green, marked at the top with a number of dark green, not very densely packed dots, fissure somewhat papillose, surrounded by dark coloured fissure zone ; flower : ovary enclosed, calyx tube c. 9 mm. long, hardly constricted, somewhat expanded towards the top, c. 1.5 mm. in diameter, white, with four to six segments, ca. 2 mm. long, succulent, brownish ; corolla tube c. 12 mm. long, somewhat expanded at the top, white, with 30–40 segments, in 2–3 rows, spatulate, c. 15 mm. long, c. 1.8 mm. wide, yellow ; stamina numerous, partly looking out of the tube, filaments white at the bottom, yellow at the top ; 5 stigmata, c. 2 mm. long, yellow or golden yellow, on a pedicel 14 mm. long ; ovary c. 2.5 mm. diameter, conical at the top ; disc low and narrow, dark green ; flower diurnal.

Several years ago I had a plant each of *C. ellipticum* sent to me through Mr. Dunne-Cooke, London and Dr. de Boer-Haren under the designation *C. luteum* Bol. Of *C. luteum* N. E. Br. a detailed description and illustration has been published in "Kakteen u. andere Sukkulente" 1957, page 59. *C. ellipticum*, however, is entirely different from that species. The bodies of *C. ellipticum* distinguish themselves from those of *C. luteum* by their smaller size, the flatter curvature of the upper surface, the different dotting and the more deeply recessed fissure. Also, the bodies of *C. ellipticum* are slightly contracted below the body edge, those of *C. luteum* more pear shaped. Particularly characteristic of the new species is also the fact that the upper side usually shows a somewhat elliptical contour (hence the name—ellipticum!). *C. ellipticum* belongs to the closer relationship of *C. flavum* N. E. Br., which, however, shows throughout larger bodies, flatter on top, with finer dotting and also a larger flower.

The discoverer of this beautiful new species is not known. Presumably, however, it occurs in the main distribution area of the *Wettsteinia*, i.e., in Little Namaqualand. On our illustration of the type plant, the characteristic features can easily be recognised ; the elliptical contour of the surface, the marking, the recessed fissure and the contraction below the transition from the surface to the sides.

Cultivation presents no special difficulties. The species can easily be brought into bloom. *C. ellipticum* can be multiplied by offshoots, so that this beautiful species will probably soon make its appearance in further collections.

This issue of the Journal has to record other passings of famous personalities in the cactus world. Mr. W. Taylor Marshall, President of the Cactus and Succulent Society of America from 1938 to 1941, in August. He was President Emeritus of the American Society for many years and during his last years he was Director of the Desert Museum of Arizona. He was the author of many publications on cacti and other succulent plants, particularly "The Cactaceae," bringing Britton and Rose up to date. Mr. Homer G. Rush, a famous figure in American Cactus circles, but who was not so well known in Europe. He held many offices in the American Society including being President in 1954 and 1955. Both these gentlemen leave memories of sincere work done and their loss will be felt for many a long day.

EXPERIENCES WITH A SMALL COLLECTION

By S. W. HARRIS

In a similar manner to many collections, mine began with one plant from a florist bought more or less on the spur of the moment and then, once the fascination had taken hold, more joined the first one on the table in the window ; of course, when that fatal spell had me in its grip I began to look for plants and quite accidentally came upon a nurseryman in my locality who really had a large stock of cacti and succulents and what's more, he knew something about them—growing them mainly for florists' trade, but keeping the best I fancy to bolster and replenish his own stock and to sell to callers at his nursery.

It was here I think that I first became really interested in cacti—they were no longer novelties to me. I began to read up on the subject and pumped my nurseryman dry of information; he was, and still is, very obliging about it all; he let me see the seeds being sown, germinating, transplantation and gave me object lessons in the use of cuttings, offsets and grafting. To add to my experience I was able to see his plants at the various stages of growth; in bud, flower and fruit. I learned a lot, bought more plants, and when I looked round, my little table in the window could not take one more plant and summer had gone.

I called a halt to it for that year and spent the winter months hoping the plants would come through it indoors with too much warmth and not enough light. I read more books (I became quite well known at the public library where they even bought some new stock on the subject!) and I looked at other people's cacti whenever I had the chance. I even took a trip to Kew.

By February it was obvious to me that if I was to have any success at all with my plants they would have to go out in the sunniest position and get a good deal more fresh air too ; a move was imperative ; (my wife had in any case let it be known that she was not in favour!) now, being a flat dweller I am very severely restricted for space, not only indoors, but for garden too ; I just have not the room for even a 6 ft. by 5 ft. greenhouse—so I am doomed to a "beginner's dozen," as it were until I have my own garden and that likelihood has never seemed so remote as now.

The only accommodation I could find for the plants was a relic of tropical fish keeping days—a 24 in. by 12 in. by 12 in. aquarium, fortunately still fully glazed and ready to be pressed into service. I gave the old tank a wire brushing, cleaned up the glass and made a span roof for it. This miniature greenhouse was fitted on to a topless box made to contain a small paraffin lavatory lamp (to give night warmth). These new quarters were placed against a wall in full sun and sheltered from the North and East winds.

I was delighted with my handiwork, it looked a treat ; I dared to wash the plants, by spraying them, of the accumulated dust and they were parked in their new home (cheers from the "guv'nor") in the sun and with all the air they wanted.

That February afternoon I lit the lamp, shut the door, put a sack over the tiny roof and went in to the fireside to check my pools. The thermometer in the morning showed a minimum of 33°F. in the aquarium ; I was thunderstruck! and awed by the enormity of what I'd done. I went to work wondering and purely on spec. bought another half-crown "Kelly" lamp and installed it as soon as I got home. They survived, every one of my 15 plants and I do not believe I need have worried half as much—the temperature (despite two lamps burning bright and sacks) went lower than ever, yet when it was over there sat my cactus plants, smug, no wit the worse for weather or my worrying.

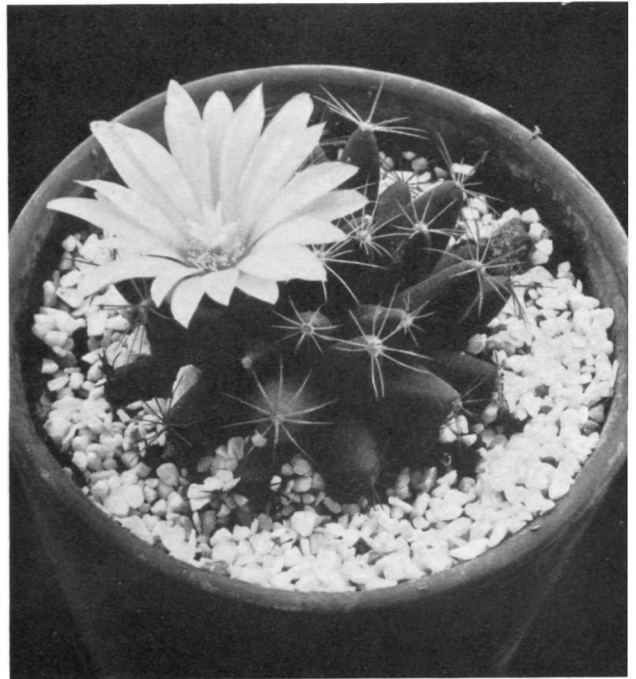
In March I decided to try my hand at raising from seed ; a mixture was sown in the approved manner and the seed pan kept over one of the lamps which I reckoned would give a soil temperature of about 60–65° (the heat these small lamps generate is quite remarkable). This seed pan was completely enclosed in a polythene bag—polythene allowing air to pass, but not water—and placed behind the tallest pots and plants to be in the shade. I could scarcely believe my eyes when, after a fortnight, I saw various bright green blubs and blobs through the polythene; there were seven of them, I knew not what, nor did I care. I'd proved a point to myself—they weren't so difficult. The seedlings progressed remarkably and eventually the good nurseryman estimated that there were three *Opuntias*, three *Mammillaria* and one *Ferocactus*; he took them off me in the end—I hadn't got room.

With better weather I noticed that my all glass "cactus house" heated up alarmingly fast (115°) in sunshine and cooled with equal rapidity when the sun disappeared; such fluctuations not being conducive to good health, I decided something would have to be done about it. Even so I had been rewarded by a fine flush of bloom on



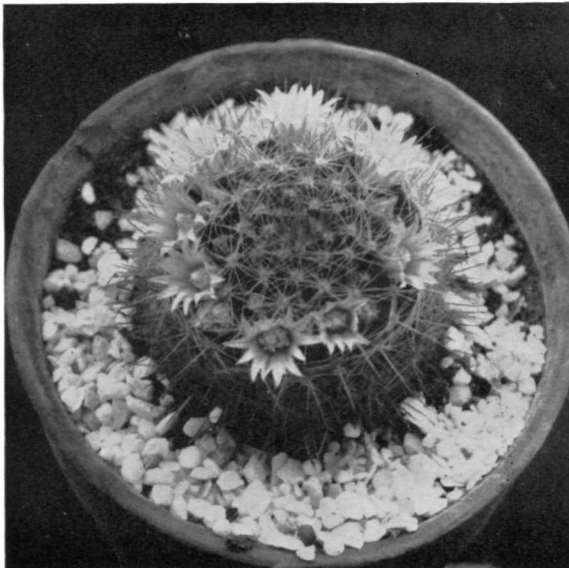
Mammillaria wildiana

W. Beeson



Dolichothele melaleuca

W. Beeson



Mammillaria viereckii

W. Beeson



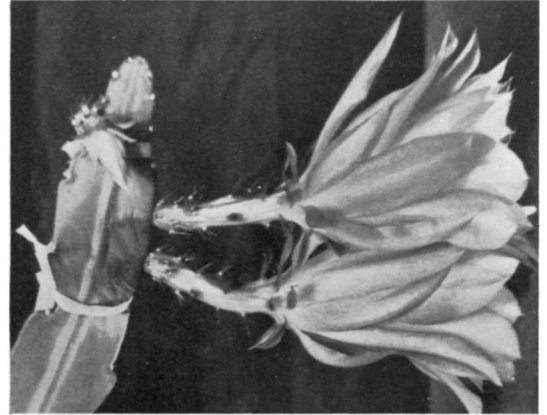
Conophytum ellipticum (natural size)

Prof. W. Rauh



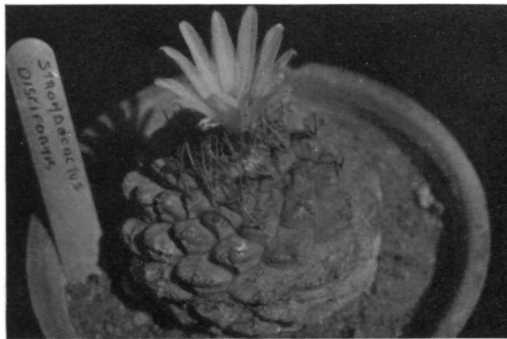
Schlumbergera gaertneri

Miss M. J. Martin



Epiphyllum ackermannii

P. R. Chapman



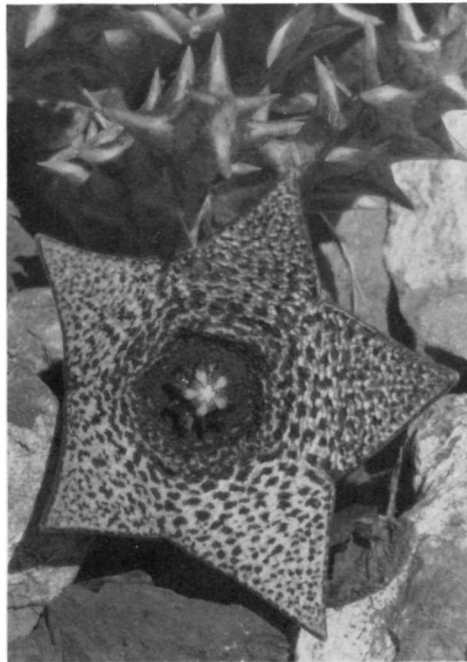
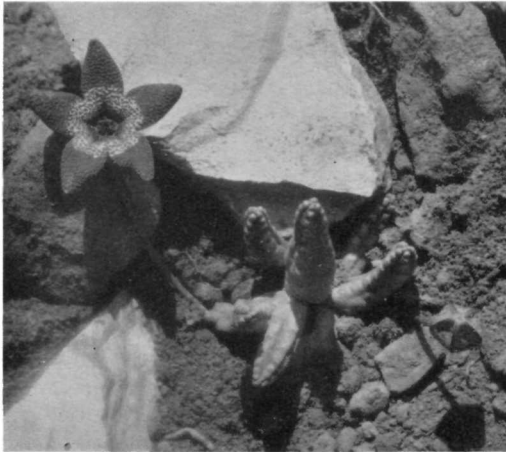
Strombocactus disciformis

J. Measures

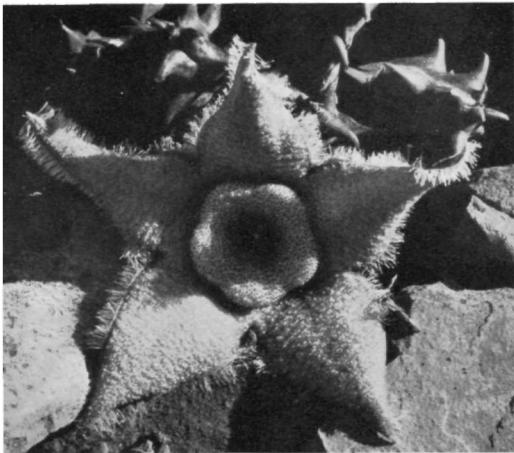


Gymnocactus knuthianus

J. Measures



Illustrations of *Stapeliad* flowers.



Illustrations of *Stapeliad* flowers.

M. kunzeana, *M. comptotricha* and *R. miniscula*. As soon as the longer evenings allowed, I started on larger and permanent quarters for the plants—space being the limiting factor as ever.

I made a wooden frame ($\frac{3}{4}$ " T. & G. deal) the dimensions of which will make many collectors laugh, for I know that had I a greenhouse this frame would be my propagating box; it is 2 ft. 3 in. square, 2 ft. 9 in. at back, 1 ft. 6 in. at front! a heat chamber is incorporated in these measurements and access to the plants is gained by opening out the front of the frame, in the manner of french windows. Warmth is provided by a Veritas sump heater which gives me a full seven days burning on one filling, my two original "Kelly" lamps are kept as standbys and the heat chamber beneath the floor of the frame is insulated by a polythene skin across the glass flooring and the pots stand on a mixture 1 in. deep of peat and vermiculite—this I find breaks up the heat and gently diffuses it among the plants—I have yet to notice any smell or evidence of smoke and fumes from any of my lamps, the secret is obviously to keep the burners clean and the wicks trimmed and always a small flame. They burn about a quart of paraffin a week, the Veritas on its own about a pint and a quarter—even I can afford that.

The cost of the frame, with glass cut to size and Sylglass—not putty, was just less than 35/-, more ingenious members than I could make one cheaper still. The Veritas was a heavy item, but I was fortunate with some of my vegetables at a local show and with the prize money I bought the lamp and some polythene to line the glazed parts of the frame.

In this home-made make-shift affair, I have forty plants—my collection, not including seedlings. In the main these plants, for obvious reasons, are the slower growing, globular or dwarfer kinds, a few *Mammillarias*, of course, *Parodias*, *Lobivias*, *Rebutias*, a *Thelocactus*, *Neoporteria* and *Notocacti*. The seedlings I have grown this summer in plastic (sandwich boxes) cases, with the lids on and whitened inside for shading; when these plantlets are ready for a pot each, next spring, they'll have to find new homes, too, as will my more mature plants when they take up too much room; and despite my using plastic and polythene in seed raising I have lost only one seedling from soft rot—an *Astrophytum ornatum* var. *mirbelli*, in fact the *Astrophytum* seedlings have been looked upon with favour by one of the Society's best known officers, so I am rather unrepentant on plastic materials.

Condensation in my "little hut"? yes, but definitely no more than which I have seen in grander edifices and that lining inside the glass does make a distinct difference to inside temperatures.

I have had the privilege and the pleasure, on several occasions, of viewing other people's collections, both large and so-called "small" and wouldn't be human if I didn't admit to twinges of envy, but I console myself with the thought that the small collection has a weighty advantage by being very easily accessible and ideal for individual attention, particularly for watering; I am sure this is not so in large collections unless the fortunate owners have a great deal of time to spare. I have found that with careful choice a very handsome and floriferous selection of plants can be housed in a very small space—a working man's collection if you like,—that's what mine is and it has given me any amount of pleasure and interest during the short while I have been getting it together. It will take a lot to make me give it up.

To conclude, if this record of my experiences helps to rekindle flagging enthusiasm, or gives an idea or two to other members, or even raises a few loud horse laughs from growers who haven't had to bother about where to put them, nor their cost, then I shall be well pleased.

The 1958 Programme is :—January, no meeting; February 18th, 7 p.m., Restaurant, Old Hall, Annual General Meeting; March 4th, Lecture Hall, Repotting and Containers, Mr. A. Boarder, Table Show, *Mammillarias*; April 1st, Lecture Hall, Cacti for Flowering, Ladies' Panel, Table Show, *Rebutias* and *Lobivias*; May 13th, Restaurant, Old Hall, Plant Exchanges, Table Show, Plants grown indoors; June 3rd, Any Questions, Panel, Table Show, *Echinocactus*; June 3rd and 4th, SHOW: July 22nd, Restaurant, Old Hall (No R.H.S. Show), Mimicry Plants, Mr. P. V. Collings and Mrs. M. Stillwell, Table Show, Mimicry Plants; August 12th, Restaurant, Old Hall, Raising Plants from Seed, Mr. D. H. Brooks, Table Show, any genus; September 16th, Lecture Hall, Know your Plants, Mr. A. S. Jones, Table Show, South African succulents; September 16th and 17th, SHOW; October 8th, WEDNESDAY, Lecture Hall, Plant Exchanges, Table Show, Hairy *Cereus*; November 26th, WEDNESDAY, Lecture Hall, Greenhouses and Frames, Open Discussion, Table Show, Any Succulent; December 9th, Lecture Hall, SLIDES, Plants in my Collection, Mrs. M. Stillwell, Table Show, Any Cactus. Times of meetings 6 p.m. for 6.30 p.m., except A.G.M. Sherman Hoyt Competition (R.H.S. Show), 17th and 18th June. Chelsea Flower Show from 20th May.

REPORTS OF MEETINGS

22nd October, 1957

The members who attended the Lecture Hall at the R.H.S. this evening enjoyed the unusual pleasure of hearing two interesting but diverse talks. The first was an entirely unpremeditated contribution by Mr. S. Naylor, who is well known as one of the Society's Auditors, but who is even better known to older members as a serious and successful student and grower of our plants.

He had generously brought along some thirty plants of *Lithops*, all of which had flowered, to make an exhibit in addition to the monthly table show. The plants created great interest before the meeting and the members were delighted when Mr. Naylor accepted the Chairman's invitation to say a few words about the plants and the genus.

Mr. Naylor said that the genus was a great favourite of his. Of those shown half had been grown from seed supplied by Mr. Boarder. He had started growing them about ten years ago and he now had 150 pots of *Lithops*. This year thirty-three species had set seed.

In his present greenhouse the only heating which he provided was by oil. *Lithops* will take low temperatures, but he counselled against watering when it was damp outside. Choose a bright day and only water sparingly. He did not agree with keeping seedlings moist. Shrivelled plants stood in water for a few minutes will frequently plump up in a matter of hours because with their deep roots they pick up moisture very quickly.

Lithops must have all the sunlight possible. His old house was sheltered from the sun with the result that there were few flowers. Now, with a house giving maximum light, the plants have given him a magnificent show. In addition the plant bodies are also a better colour.

They are not difficult to raise providing they are given this light and not shaded in any way and are allowed a free flow of air which will also ward off scorching. They should be planted in deep pots to accommodate their long roots and always be watered from below. If these facilities cannot be provided he suggested that the genera be avoided. In their natural habitat these plants have their tops level with the soil, due to their contractile roots, whereas in pots they tend to grow out of the soil. The soil should be open to permit easy and quick drainage. If he found this impaired he removed some of the upper soil and replaced it with sand. Mr. Naylor then particularised on some of the plants shown.

In thanking Mr. Naylor, the Chairman expressed the hope that the members would have the opportunity of hearing him on another occasion at greater length and with longer notice.

22nd October, 1957: Succulent Collection at Kew: E. W. MacDonald

Mr. E. W. MacDonald took the stage for the official talk for the evening. In his opening remarks he said that, no doubt, some of those present had heard his talk before.

The succulent collection at Kew had developed gradually from quite a small collection. It is first referred to in the year 1768 when 111 species are mentioned, including 10 *Aloes*, 2 *Agaves*, 19 *Cacti*, 2 *Stapeliads*, 8 *Crassulas*, 6 *Sempervivums*, 44 *Mesembryanthemums* and 11 *Euphorbias*. These were housed in a large lean-to house known as the "Long Stove" which was heated by hot air ducts through flues in the floor.

The original No. 5 House, 200 feet long by 30 feet wide and 15 feet high was constructed in 1855 and was in constant use until 1904 by which time it was so dilapidated that it could not be repaired. Its successor was built on the lantern principle but the curator considered it too dark. When Mr. MacDonald took over in 1915 he found dripping very prevalent because of the combination of wood and iron which gave unequal expansion and contraction. This could only be combated as long as there was room to move plants away from the danger spots. With a growing collection this became increasingly difficult.

The third No. 5 House, the present structure, was then projected and 1st November, 1954 was the deadline for the removal of the plants. It was, however, a very long time before the contractors got to work. The big problem was the temporary housing of the plants. The *Agaves* were put in the Temperate House but there it was cold and wet. The cacti and the *Aloes* were put into the Palm House where it was hot, humid and leaky. This state of affairs lasted for two years. Mr. MacDonald said that he was very pleased with the new house which was extremely light both in the roof and walls with large panes of glass. There were no pillars. Although there were two inches of lineal expansion there were no leaks.

There was now, in addition, the Sherman Hoyt House which was unique for the backdrop of a painting of the Mojave Desert in an apse, which blends so well with the rocky debris between the plants. These plants were given, together with the cash for building the house, by the American lady after whom the collection and the house is named.

The King George V Memorial House, or 7B, houses South African plants. Here the fine wire screen is essential as one-third of the original plant inhabitants disappeared in the first year. Mr. MacDonald said that he would prefer sliding glass panels.

Mr. MacDonald told several interesting and amusing stories of the visitors to the collection. Some of these gave his hearers quite a new angle on the difficulties of curators and explained some anomalies which members had noticed.

One or two of the larger trade growers have numerically larger collections but the total number of plants at Kew is now over 7,000 with 1,800 different species.

Some of the plants were of ancient stock and differed from Britton and Rose in appearance and were not correctly named as a consequence. An example of modification by environment. In this connection Mr. MacDonald quoted some individual instances.

Curators, too, had their cultural difficulties, for instance a *Carnegia gigantea*, given by Mrs. Sherman Hoyt, was eight feet high and a foot in diameter, died inwardly, rotted and collapsed. The present specimen is nine inches high.

Some donors can be a source of embarrassment, for instance the lady who was liable to come in at any time of the year and ask where her plant was. As it was long past its best it imposed an unnecessary hardship.

Reverting to the difficulties met in moving the plants when taking up occupation in the No. 5 House and in repotting some of the larger species, Mr. MacDonald said that some of the larger *Agaves* weighed from three to four hundredweights without the soil. They were levered from the Temperate House on a bomb trolley. For repotting use had to be made of sheerlegs and a pulley and chain. The larger genera were arranged alphabetically and mainly based on Britton and Rose. The centre benches were grouped more for effect.

In reply to a question he explained that spare plants were not offered for sale but were retained for exchanges with other botanical gardens. Other questions led to lively and amusing exchanges with Mr. MacDonald holding his own.

The Chairman closed the meeting by expressing the thanks of the members for an interesting glimpse behind the scenes.

19th November, 1957 : A Visit to Monaco, 1953 : G. D. Rowley

Some sixty members were entertained and delighted by Mr. Gordon Rowley's commentary on a series of coloured slides by Dr. Elkan, portraying the scenic and succulent delights of a part of the Principality of Monaco.

Mr. Rowley said that the slides and the commentary arose out of the I.O.S. Conference at Monte Carlo in 1953 when he was one of those representing the United Kingdom. This was his first journey out of this country and he had naturally found the occasion both exciting and thrilling. Dr. Elkan's pictures were taken two years later and, as was apparent to keen observers, taken at a different season of the year.

Monaco is a principality on the Mediterranean surrounded, since 1860, except for that side facing the sea, by the French Department of Alpes-Maritimes. It is small and it is quite easy to drive right through it without realising that, for a brief time, one has passed out of France. The coast is beautiful and rugged with many little bays and promontories with the hinterland rising sharply to mountains of 8,000 feet. It is a natural trap for the sun and sea breezes with a climate of extraordinarily bracing characteristics.

Mr. Rowley illustrated these points with many skilfully contrived slides of striking beauty and composition.

Mr. Rowley then turned, only too briefly for his audience, to visits made to succulent collections. He referred first to that of Mr. J. Marnier-Lapostolle at Cap Ferrat and then passed to the Jardin Exotique de Monaco. The name of this garden and of its Director, is quite well known to many who have not had the good fortune to visit Monaco.

The garden is entirely man made, literally carved into the cliff face ; the lower level being 285 feet and the

upper 520 feet above sea level. So skilfully is it designed, however, that the most timid loses the impression that it is a vertical rather than a horizontal garden, despite the many glimpses of the sea and the bay which are cleverly blended with the arrangement of the plants. Here there are succulents growing out of doors in pockets of soil which have had to be constructed to hold the plants and be big enough to give adequate root room for many plants of most imposing proportions. Not only are there many tall *Cerei*, *Trichocerei* and *Pilocerei*, but many *Aloes*, *Agaves*, *Euphorbias*, *Opuntias* and shrubby *Mesemb.* Great use is made of grouping common plants into masses with spectacular results.

Much skill, too, has been used in constructional work. For example, what appeared to be rustic woodwork was, on close inspection, concrete. The plants do not obstruct each other because of the sharply differing levels of the paths. Much artistic ability has also gone into the lay-out of the gardens, as Mr. Rowley illustrated with several slides, by grouping plants about apertures in tunnelled walks thus giving the most striking plant silhouettes against the brilliant blue of the sky. Most of the plants are large or even huge for the simple reason that it is consequently impossible for them to be removed surreptitiously. The more portable plants are cunningly placed out of reach or in protected houses.

Mere words cannot describe the beauty of the many slides and those present will long appreciate the skill of Dr. Elkan in so embellishing plant photography with backgrounds of such scenery or lighting and in many cases both. These slides combined with the form of presentation for which Mr. Rowley is so well known took those present far away from London on a November evening. The thanks of members is fully accorded to Mr. Rowley and Dr. Elkan for such a diverting evening.

PROGRESS REPORT

By A. W. HEATHCOTE

Some of those members who heard my discourse on moving from the suburbs to the sea may be interested to have a progress report dated 17th November, 1957.

Not unnaturally, with a fair sized ex-meadow for a "garden" much time had to be spent there; if only to keep in the good books of my immediate neighbours by keeping down the weeds and long grass. In addition there has been a great deal of concreting to be done. As a result the plants have had a fair amount of time to themselves.

I managed, however, to complete the repotting of everything and, as expected, my lean-to greenhouse is far too small. Unfortunately additional greenhouses need more than good plans—but it is good to travel hopefully. I had no adventures with compost this time as I relied on a tried and more distant source.

You may recall that our two Vice-Presidents suggested that I try sea-shore sand for my *Lithops* compost. This I did, following the tide out to fill my tine. The result has been astonishing to me. Many of the 1956 seedlings are now of a saleable size and a pleasure to look at, despite being planted late. The 1955 seedlings given to me by Mr. Young and which were saturated with salt spray on the day of the gale are greatly enlarged and three of the four flowered on both heads. As they are all in one large pan they have attracted much attention. The residue of the original collection have recovered from the shock of the removal and are growing steadily. None of these bloomed this year. One showed marked signs of rotting on one half but after being sliced in two (carefully preserving the root for the good half) it is still alive, if a little depressed looking. An unnamed *Conophytum* given to me over six years ago which had grown not at all, has, this year, doubled its volume and is now showing a tiny yellow paintbrush on one head.

The leafy succulents have all grown well and most have flowered at least once. The most spectacular is *Echeveria metallica* x *Graptopetalum weinbergii* (affectionately known as "Mrs. Shurly's cross") also via Mr. Young. This is a delightfully coloured plant. It has spent most of the summer developing a flower head and it will still want a few weeks before the blooms open. The flower head is over a foot out of the perpendicular from the pot centre. A tiny scrap of *Pachyphytum viridis* which remained at an inch long for over a year is now a many-leaved

plant over three inches high with a glowing sheen. Such plants as *Echeveria hovei* and *E. dudleyi* have also coloured more than usual as have *Sedum weinbergii* and *S. amethystinum*—both the latter rather common, perhaps, but very lovely when full coloured and most attractive to visitors. *Sedum sieboldii* has leaves which are almost scarlet but not for much longer for the first have fallen. The various cuttings of *Aeonium arborescens* have all developed large rich green heads which look like flowers. These have an interesting origin. They come from a cutting which was taken from a plant in the Kaiser's garden at Potsdam. Even *Kalanchoe tomentosa* has grown from one inch to two. All the *Haworthias* are in good heart and *H. fasciata*, *H. radula* and the *H. attenuata* varieties are particularly striking.

The cacti are particularly noticed for the good colour and spine growth. Very few have not done well. I was particularly happy about the steady growth of a *Cephalocereus senilis* given to me by Dr. Craig when he was over here. This had travelled round Europe with him and looked rather like a forgotten piece of *Chamaecereus sylvestrii* when he gave it to me. Only the fact that he had given it to me and that it had been brought from the Andes singled it out for any attention in that state. When repotted it was just large enough and strong enough to hang over the side of a 2½-inch pot. My wife and I derived much pleasure and amusement from inspecting it every other day and noting the way in which it slowly dragged itself up until it finally stood erect. It is now over four inches high but the lower part still bears signs of its hard-spent youth.

Mam. gigantea has developed in a rather unusual manner. This year's growth has been upwards instead of upwards and outwards with the result that it appears to be wearing a hat. Everything else about it appears normal. It is certainly a good colour and the spines are fine.

At last I have succeeded in growing on a cutting of *Opuntia microdasys rufida* to seventeen pads with only two tiny scar marks on the whole plant. I am hoping for better success with my four *Epiphyllums* next year. None flowered last year, but I did not expect them to. This year two have been properly rested and fed—the other two were moved by a friend during their stay outdoors and remained overlooked until 16th November when they were rescued and brought indoors. *Zygocactus truncatus*, on the other hand, is all ready to go, having twenty-one buds on twenty-five tips.

So much for the actual plants.

I have suffered much from mealy bug this year. This has been quite heavy for me. Normally my plants do not suffer unduly from this pest. In nearly every case—certainly in the worst cases—it was worst with plants that had either not been repotted last year and were in the same pots that they spent their exile in, or had been potted late last year. The indication is that an overlong spell in a spent compost or overlong periods of drought during the summer months had something to do with it. The *Chamaecereus sylvestrii* that spent so long in a broken nine-inch pot and which I delayed potting for one reason or another until this year was a good example. When the remains of the pot were removed there was very little soil there; just a mass of roots and mealy bug. Without even an autopsy it was burned. I now have a young plant with three tails given to me by a schoolboy as a token of appreciation. Fortunately I have a very good isolation hospital for dealing with the pest—the window sill in my workshop—and the nicotine/methylated spirit solution is bringing the sufferers back to normal. The radiator (off the kitchen system, you remember) was installed before the end of 1956 but its real value is, of yet, uncertain. Last winter was very mild indeed and the worst frost in my district did not occur until May and was hardly noticeable. Maybe this year will be different.

The wide window sill in the front of the bungalow is used by us as a display counter, and much interest has been caused locally by the interchange of flowering plants throughout the year. The *Echinocacti* and a *Crassula falcata* were particularly admired as they were clearly visible from the road. It was on this window sill that the wee blue tit met his death.

I have saved the most important lesson until the end. Many, many times have we heard and read that succulent plants need light (among other things, of course). This my plants have had in abundance. The clarity of our light is something you can feel. After all, the Astronomer Royal has his workshop only a few miles away. This light has obviously given the colour to the leafy succulents and the *Lithops* and developed the colour and spines of the cacti as well as causing all of them to grow so well. It is a thing which we cannot manufacture or buy. All I can advise is keep the glass clean if you don't live in Sussex. How many of you really bother about this? Try it, it is worth it.

As a tailpiece: the two dustbins are still in use. One is just a dustbin and the other holds my reserve compost whilst resisting claims that it be used for boiler ashes.

REVIEWS

Since the last issue of the Journal there have been some notable books published on our subject.

"Flowering Stones and Mid-day Flowers," by Dr. G. Schwantes, translated by Mrs. V. Higgins. (Ernest Benn Ltd., Bouverie House, Fleet Street, London, E.C.4. Seven guineas).

This is a remarkable book of 420 pages dealing with the *Mesembryanthemaceae* with thirteen illustrations in colour of individual plants, also one hundred and seventy illustrations of individual plants in monochrome. In addition, there are fifty-two figures in the text of flowers and capsules of various plants.

Readers who remember the insets to the Journal of Dr. G. Schwantes' book "Cultivation of the *Mesembryanthemaceae*" will know the readable matter that the author is capable of, and this huge book is no exception. Dr. Schwantes states that it is not intended to be a monograph, rather an expression of an experience with no intention of dealing with systematic relationships. Much of the book is covered by this expression, but one hundred and twenty-eight different genera in the *Mesembryanthemaceae* are briefly described. The genera *Lithops* and *Conophytum* and seventy-three *Lithops* species and two hundred and seventy-seven *Conophytum* species are described in detail. It is interesting to compare with the fifty *Lithops* species that Dr. G. C. Nel described in his book and those specialising in this genus will find plenty of interest.

This is a wonderful book, full of material of experience, of description—rarely completely scientific—eminently readable for all those interested in the *Mesembryanthemaceae* and it is one that I can highly recommend to all. The price appears to be high, but if you obtain the book I am sure you will find it justifies the outlay.

"Mammillaria," by C. Marsden. (Clever-Hume Press Ltd., 31 Wright's Lane, Kensington, London, W.8. 35/-).

This is the second book of the Cacticulture series that has been embarked upon by the author and his publishers.

It is a book of 407 pages and includes six plates in full colour and nineteen plates in black and white.

It deals with well over 1,500 names of species, but this, of course, includes synonyms and varieties. It deals with Mammillarias in alphabetical order without any attempt to classify them in sections. Each species that the author accepts is described quite fully, with synonyms, classification, cultivation and varieties. With such a huge list of names it is unfortunate that there are so few illustrations of plants.

With such an accomplished author I was disappointed to find so little original material. Any owner of Craig's "Mammillaria Handbook" will see, by comparison, that our author has copied the descriptions given there with slight alterations of words and the names even are so obviously taken from Craig. Of course, I appreciate that Craig's book is not so readily available, in fact, I understand it is now out of print. In that case, a republication of the material is valuable, but I still feel that it would have been more welcome to have a readjustment of the genus, especially in view of the controversy that has gone on during the recent years.

Unfortunately, adherence to Dr. Craig's book has meant that the present publication is out of date, as I believe I am correct in stating that but for two species described in our Journal by Dr. Helia Bravo, not a single *Mammillaria* described since Craig is included. I hardly think his cultivation advice is always right. When he comes to a species, specimens of which have not yet been received in this country, he goes to the plant's native habitat and from this he builds up a cultivation that can hardly be successful here, as it is well known that an entirely different cultivation by us is necessary if we are to cultivate the plants in this country.

"Stapeliads," by Edgar Lamb. (Blandford Press Ltd., 16 West Central Street, London, W.C.1. 30/-).

This is a truly remarkable book. I am particularly struck by the perfect production as a publication. That is the first thing that impresses me, but that is not intended to convey that the contents are not worthy of an impression. It is a book of 156 pages including twenty-eight plates in colour and one hundred photographs in black and white.

The book deals with *Stapeliads* in general, their cultivation, pests and diseases, growing from cuttings and seed and many other matters of intense interest to all who are interested in the Family. I would have liked it even better had Mr. Lamb dealt more fully with the flowers of the *Stapeliads* as it is through them that identification can be made. It is true that this means entering the world of systematics and Mr. Lamb disclaims any intention of doing this. The body forms of *Stapeliads* are so much alike that the amateur and beginner would have been helped considerably by illustrations indicating the different genera that are usually considered as *Stapeliads*. The book

contains photos. and plates, practically all giving flowers of the plants, but there is no arrangement special for identification purposes and I do hope that if this book is reprinted that a chapter and some illustrations can be added to make it more helpful. I can recommend the book to all readers. There have been too few books on these very interesting plants.

“The Voice of the Desert,” by J. W. Krutch (Alvin Redman Ltd., 4 Fitzroy Street, London, W.1. 18/-).

This is a book that was brought to my notice by a member and not by the publisher and I consider it worth while including it here. It is similar to Walt Disney's films on the desert and the reader will be enthralled even as they were by the film. It is even of interest to us in cacti as there are two chapters devoted to cacti and cactus run throughout the whole of the book as an inescapable feature of the desert. There is an inset of sixteen illustrations, some of them cactus, and the chapters have such intriguing titles as “the mouse that never drinks,” “love in the desert.” I am certain you will not regret purchasing it.

E.S.

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Dr. A. Tischer requests us to mention that the type plant of *Conophytum extractum* was deposited in the Staatssammlung Munich under Mes. Nr. 209.

I am advised that the notes of the late Howard E. Gates have been passed on and it is to be hoped that they may finally be published in a book.

Cures for mealy bug continue to come in. The latest comes from a member, Mr. S. W. Harris, who says : “another effective remedy for mealybugs and their kind. It is fairly new on the market and is called ‘Tritox’—a systematic insecticide which can be applied either at the roots or as a spray, it is absorbed by the plant and sucking insects are killed by it.”

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THE
CACTUS
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JOURNAL
 OF GREAT BRITAIN

Established 1931

Vol. 20

APRIL, 1958

No. 2

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SOCIETY NEWS

1958

May 13th	Plant Exchanges. Table Show : Plants grown indoors. (Restaurant, Old Hall).
June 3rd & 4th	SHOW. Evening : Any Questions. Panel. Table Show : Echinocactus.
July 22nd	Mimicry Plants. Mrs. M. Stillwell and P. V. Collings. Table Show : Mimicry Plants. (Restaurant, Old Hall. NO R.H.S. Show).

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THE
C A C T U S
AND SUCCULENT
J O U R N A L
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 20

APRIL, 1958

No. 2

FROM THE PRESIDENT

With this issue of our Journal I have completed the twelfth year of my editorship. No, I am not asking you to say what a good Journal it has been and what a wonderful fellow the editor is—he already knows that !!!

What I have in mind is the remark of another editor with whom I have been in correspondence, on and off, for nearly forty years and who is an older hand than I am at the game of editing. He warned me many years before I undertook the task that I would see a slow, but gradual decline on the part of contributors to realise the importance their contributions have for us and for the Journal. At the time, he had been editor for about twenty years and was well placed to give an authentic opinion. At that time, he was completely out of articles for his Journal and he was extremely despondent and realised he might have to write his Journal entirely himself. Incidentally, he is still editor of the same cactus Journal and he is still filling his Journal, but that has been at the expense of tremendous effort to interest those who contribute his articles. I doubt if one of his readers realise what a hopeless job it is and what the printed result cost him in effort. Another very well known personage in the cactus world I remember saying that a good editor could and, in emergency, would write the whole of his Journal himself. I just wonder if I could summon up the energy to do this myself and, most certainly, I wonder if I could. I have painful memories of an article on *Stapelia* that I wrote in the first edition of this Journal in circumstances much like that which has been described.

By now I suppose you are wondering why I am rambling along these lines. It is because I am greatly in need of good articles for our Journal. Friends among the members and without the Society have gathered round and made my job a routine one, but now I am finding some difficulty and I appeal to my many friends to note that I would welcome their help in this direction with articles of an import that will interest and help our readers.

The same applies to photographs. For a considerable time I have been drawing on my "bank" of photographs, but this is dangerously near exhaustion. Recently I was asked whether I could not provide more illustrations as they are used by so many for identification purposes. I had to point out that an editor can only provide what is given him to publish and if others do not contribute the photographs the editor is unable to publish something out of nothing. I am hoping that this discussion will provide the necessary photographs, but we must wait and see. Readers will have noticed that for some considerable time the photos published in the Journal have had no relation to the articles printed therein. I have not many good helpers in the matter of photos like my and our very good friend, Mr. W. Beeson. I am hoping that now some of our clever photographers will come to our aid. If you send in some photos, do not be hurt if I have to reject some. So many photos are taken on 35 mm. film and are blown up to the required size. If the 35 mm. film is not very sharp it means that these defects are increased in any enlarged photo and reproducing them in print increases still further these defects.

May I appeal to those who can contribute useful articles and to our photographers? You will immeasurably add to the pleasures of my task as editor.

E. SHURLY.

CACTUS CULTURAL NOTES

By A. BOARDER

The task of repotting all the cacti should have been completed by now. The subsequent watering of the plants will depend on the weather. It is of little use expecting the plants to grow unless they get sufficient water. It is well known that cacti can go for very long periods without water but they will not grow unless they can get a fair supply during the growing period. These plants are among the hardest plants to water correctly in the vegetable kingdom. The fact that they have no leaves makes them so much more difficult to treat than the ordinary plant. Most plants in pots can tell you when they need water by the drooping of the leaves or flowers. No such signs are possible from the cacti. A plant badly in need of water can look exactly like another of the same kind which has wet soil in the pot. It is not easy either to be certain when a particular plant needs watering. It may not be difficult when only a few plants are kept. The pot can be tapped to see if it rings clear, when water is needed, or the weight can be tested by lifting the pot. With practice the weight of a pot should soon indicate to you whether the plant needs water or not. It is not always easy to tell at a glance if a pot wants watering when the top of the soil looks dry. It may be that underneath the soil may be quite damp still and the plant not yet ready for watering. This is especially so in the evening after a hot day when the surface of the soil may have been dried up. If the same pot is examined in the morning it may look quite different as the whole of the soil will by then have become a uniform dampness.

Another very important point about watering is to see that enough is given at a time to make sure that the whole of the soil in the pot has been well damped. A tiny trickle of water may only just damp the surface, and if this kind of watering is carried on for some time it is possible that some of the soil in the pot may never get wet the whole year through. It must be realised that a plant can only take in its nourishment in a soluble form, and so without adequate water it cannot thrive. Once a plant has been watered well it should have no more until the soil has dried out again. This can be in a day or less if the pot is a small one and it has been hot, or a week if the weather is cool. There can be no hard and fast rule for watering. Young growing cacti will need more water than an adult plant and some kinds of cacti have to be watered with great care at all times to make sure that the roots are not too wet at any time. Such kinds are the Epithelanthas, Pelecyporas and Solisias. There will always be arguments as to whether it is better to water from above or immerse the whole pot in water. I never water by the latter method. For one thing I could not find the time to do it. I have hundreds of pots to deal with and it would not be possible to handle them all at each watering time. At the time of writing, near the end of February, I have been busy getting on with repotting. I find that I have 460 Mammillarias in pots which have to be dealt with, and hundreds of other Genera, such as Lobivias, Coryphanthas, Notocactus, Malacocarpus, Rebutias, Stenocactus, Astrophytums, Echinocereus, Parodias, Ferocactus, Echinocactus, etc. My method of watering is to fill up each pot with a long-spouted can, and if the pot is large and the weather hot the plant may get a second watering immediately after.

On a hot day the plants may get a good syringeing just before the house is closed down for the night. My objection to watering by immersing, apart from the time taken, is that the soluble nourishment could be washed out of the drainage hole by repeated dippings and any root disease could be spread from one plant to another. If a pot was very dry it could be stood in a container and some water added so that the soil was able to soak up all the water. This idea is not so bad, but I still consider that it is possible by so watering to so saturate the soil that all the air is expelled and the soil becomes so wet as to be unhealthy for the plant.

When repotting it is imperative to make sure that enough space is left at the top of the pot to be able to give sufficient water at a time. If the soil is brought right up to the rim of the pot, any water given will just run over the side and not damp the soil at all. The pans of seedlings should be watched carefully. If the pans are in a propagator then it is possible that the soil will dry out very quickly. It is often only possible to water such pans by means of a fine spray, for fear of disturbing the tiny seedlings. This spraying can appear to damp quite well, but it is probable that under the surface the soil is very dry. The seedlings cannot be expected to grow under such conditions. I have had a good germination of seeds sown this year. I made a start early in January and have now hundreds up. I have sown over 500 different kinds so far and am still awaiting the seeds from the Society. The seeds are sown in 4-inch half-pots which have been divided into sections with celluloid strips. Although

usually each pan is divided into four parts, when the amount of seed of a kind is very small I may double the divisions. I used 68 pans to take 400 kinds of seeds.

My propagator was altered slightly this year. I have a frame 6 feet by 1½ feet which was heated by a 50 foot "Warm-glo," cable heater. The thermostat was in the air and set at 70 degrees F. I found that with the cable bedded in sand under the pans the temperature of the air would be about 65 degrees when the sand was at 110 degrees. I have therefore reset the cable so that part of it is now exposed and runs around the inside edge of the frame. This lessens the base temperature and increases the air temperature. I find this a great improvement. As my first frame was full up I have obtained another similar cable heater which is installed in a second frame adjoining the old one. This is used for the pans of seedlings which are well up and the air in this frame is kept drier. In the original seed frame the pans are surrounded by damp peat, but in the second frame no peat is used and the pans stand directly on the sand. This tends to keep the seedlings from damping off once they are up. They are also nearer the glass which tends to prevent them from drawing up.

The latest edition of the Society's booklet contains an article by me on seed raising and so I need not give all the directions again in these notes. I have been experimenting with surgical spirit for killing mealy bug. I find that it is a good killer of the pest and appears to do no harm to the plants as long as it is used with caution. The best way is to dip a pointed stick into the spirit and to touch the bugs with this. Where a plant is badly infested and spraying has to be used it is imperative to see that the plant is not left long without the spirit being syringed off with some warm, slightly soapy water. Some plants can be ruined if the spirit is left on them in any large quantity. Such Mammillarias as *M. albescens* and *M. camptotricha* can be badly scarred if not killed and most of the *Echinocereanae* are harmed by the spirit. The *Echinocereus*, *Lobivias* and *Rebutias* seem especially prone to damage from the spirit and I have killed some *Echinocereus* by spraying.

I intend to experiment with other insecticides this year. The types like Tritox, Malathion and Parathion seem to be the kinds which would kill the bug and could do so by poisoning the sucking pests which feed on a plant watered with the solution. Whether any or all of these will harm the plants remains to be seen. It is a fact that Parathion and Malathion must be used with caution and protective clothing and eye goggles are recommended. I have always been very careful not to recommend any insecticide until I have tested it thoroughly, as until it has been tried out on different types the actual damage which could be caused is not known.

When repotting this year I noticed an almost complete freedom from root bug in the soil. I feel sure that this is largely due to the fact that all pots have a little Paradichlorbenzine in them. Sometimes the pot has had the inside wiped round with the chemical or else a little is dropped over the crocks. A watch should be kept for ants as they not only carry mealy bug to various plants, but can remove seeds from a pan. If left alone they can make nests in pots and remove most of the soil, thereby doing damage to the roots of the plant. A little Nippon dropped on small pieces of clean glass early in the year will tend to keep the ants under control, or some D.D.T. powder sprinkled all around the pots will keep many at bay. This will also do as a foil to thrips.

If a fine display of flowers is required do not forget the *Lobivias*. Although most of them are not particularly handsome as plants their flowers can be magnificent. They are of such unusual shades of colour and so large for the size of the plant that they cannot fail to please. I find the following very good flowering kinds: *Lobivia famatimensis*, *L. higginsiana*, *L. caespitosa*, *L. hertrichiana*, *L. aurea*, *L. jajoiana*, *L. leucorhodon*, *L. backebergii*, *L. weghiana*, *L. haageana* and *L. rebutioides*. I have many more which give great pleasure and as they can flower when about two years old and fairly small they need not take up too much room in the greenhouse. The *Notocactus* are noted for their freedom of flowering, but most of them are yellow. However, two very nice ones are *N. rutilans* and *N. mueller-melchneri*. These have red and pink flowers respectively. In the *Gymnocalycium*s many have whitish or white and pink flowers, but one or two have fine red flowers and so make a good variety of colour. Some of the red flowered species are: *G. mostii*, *G. baldianum* and *G. venturianum*. The *Parodias* can give a prolonged flowering period as long as the plants can get plenty of sunshine. They like to be near the glass and will continue to give a succession of flowers through most of the summer. They are rather slow to grow from seed, some of which is almost as fine as dust.

Before the next Journal is published the summer show will be held. I do hope that as many members as possible will exhibit as by this means it is possible to advertise our hobby to the uninitiated. Some members do not appear to realise how the plants are judged and think that any large plant must naturally beat a small one. There is more to it than this, as points are awarded not only for growth, cleanliness, etc., but also for rarity, being

true to type and difficulty of growth. In the other succulent classes this is sometimes confusing when exhibitors of large lush specimens find that their plants have been beaten by small but rare plants. The latter may be perfectly grown and beautifully coloured, whereas the larger plants may be more like a cabbage than what the plant should resemble. Not that a rare plant is likely to beat a well grown specimen if it is badly damaged or does not appear to have made any fresh growth since it was imported. I know that it can be difficult to tell for sure whether a plant has been freshly imported or not in some instances, but these plants usually show many signs of damage to skin or spines. It must not be thought that good spines cannot be grown in this country. Where a plant gets proper treatment and plenty of light, good spines can be grown. I have some *Astrophytum capricorne* plants which have spines as good as imported plants. I saw a cactus show last year where a splendid specimen of this plant was passed over by the judge. I suppose he did so as he thought it might have been recently imported, whereas this one plant was a better specimen than any other plant in the class and worth all the others put together.

When groups of plants are exhibited try to use the same type of pots and labels. It looks very bad to see three plants in a class, as one exhibit, with three different kinds of labels.

THE JUNE SHOW

Inset in this Journal will be found, members only, a schedule of the various classes in our Summer Show for June 3rd and 4th. This Show is held in the New Hall of the R.H.S. and is incorporated with the usual R.H.S. Show.

Every member is urged to make an entry in at least one class, but entries can be made in all of the classes if desired. We wish to impress upon members the importance of exhibiting at the Shows. While it is very interesting to all members to go round the tables and view the exhibits and make caustic or complimentary comments, the Shows have a larger purpose. So far as the members are concerned, in addition to viewing the plants with all the interest of seeing plants other than one's own, it is an occasion when everyone can meet their fellow members and the officials of the Society, it becomes a very important social occasion and much can be learned or enjoyed at these events. This is of the greatest importance to us all, but we do not stop there. If you have attended any of our Shows you must have been impressed by the interest shown by the general public, as well as many who are interested in our plants, but are not members of our Society. Many new members have been gained because of these Shows. The Shows are excellent public propaganda and they show to the general public that our plants are really beautiful, that they flower and that they are worthy of being cultivated by anyone interested in plant life.

Each class, of course, is awarded prizes in cash and a fine certificate is presented to every winner, whether first, second or third in each class. In addition, Denton medals and Amateur Gardening awards are given at each of our Shows. Mr. Boarder is the judge and, I believe, is being joined by Mrs. Stillwell this year, Mr. Boarder to judge the cacti and Mrs. Stillwell the other succulents. As a result of their judging and placings, points are awarded and at the end of the year these points are added up and there are several cups, etc., which are given to the successful winners; these cups, etc., will be held by the winners for the following year.

The Council has decided that with the October issue of the Journal there will be a full-sized coloured illustration of a plant which can be used as a frontispiece to the volume. What the subject of this illustration should be has been a problem, but the suggestion has been made and was decided upon that Mr. Boarder should make the choice from the plants exhibited at the June Show of a plant that he considers is most suitable for reproduction in colour. We hope that the result will be a justly named "Plant of the Year," but the needs of reproducing such a plant in colour will have to govern Mr. Boarder's judgment, especially as it is eminently desirable that such a plant should be in flower, if at all possible. So your plant may be the one that Mr. Boarder chooses. It does not necessarily mean that it will be placed first, it could easily be a single plant in the exhibit of three, but it did not justify being placed as a first because the other plants in the exhibit lost points. Now, here is the incentive to show. Do your best. We know transport is a problem, but this can be overcome if you co-operate with other members in your neighbourhood.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

April can be a wonderfully exciting month in the greenhouse with all the fresh new growth on the plants and the flower buds appearing. It is always a great thrill when a much loved plant flowers for the first time, particularly if it is one that is not too easily flowered in this country. Once a plant has set its buds it is not advisable to move its position.

At the time of writing, which is early March I am still in the process of my spring check up and first proper watering. It takes a long time, but is worth it to see the finished result. I examine each plant separately for pests, etc., and treat as I go along, removing any old leaves and giving the soil a rake over before watering. This ensures that the water really gets down to the roots. I do not attempt any repotting until this operation is finished and then I can see at a glance those plants that need repotting the most. When one has hundreds of plants to deal with it is utterly impossible to find time to repot everything, but it is very necessary to repot all plants in three inch pots and under every year, with the exception, perhaps, of some of the South African pebble plants which, being very slow growing, can be left a little longer. It is never too late to repot a plant that is not looking as well as it should, it will usually give it a new lease of life whatever time of the year, in fact, it is a good idea to always keep a good supply of freshly scrubbed pots graded in sizes and arranged on shelves over the potting bench, if you are lucky enough to have a separate little potting shed. It can be made as orderly as the housewife's kitchen with separate compartments for all the potting ingredients, labels, ink, and tools and not forgetting a good supply of tiny envelopes for collecting seed from your plants.

Finally, the various insecticides for pests should be close at hand, but preferably on a top shelf away from children. I use a large round zinc tray, when repotting, to take the old soil as it is turned out of the pots. As the tray becomes full I tip it out on to the garden, and so prevent any old soil laying about to contaminate the fresh.

Once again I must mention my favourite plants, the *Gibbaeums*. They seem to like my conditions and flower well every year. As they are growing through the winter they do need a certain amount of water and they will reward you with a fine show of flowers in the very early spring. At the time of writing I have *G. fissoides* out. This is one of the largest red flowered ones. *G. perviride* growing in a 5-inch pot flowered from every head. I grew this plant from seed in 1949. *G. molle* and *G. pilosulum* flowered just after Christmas. Others now in bud are *G. petrense*, *G. album*, *G. shandii* and a very large plant of *G. pubescens*. These plants like a very coarse gritty soil with a fair amount of limestone chips. *Gibbaeum heathii* should be kept dry until it starts to split and reveal the new pair of leaves. That is the commencement of its growing period. The flower buds appear tucked down beside the new pair of leaves. *G. velutinum* is one of the easiest to grow and to flower. There appear to be several varieties of this plant, with flowers ranging from very pale pink, up to red. They all prefer to be slightly rested during the summer months.

My *Pleiospilos nelii* has two buds showing, which I hope will open successfully. I am keeping it quite dry until the buds are above the body of the plant, as, if the plant is watered too early, often the two leaves swell up and crush the buds out of existence. It can be given just a little water when the buds are quite clear, and then no more until the bottom pair of leaves have dried away, as with other *Pleiospilos*.

As an experiment, for the past year I have grown a number of the leafy and shrubby types of succulents in full sun on a fairly high shelf. They were kept quite dry through the winter and have developed the most beautiful colours. *Kalanchoe cordifolia* is a beautiful bright pink, while the green leafed shrubby *Crassula elata* has brilliant red edges to the leaves. *Kalanchoe granata* is a real flaming red. *Sedum guatemalense* is a rich copper colour instead of the usual green when treated too generously. *Graptopetalum weinbergii* is a real picture with its deep mauve and white leaves. It makes a fine partner for *Echeveria hoveyii* with similar colouring. The beautiful blue of *Kleinia repans*, placed next to a large plant of the deep orange *Sedum adolphii*, has to be seen to be believed.

It is not too late to sow some seed and towards the end of April will be quite successful without a propagator. Never let the pans dry out until the little plants are well established. Try to obtain as much seed as possible from your own plants by careful pollination with a camel hair brush. It is the only means of propagating some of the rarer plants. There are certain types of plants which have both male and female species, as with a number of the *Euphorbias*. Here it is essential that you make sure if your plant is a male or female by examining the flowers. It is almost impossible to tell until they do flower. The male bears the pollen which must be carefully transferred

to female flowers. I get a fair number of bees in my greenhouse during the summer, so get a fair amount of seed as they always seem to be busy. I have a beekeeper living close by. I also get trouble with the wild leaf-cutting bees, but, apart from making a mess by burrowing into the soil in the pots and throwing out the excess dirt, I do not think they do much harm. If the whole pot is placed in a bucket of water the bee soon comes up to the surface, and can sometimes be caught.

I gave all my *Conophytums* one good watering on a fine sunny day in March and they have all plumped up nicely. They will receive no more water until the end of July, or such time as they split to reveal the new growth.

I have been asked for advice concerning dark brown marks which have appeared on *Aloe variegata*. I can only suggest that it is some form of virus disease common to certain *Aloes*. The only remedy is to dispose of all infected leaves and, if necessary, burn the whole main plant, and start off again with an offset, preferably from someone else's plant which shows no signs of the trouble.

This year I am thinking of growing my *Stapeliads* in full sun up on a shelf to see if I can get some really hard ripened growth before next winter. Whatever I do I still seem to have a large percentage that rot off from the base every year, even though they are kept bone dry through the winter. I have given up trying to keep some of the rarer varieties as they seem to decrease in size and numbers every year. It is a great pity as I am very attracted to the wonderful flower formations of these plants. Those people who are successful would be well advised to try some of the more uncommon ones such as *Hoodias*, *Tavaresias*, etc. It seems that they need more warmth during the winter than the average collector is prepared to give, and a richer soil containing leaf mould.

Faucarias benefit from being broken up after three or four years, as they tend to get very woody and do not flower so freely. The same applies to the *Trichodiademas* and *Stomatiums*.

Why not try arranging a little succulent garden outdoors as soon as all danger of frost is past? That old potting soil can be dug into a sunny border together with some good sharp sand and a little peat if necessary. Any unwanted plants can be bedded out by way of an experiment, together with rooted cuttings of such things as: *Sedums*, shrubby *Mesembryanthemums*, *Trichodiademas*, *Stomatiums*, *Faucarias*, *Aptenias*, *Bergeranthus*, *Echeverias* and many of the shrubby *Crassulas* and *Aeoniums*. Only plant out those plants you know to be able to take a fair amount of water during their growing season. Results should be well worthwhile.

TABLE SHOWS

May we impress upon members the desirability that all of you participate in these? If you refer to your membership card you see that at every meeting there is a table show at which plants are displayed of the genera mentioned on the membership card. Only one plant from each exhibitor is required. All plants should be in pots not larger than three and a half inches in diameter.

The purpose of these table shows is to add to the interest of the meetings. Our very good friend, Mr. A. Boarder, does the judging and he places the plants in their order, viz., one, two and three. The points awarded to each exhibitor are added up and at the end of the season prizes of money are given to first, second and third placings. It is, therefore, in your interest to make a display at each of our meetings. The more meetings at which you exhibit, the higher the points and the greater the possibility of your being placed among the winners at the end of the season. The principles of the judging are the same as at our two Annual Shows at which, of course, Mr. Boarder is also the judge.

Remember that your fellow members like to see your plants. After the meeting the show table is always completely surrounded by members anxious to view the plants and note the placings. It has become one of the stock features at our meetings.

Mrs. M. Stillwell conducts the show and your plants should be handed to her at each meeting.

HOW I BEGAN!

By P. V. COLLINGS

On several occasions during my membership of the Society since its inception, I have wondered how my many friends there came to begin to collect cacti and the other succulents. When I think back on how I began I really do not wonder because I know our plants, but it may encourage others to have their own beginnings recounted in the Journal to recount mine.

My first initiation into the gentle art of cacti growing was during the first World War of 1914–1918 when I was on leave. One of the friends I had made in the forces was also on leave and he invited me to his home to see his garden.

I duly made the visit and I spent quite a long time enjoying the pleasures of his gardening efforts and also the many anecdotes he made during that visit. I had no idea that this visit was to have such an effect on the rest of my life. I was not a gardener by any means, but what visitor can resist looking into a greenhouse? Man is naturally inquisitive and greenhouses always seem to be connected with strange plants and something never seen before. My friend had a tiny greenhouse, but it was filled with tomato plants, with which I was not very interested, but on a little shelf in one corner, so inconspicuously placed, I noticed two very strange, unusual plants. One of them appeared to have some little white stars all over it. I had never seen anything so strange in the plant world before. They were, of course, *Mammillaria gracilis* and the other *Gasteria maculata* and I then thought that nobody could have ever seen such extraordinary plants. These two queer, extraordinary plants kept uppermost in my mind for a very long time and when I was demobbed I decided to visit my friend again. By this time these two plants had so intrigued me that I felt I must learn where I could obtain similar specimens as I certainly was very attracted and imbued with the hope that I, too, could grow them. My friend gave me the address of the nursery where he had obtained them and it was not long before I made the time to visit that place.

At that time I had no knowledge whatsoever of the Cactus family and I had no idea what I expected to see, but I was a little disappointed to find, on my arrival, that although I saw dozens of *Mammillaria gracilis* and *Gasteria maculata*, the nurseryman had no others. I had hoped to find some other types of cacti, but I had then no knowledge of the great number of kinds of cacti, so my anticipations were quite moderate. I was very disappointed, but my enthusiasm for these plants was still keen and after making my first purchase by a specimen of each of the two species, I got the nurseryman to give me the name of Fr. A. Haage, of Erfurt, Germany, as a grower and dealer in cacti and I wrote to Mr. Haage for a copy of his catalogue. I had my first experience of the great number of cacti that could be obtained. The wonderful illustrations in this catalogue, many in colour, was too much for me as I had never even dreamed that there were such examples of vegetation in the world.

It was not long before I had purchased and installed quite a nice little collection of cacti from Mr. Haage, including *Astrophytums*, *Mammillarias* and, above all, I obtained a *Cephalocereus senilis* which was my pride and joy as the beautiful white hairs growing on the plant greatly intrigued me. I suppose in all I had, by the end of the year, about thirty plants which I kept in a very small greenhouse, four feet by two feet, which I had constructed to house my small collection. This little greenhouse hardly deserved the name as it was only eighteen inches high. In the winter I had to bring the plants indoors. When the following year came my desire to increase my little collection was checked because I could not find room for them as my small greenhouse was completely full and I had to think of something larger to contain my new found treasures.

It was not long before I decided to have a larger greenhouse and, having made up my mind, I eventually bought one eight feet by ten feet and seven feet high. At the time I believed this to be an enormous erection and while erecting it I doubted whether I had been wise as I did not believe it could be confined to cacti as I could never obtain enough specimens to fill it, so I installed some other plants and only used one side for my cacti. You will have noticed that I have always said cacti, even though my original plants included a succulent other than cacti, but in those days we called all cacti and the other succulent plants cacti, but about this time I became somewhat aware of the difference.

All collectors of these plants will realise that the inevitable happened, the cacti and the succulents grew and grew, new plants were obtained to satisfy my growing enthusiasm and very soon the whole of the greenhouse became the Cacti and Succulent House and I had to discard the other plants I had installed there. The trouble is, but is it a trouble? one gets so enthusiastic with the plants that there is always the desire to find other kinds

and, incidentally, where to find them, giving one the pleasure of visiting establishments where many cacti and succulents were to be seen. I had the pleasure of meeting most of the best known growers and importers. Those who have begun their collections since the war have no knowledge of the extreme pleasure we had before the war in being able to visit shops, etc., where newly imported plants could be seen and purchased. One such was the London Garden Stores to which I became a regular visitor and from which establishment I made many purchases of plants that increased my enthusiasm, some of which I still have.

All these activities meant that my greenhouse was getting much too small for my growing collection, so I added another ten feet to the original one, making the house eight feet by twenty feet. Having so much increased the greenhouse I had to consider the matter of heating it. With my smaller house I had used an oil stove, but I did not place too much trust in it as, on occasions, it smoked a little and this did not improve the look of the plants, but, even so, I did not have the disastrous experience of some others. I invested in a hot water boiler with four-inch pipes along each side of my greenhouse and this proved to be ideal, and I was delighted with the results as it protected my plants during the winter and I did not have the trouble of being smoked out. This all happened while I was living in London with all its dirty atmosphere which meant that I was continually cleaning the glass to get light to my plants. In 1930 I moved to Barnet where I had fields at the back and front of the house. The houses were farther apart and the air was clean and fresh and the improved conditions increased my enthusiasm greater than ever. I took my greenhouse with me and set it up again at the end of the garden, about fifty yards from the house. The change of environment and the clear air made all the difference to the growing and flowering of the plants and they made such progress that, as my greenhouse did not have elastic sides, I had to think of something else. Many of my *Mammillarias* had grown in clusters from three-inch pots till they had to be in eight-inch pots and many of the *Cerei*, which I had obtained when they were quite small, were now in eighteen-inch pots and doing their best to push through the seven feet high roof.

I gave a great deal of thought to the situation and I came to the conclusion that it would be a pity to break up the clusters of *Mammillarias* which I had grown for so many years and I also had many large clusters of *Lithops* and *Conophytums* which I did not wish to break up. The only alternative was to once more enlarge my greenhouse. By this time I had 1,500 plants and, with such a number, I was at my wits end where to house them while rebuilding. In those days we had no experience of keeping cacti outside. The only way I could think of was to build the new greenhouse over the present one. Finally I did this, with the result the house now measured twenty-five feet by fourteen feet and eight feet high. Taking down the original greenhouse I was able to build a centre stage and two side stages. My collection soon grew and now numbers well over 2,000, but although even this large greenhouse was chock full I still continued to purchase an odd plant or two, making difficulties of housing for me. I, like everybody else, could not resist the temptation of adding to the collection.

It was about this period that I had the pleasure of meeting Mr. Shurly. He was using one of the gardening journals as propaganda for the formation of what is now our Society, and as I had made small contributions to this Journal on my experiences with cacti cultivation I was, naturally, interested and got in touch with him and we had conversations and discussions before he finally called the meeting at which the Society was formed.

My continual acquisitions of plants again brought me into difficulties and I had to add another part at right-angles to the existing greenhouse. This only measures fifteen feet by eight feet and is only used in winter for semi-hardy cacti which are planted in a rockery kept for this purpose.

My neighbours thought that I was a bit queer in the head as they observed the enthusiasm I used in nursing my plants and they frequently asked me when I was going to turn the garden into one large greenhouse. If ever I win the pools I might consider even that.

May the beginners among our members enjoy the pleasure and happiness that I have derived from my collection and that they may, after as many years, still retain the enthusiasm which has helped me to brighten the leisure hours I have had after the business of the day has been done, although I must confess to even breaking into the business hours to keep watch on the startling events happening in my "Holy of Holies"!

OPHTHALMOPHYLLUM LATUM Tisch. spec. nov.

By Dr. A. TISCHER

(Fam. *Ficoidaceae* Juss. em Hutch.: Subfam. *Ruschoideae* Schwant. : Gen *Ophthalmophyllum* Dtr. et Schwant.).

Planta corpusculis 1–2 ; corpuscula conica vel subcylindrica supra compressa bilobata, ad 25 mm. alta, ad 22 mm. lata, ad 20 mm. crassa, lobis rotundatis ad 7 mm. altis ad 7 mm. diam. fenestratis ; fissura ad 4 mm. longa ; glabra minute papillata lutescente viridia, in parte superiore punctis haud magnis viridibus ; flores diurni ; ovarium inclusum vel visibile ; calycis tubus ad 6 mm. longus non ampliatus ad 5 mm. diam. segmentis 6 carnosus acutis ad 3 mm. longis brunneis ; corollae tubus ad 6 mm. longus tubo calycis per 2 mm. adnatus, segmentis 60–70 spatulatis albis ad 10 mm. longis, superne ad 1 mm. latis, staminodiis multis acutis albis ; stamina multa filamentis albis antheris luteis exsertis ; stigmata 6 acutis basim versus leviter incrassatis ad 5 mm. longis albis, stylo 0 ; ovarium ad 4 mm. diam. superne conicum disco dilatato obscure viridi.

Habitat : Klein Namaqualand prope Steinkopf—Umdaus und Hanzpaal.

Coll. : H. Herre 1956 (S.U.G. Nr. 13729).

Typus in Botanische Staatsammlung Munchen Mes. Nr.

Plants consisting of 1–2 soft fleshed bodies ; bodies mostly conical to somewhat cylindrical and narrower above than below, somewhat flattened above and ending in two lobes, c. 25 mm. high, at the top up to 20 mm. wide and 12 mm. thick, at the thickest part of the body c. 22 mm. in diameter ; lobes convex above, c. 5 mm. high, fissure running right through, 4 mm. long ; basic colour light green to somewhat yellowish green, sides not reddened, surface low papillose, towards the windows translucently darkly dotted, lobes windowed above ; ovary enclosed or visible in the fissure ; calyce tube c. 6 mm. long, somewhat flattened, not expanded towards the top, c. 5 mm. in diameter, light green ; with 6 tips, succulent, pointed, c. 3 mm. long, brownish reddish ; corolla tube of the same length as the calyce tube, united with the latter to the extent of 1 mm. with 60 to 70 segments, spatulate, white, c. 10 mm. long, at the top 1 mm. wide, notched above or more or less pointed, becoming shorter and narrower towards the inside, inner ones numerously staminodial, white ; stamens numerous, filaments white, anthers yellow, rather projecting from the corolla tube ; stigmas 6, awl shaped, pointed, pinnate above, c. 5 mm. long, greenish white, peduncle 0 ; ovary 4 mm. in diameter, deepened somewhat cup shaped above, centre somewhat conical, disc widened out, dark green ; flower diurnal.

OPHYTHALMOPHYLLUM LATUM Tisch. var. *rubrum* Tisch. var. nov.

A typo colore rubro—purpureo corpusculorum differt.

Habitat : near Steinkopf—Umdaus und Hanzpaal.

Coll. H. Herre, 1956.

Ophth. latum Tisch. var. *rubrum* Tisch. differs from the type by the intensive purple colouring of the bodies.

In the case of *O. latum* it is the question of a type already known, which was discovered by Herre during one of his journeys into Little Namaqualand and which, in his description of this journey, was mentioned in "Monatsschrift der Deutschen Kakteengesellschaft" 1932, p. 140, as "green and red raspberries." Herre determined his find first of all as *O. maughani*. In 1950, Herre again visited the district of the habitats and collected further material. It is being cultivated in Stellenbosch under the No. 13729. A comparison with other species of *Ophthalmophyllum* showed that in the case of this type it was the question of a new species, not described so far, which particularly also differs completely from *O. maughani* (N. E. Br.) Schwant. The latter is more cylindrical and slenderer in its habit, not so thick set and not so thickened below as *O. latum*. The lobes of the latter are more clearly pronounced, more curved above and window like translucent over the whole length, whereas in the case of *O. latum* mostly only the upper part has windows. Finally, *O. maughani* is coloured slightly olive to light ochre, whereas *O. latum* is coloured light to slightly yellowish green. A typical picture of *O. maughani* is published in "Mesembryanthema," p. 107, by Brown-Karsten-Tischer. The picture of a plant of this species on the right of our illustration, which plant originates still from the first collection from the original habitat sent to Brown, shows the characteristic differences compared with *O. latum*. A good illustration of the latter can be found also in Jacobsen ; Handbuch der Sukkulente Pflanzen, Bd. III, p. 158 (No. 2281) although under the erroneous

designation *O. maughani* (N. E. Br.) Schwant. This illustration evidently reproduces one of the "green raspberries" (see above) collected by Herre and erroneously determined at the time by Herre as *O. maughani*.

As already mentioned above, Herre, on his collecting trip 1932, between the green *O. latum* found also "red raspberries." This type was rediscovered by Herre on his collecting trip 1950, one plant of it being sent to me. In its habitat it completely resembles *O. latum*, but differs from the latter by the intensive purple colouring of the bodies which particularly comes into prominence when the plants are wilting. What is remarkable is that among the young plants reared from the green *O. latum* so far now shows the red colouring. Evidently a similar condition exists here as in the case of the red variant of the *Lithops optica* N. E. Br. Within *Ophthalmophyllum* we know, so far, two species with intensive red colouring: *O. rufescens* (N. E. Br.) Tisch. and *O. schuldtii* Schwant.

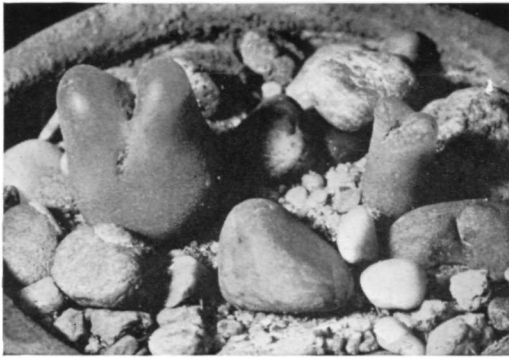
Both occur, however, in widely apart habitats. A certain similarity with the "red raspberry" is shown only by *O. schuldtii*. This species, however, is smaller and the lobes are flatter. Complete identity between the two types is improbable. I would like, therefore, to consider, for the time being, the red type from the environs of Steinkopf as a variety of *O. latum*, and suggest for it the designation var. *rubrum*. Presumably the type mentioned in Jacobsen: Handbuch III, p. 1581, as *O. maughani* var. *rubrum* N. E. Br. (nom. nudum!) is the red variety of *O. latum*.

In cultivation *O. latum* causes no more difficulties than most of the other species of *Ophthalmophyllum*. But, due to its compact body shape and the bright light green coloured bodies, it is of a striking appearance. During the growing period (approximately from August to November) watering must be done carefully, owing to nearly all *Ophthalmophyllums* withstanding great dryness. From December to July the plants can be kept completely dry. In the meantime, it has been possible to raise a number of seedlings from seed emanating from the material sent in by Mr. Herre, so that *O. latum* should soon be met with more frequently in cultivation.

ADDITIONAL BOOKS TO THE LIBRARY

Since the last list of books in the Library was published in April, 1955, the following books have been added. Members find certain books of special interest, but, unfortunately, they are nearly all out of print and it is not easy to obtain further copies. As a consequence, the few copies we have are constantly out on loan and it is very important that lenders should return their books as soon as they have finished with them because so many others are waiting for them.

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|--|---|
| Carlson, R. The Flowering Cactus. | Marsden, C. Mammillaria. |
| Cutak, L. Cactus Guide. | Marsden, C. Grow Cacti. |
| Day, H. Flowers of the Desert. | Marshall, F. Glossary of Succulent Plant Terms. |
| Green, G. G. Cacti for Everyone. | Rose, J. N. and Purpus, J. A. There new species
of Echeveria from Southern Mexico. |
| Howes, P. G. The Giant Cactus Forest and its
World. | Stockwell, W. P. and Breazeale, L. Arizona Cacti. |
| Hall, H. Common Succulents. | Shreve, F. The Cactus and its Home. |
| Lamb, E. Stapeliads | Schwantes, Dr. G. Flowering Stones. |
| Lamb, E. The Illustrated reference of Cacti and
Succulents. | Shewell-Cooper, W. E. A.B.C. of Cacti and
Succulents. |
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Ophthalmophyllum latum (left)
O. maughanii (right)

Dr. A. Tischer

Crassula anomaloe

G. Parris



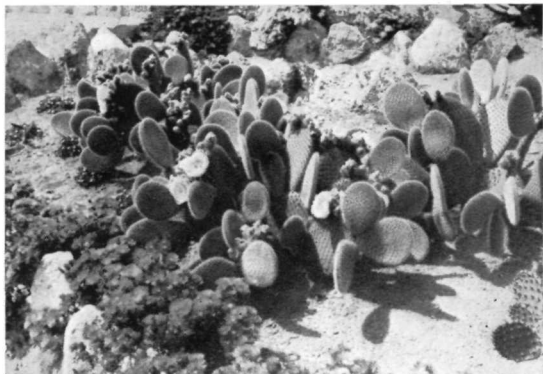
Mammillaria multiramata

A. Boarder

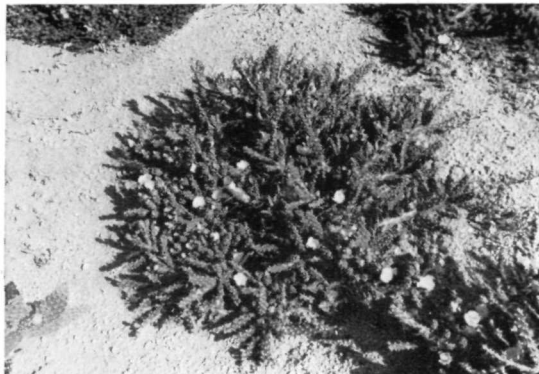


Notocactus concinnus

A. Boarder



Opuntia scheerii



Opuntia aurantiaca

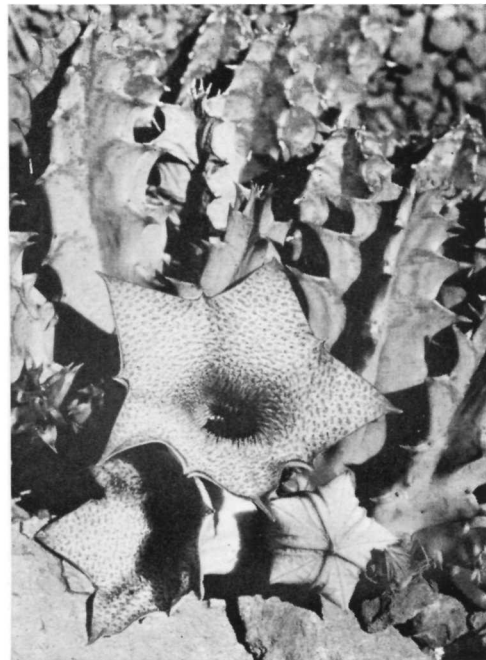
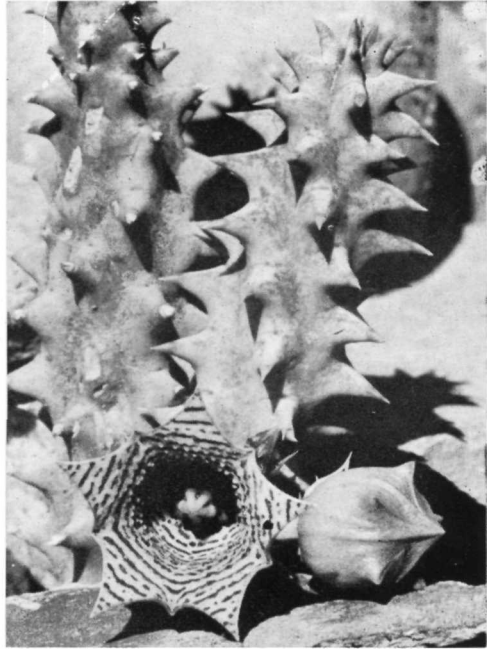
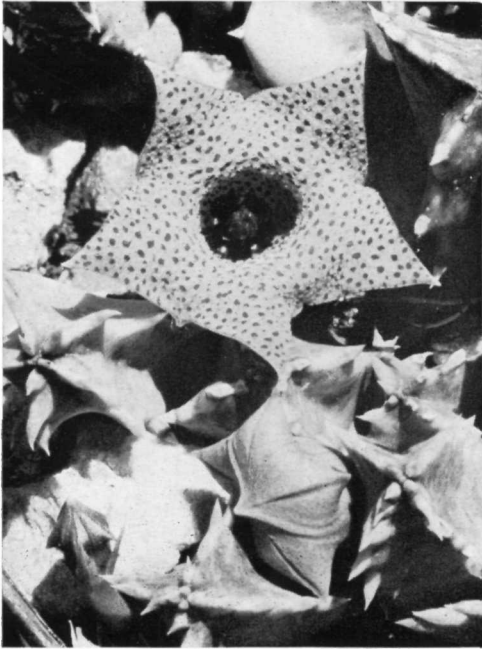


Opuntia compressa

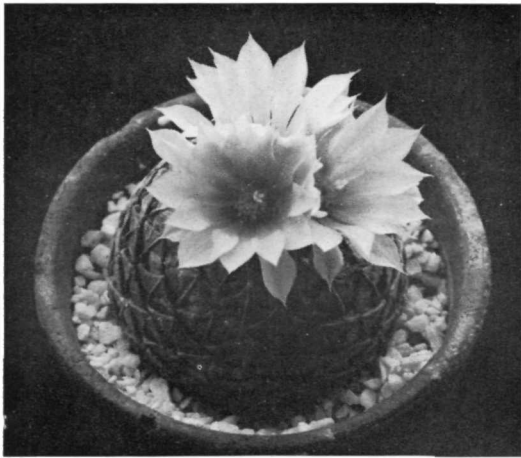


Opuntia allairei

Four Photographs by J. Panella, Pinya de Rosa



Four more *Stapeliads* showing different flower markings



Encephalocarpus strobiliformis



Gymnocalycium venturianum



Notocactus rutilans



Rebutia violaciflora

JOTTINGS

JOURNAL BINDER. A self binder, capable of holding four years' Journals, finished in green cloth with gilt lettering on the spine, is now available, price 12/- post free to members. A very efficient binder, adjustable to each year. Apply to Hon. Treasurer.

LABELS. New triangular type, one which can be read without turning the head and stays in place when watering. White ivory, 3/6 per 100, post free. Apply to Hon. Treasurer.

BLAZER BADGES. Obtainable on black or navy ground, 10/- from the Hon. Treasurer.

SEED DISTRIBUTION. In spite of repeated communications with our South African supplier, the seed has not yet arrived in this country in time for distribution. In view of the fact that sowing time is near, I am sending out Cacti seed in order that members may get them sown in time. The other succulent seeds will be held over for the next distribution. I regret having to do this, but in spite of strenuous efforts on the part of our Hon. Treasurer, we have been unsuccessful in hurrying the seed.—G. L. R. Hedges (in charge of Seed Distribution).

THE I.O.S. IN JAPAN. The newly formed Japanese Section of the International Organisation for Succulent Plant Research has lost no time in starting to publish its own Journal; quite an impressive one, too, with 44 pages, a colour cover and numerous illustrations. The text is in Japanese, but with added summaries in English. No. 1 for Jan.-Feb., 1958, covers two subjects: variegated succulents and the cultivation and growth of *Welwitschia*. The intention is not to duplicate existing society Journals (of which Japan also produces three), but to encourage original observations and scientific articles; an aim of the I.O.S. since its foundation. Perhaps lower publication costs will make possible in the Far East what has been battled for in vain in Europe. The title is "Succulentarum Japonia" (whatever that might mean) and publication is promised at two-monthly intervals, which will be extremely good value at the membership of £1 per annum. Those interested should contact the able and enterprising editor, Mr. Hajime Oku, 86 Horinouchi, Toshima-ku, Tokyo, Japan, without delay.—Gordon D. Rowley.

ERRATA. Vol. XIX (No. 3) p. 67. July, 1957. *Pilosocereus hapalacanthus* (Werd.) Byl. & Werd. should read *Pilosocereus hapalacanthus* (Werd.) Byl. & Rowl.—R. S. Byles.

EXCHANGE NIGHTS. Will all members note that on these occasions it is not permitted to make sales of plants to others attending. The purpose of exchange nights is literally exchanges only. There have been incidents where certain members have simply passed round the room endeavouring to make sales and without any pretence of exchange. Exchange nights are not sale rooms or bazaars and the object is to provide the opportunity for members to make exchanges and meet socially.

GIBBAEUMS. An extract from an old letter from Harry Hall, of Kirstenbosch, South Africa. "Primarily, I was out to re-visit the famous *Muiria hortenseae* locality. Exactly two years previously I had seen them in flower and I promised I would go and collect specimens for illustrations in volume three of our 'Protected Plant' booklets. All around were masses of *Gibbaeum album* flowering pure white, or soft pink, or magenta. It was hot, calm and thundery. I visited patches of most of the known *Gibbaeum* species, none being in flower, of course. It is curious that only *G. album* flowers at this time and, sharing it with *Muiria* produced the rare hybrid of these two, though Mr. Herre clings to the view that it is not a hybrid at all. *Muiria* is still one of the rarities in cultivation. I wish you could see for yourself the various *Gibbaeums* which went into *G. heathii* in the recent publication on the genus, to see how they differ in appearance from one another. How *G. comptonii* grows so deep down in the ground as to rival some of the *Lithops* for invisibility and altogether a dwarf member. And the tiny heads of *G. luckhoffii*, and then compare with the huge bodied clumps of the original *G. heathii*, visible for a hundred yards. Then there was *G. blackburnii* with its purplish bodies, somewhat elongated and which grows amongst *Haworthia truncata*. During the three days I was on the Karoo the shade temperature soared to about 102 degrees and at Ladismith a thunderstorm was cooling things down. But over all the Swartberg range there were thunderclouds for most of the time. However, a few miles from this mountain mass, down on the Karoo, no rainfall at all, but that is the usual order of things. Thus we get the odd situation of the Karoo rivers flowing for an hour or two, to seep away

into the thirsty bed lower down and flowing between the most parched and arid lands on which no rain might fall for six months at a stretch. There is not even a strip of green by the river banks, except for an occasional thorn bush." (A useful illustration of the variation of certain species in their native habitats.—Ed.).

LISTS RECEIVED

Wheldon & Wesley Ltd., Lytton Lodge, Codicote, nr. Hitchin, Herts : Catalogue No. 88 of 160 pages, including a page of books on cacti and other succulents.

H. Winter, Fachfeldstrasse 51, Fechenheim, Frankfurt A.M., Germany ; 36-paged printed list of cacti and other succulent seeds.

G. G. Fuge, Uplands Nursery, Blackhorse Lane, Downend, Bristol : Two mimeographed lists of cacti and other succulent plants, one normal sized plants, the other specimen plants.

Kaktimex, Turgi AG, Switzerland : three-paged mimeographed list of cacti and other succulent seeds.

S. V. Smith, Wyck Hill, Stow-on-the-Wold, Glos. : five-paged mimeographed lists of cactus and other succulent plants.

Shinsen Nursery, Tokushima, Japan : five-paged mimeographed list of cacti and succulents, including crests and variegated plants.

REVIEWS

The first volume of Curt Backeberg's *DIE CACTACEAE* has now appeared. This is the first of a three-volumed work intended to cover the whole of the Cactus Family and, in the opinion of the author, to bring the past literature up to date. This first volume comprises 638 pages with 618 photographs and illustrations in the text and there are also 34 plates. It contains the very valuable contribution on *Tephrocacti* which genus has been the subject of the author's study for many years. This contribution brings this particular genus up to date and includes much new material that is invaluable to every one interested in our subject. The volume, in addition to the usual introductory material dealing with the Cactus Family in general, deals with *Pereskias* and *Opuntias*. Of course, it is not everyone who agrees with the author in his ideas on the subject of cacti, but nobody, I am sure, will question the sincerity of the author and the length of his study of cacti in his own country and the very valuable studies and researching he has made in South Africa. He certainly has had the experience, as a professional grower and as a collector in the field, and these make any contribution he makes to the subject very valuable indeed whether you agree with his general ideas on cacti or not, what he gives us in this book, apart from his ideas, gives us a really up to date record of species and details of the two Tribes he has included in this first volume and I, for one, will look forward to his two further volumes.

E. SHURLY.

That very versatile author, Walter Haage, has completed a new book which is called *KAKTEEN STERNE*, and it deals with the *Astrophytums*. It deals very fully with that genus and includes quite a deal about the hybrids that have been cultivated between the different species. It is a book of 156 pages and is profusely illustrated by photographs and drawings, including some coloured pictures. The book is, naturally, a vade-mecum on the genus and can be highly recommended to everybody interested in the genus.

E. SHURLY.

The above two books are in German. *DIE CACTACEAE* can be obtained from booksellers advertising in this Journal and is published by Veb Gustav Fischer Verlag, Jena, Germany. *KAKTEEN STERNE* can also be obtained from the same booksellers advertising in this issue and is published by Neumann Verlag, Radebeul, Dr Schmincke-Allee 19, Germany.

Dr. W. E. Shewell-Cooper has written another of his series of A.B.C. books—this time "The A.B.C. of Pot Plants" (English Universities Press Ltd., 102 Newgate Street, London, E.C.1. 7/6 net). This book follows the general lines of the previous A.B.C. books in size and general set up. There are 174 pages, including eight coloured illustrations and numerous drawings in black and white, some on coloured paper, a rather unusual experience. There is a chapter on cacti and succulents consisting of fourteen pages. Our author is a very experienced writer, but I feel that while the main part of his chapter is extremely good, I am sorry to note a few things on which I consider him to be wrong, such as, advice not to cultivate plants that come from tropical forests (this excludes *Epiphyllums* and climbing *Cerei* which give us the most exotic of blooms); fill one third of the pot with crocks; 2,000 species of cacti known (this should be over 5,000); *Mammillaria* not *Mammillaria*; *Mammillaria* has 200 species (this should be over 350). Nevertheless, the book is very well worth while, especially if you are interested in plants other than cacti and the other succulents.

SUMMARY OF BRANCH REPORTS

The Council of the Society pays tribute to the sterling work done by the officials and loyal supporters of the Society's Branches and is pleased to publish some details on the activities of Branches during 1957. These remarks are necessarily brief and bear no relationship to the appreciation felt for the efforts of the members concerned.

BERKS & BUCKS BRANCH

This well-established Branch continues to flourish with an increased membership and consistently supported regular meetings ; in the summer at Windsor, in the winter at Slough.

Undoubtedly, its highlight is its Annual Open Competition, held in conjunction with the Windsor Rose Show in the grounds of Windsor Castle. This year, on 5th and 6th July, the twelve classes were housed on sixty feet of staging. The Cup was won by Mr. Marshall and was presented by the Duchess of Gloucester who showed much interest in the exhibits when she toured the Show. Thirty to forty people enjoyed the second Christmas party at Windsor, which even terminated with a cabaret. The Table Shows were a great success. The first prize was won by Mr. J. Griffin (Branch Treasurer) and that for Succulents other than Cacti by Mr. Marshall. The Branch wishes to pay tribute to Mr. Marshall who has had to relinquish the chairmanship of the Branch as a result of moving to Southgate.

WEST KENT BRANCH

The thanks of the Society and of the Branch members must first be accorded to Mrs. Hoather who, after a number of years service, relinquished the Secretaryship during the year.

Several visits were paid to view members' collections in addition to a programme of evening lectures. Particular interest was shown in a display of Mr. Collings' ever popular slides. This Branch also took part in three local Shows and although only one was competitive a number of awards were gained. The financial position is sound and a slide projector has been purchased.

ESSEX BRANCH

This Branch provided its usual periodic meetings which at the end of the year, however, were not so well attended as usual.

1957 saw its Fifth Annual Show at Ilford which again proved to be a great draw in maintaining its very high standard. Its Sales Stall and Refreshments arrangements again helped to bring in a profit which many horticultural societies would like to see. Stills from "The Living Desert" and "The African Lion" loaned by Walt Disney Film Distributors Ltd., were an added decoration. Twenty-seven classes brought 179 entries to be judged by Mr. Boarder. The principal prize-winners were Messrs. Hubbard, Taylor and Brewerton.

In September forty-one members went by coach to visit Mr. Jones's nursery near Guildford and enjoyed a day perfect in every respect.

The Branch continues to maintain its sound financial position.

NORTH LONDON BRANCH

This Branch reports consistent interest by its members in its regular meetings and is particularly proud of its Show activities.

In June a non-competitive Branch exhibit at the Southgate & District Horticultural Society's Show gained a Gold Medal award. In September it held its first competitive Show in conjunction with the New Barnet Amateur Gardeners' Society. This proved highly successful with 61 entries showing over 140 plants. Mr. H. N. Judd received the Denton Medal and Mr. A. E. Manders the Society's Certificate for a special exhibit. Other prize-winners were Mr. R. H. West, Mrs. C. M. Allen, Mr. E. D. Macklin, Mr. Collings (not Mr. P.V.C.), Miss A. Dixon, Miss O. Shorey, Mr. J. King, Mr. S. W. Harris, Mr. R. Arrundale, Mr. C. N. Brasted, Mrs. J. Adcock, Master M. Naish, most of whom are new to showing.

Their programme for 1958 is as follows :

February 28th, Kodachromes, Mr. & Mrs. Judd ; March 21st, Plant Exchanges ; April 15th, Lecture by Mr. Gilbert ; May 17th, Collection visit. "Grafting" by Mr. R. H. West ; June 14th, visit to Mr. Jones' nurseries ; July 12th, visit to Mr. Collings' collection ; August 23rd, visit to Mr. R. S. Dale's collection ; September 6th, Competitive Exhibition of Cacti and other Succulents at Lyonsdown Hall, Lyonsdown Road, New Barnet, Herts. ; September

14th, Plant Exchanges ; October 14th, Plants of Interest, by Mr. Collings ; Annual General Meeting ; December 2nd, Kodachromes, Mr. Judd. Any member of the Society is entitled to attend any Branch meetings and those interested should write to the Hon. Secretary, Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.

NORTH WEST LONDON

This Branch musters on average about half of its total members at its monthly meetings, rising to over 80 per cent. on occasions, which speaks well for both members and meetings.

A wide range of subjects has been covered with the emphasis on the cultural aspect. Members took an active part in the Wembley Show and the Branch itself staged a successful exhibit and a request has already been received from the Show organisers for the effort to be repeated. Additional classes for succulents are to be provided.

In this Branch, again, Table Shows have been well supported.

Although only just a year old this Branch is already on a sound financial basis.

It must not be forgotten that members of this Branch also provided valuable help to the Society in packeting the seed for the Annual Seed Distribution.

NORTH WEST COUNTIES BRANCH

This Branch held its inaugural meeting on 10th July in Manchester and has made a sound start.

The members are fortunate in having available projectors for both slides and films and the Howard Gates slides have already been enjoyed. Mr. Andrews, the curator of the old "Darrah" collection in Alexandra Park, Manchester, gave the talk at one of the meetings.

Table Shows are being held at the monthly meetings and the prospects of the Branch are bright.

HERTFORDSHIRE BRANCH

This Branch held its inaugural meeting on 8th April and held four meetings each in St. Albans and Watford. Attendances averaged twenty at the former venue and ten at the latter. Highlights were "Flowering Plants in my Collection," by Mrs. Stillwell, the Howard Gates Slides and Kodachromes of flowering cacti by Mr. Ausden. The Branch Chairman, Mr. Clare, also gave a talk on "Cacti for Beginners" which was of great interest. Monthly Table Shows have been well patronised. Two "Bring and Buy" sessions and monthly contributions by the members leave this Branch in a healthy financial position.

The library which has been formed from books given or loaned by members is well used and appreciated.

NORTH SURREY BRANCH

This Branch came into existence as the result of an enthusiastic inaugural meeting in June, and the response to the subsequent monthly activities confirms that it will serve a useful purpose in augmenting and supplementing meetings at the R.H.S. halls.

By the end of the year there had been a programme of three talks, a show of coloured slides, and two visits to collections. These drew attendances of about one-half of the total membership, and this measure of support has led to the arranging of a more ambitious programme for 1958.

The expenses incurred as the result of the six months' activities have been met by a variety of methods, familiar to members of older Branches. It is hoped that 1958 will see an expansion both of membership and activities.

AWARDS, 1957

Mr. S. Reeds. Sir Wm. Lawrence Cup for Cacti. Mrs. Luty Wells Cup for 3 Cacti. 9—1st, 2—2nd., 3—3rd.
 Mr. P. J. Measures. Sir E. Theobald Cup for Succulents. P. V. Collings Cup for Euphorbias. Mrs. Pryke Howard Cup for 6 South African Succulents, shared with Mr. K. Walden. 9—1st, 1 2nd, 1 —3rd.
 Mr. G. Gorrod. R. S. Farden Bowl for Groups. Two Amateur Gardening Diplomas for Outstanding Exhibits. 2—1st, 3—2nd, 2—3rd.
 Mrs. M. Stillwell. Amateur Gardening Silver Bronze and Bronze Medals. 2—1st.
 Mr. R. H. Melville. Challenge Shield for Juniors. 2—1st.
 Mr. B. C. Marshall. S. J. Pullen Cup for Miniature Garden. 1—1st.
 Mr. R. H. West. 2—1st, 7—2nd, 2—3rd.

Continued on page 44

REPORT OF THE COUNCIL, 1957

It is with pleasure that the Council presents the Accounts and Report for 1957.

The membership at the end of 1956 was 1,082; this number has been increased to 1,122 at the end of 1957. It is inevitable that the volume of work so willingly carried out voluntarily by all the officers has increased, but everything has, as usual, proceeded smoothly and satisfactorily.

BOOKLET :

The sales of the Booklet have continued during the year. Over 50,000 copies have been sold to date. All profits have materially assisted in providing further facilities for members, especially in the purchase of more books for the Library and seed for distribution to the members. The task of distribution of the Booklets has been taken over by Mr. D. Brewerton. We desire to record our thanks for the able manner he has carried out this task and relieved Mr. and Mrs. Shurly of a heavy task, but finance and correspondence is still being attended to by Mr. Shurly, to whom all money and letters should be addressed.

BRANCHES :

The Branches have continued their activities during the year in arranging local Shows, Meetings and Outings, also in increasing and fostering local activities. We express our thanks to the officers and their loyal supporters. Mr. A. Heathcote has been extremely busy during the year in assisting in the negotiations and formation of further Branches. Three new Branches have this year been formed and negotiations are in hand for the formation of further Branches.

EXCHANGES AND SEED DISTRIBUTION :

The seed distribution during the past year presented a formidable task for Mr. G. L. Hedges. Apart from a few "teething" troubles this proceeded satisfactorily. Members would help if they followed the instructions given for applying for seed. Arrangements are in hand for a simplified method of application for the use of members requiring seed. We wish to record our thanks to Mr. Hedges and his band of helpers who have given so much time in counting, packeting and the distribution of seed. Arrangements have been made for further and increased supplies of seed to be made available during 1958.

JOURNAL :

This publication has continued on similar lines to past issues. This, our most important feature, and the organ of the Society continues to give satisfaction and appreciation. The preparation and production has been carried out by Mr. E. Shurly with his usual care and enthusiasm and has covered a wide variety of material for all members. We are indebted to Mr. Shurly and again record our sincere appreciation and thanks for his untiring efforts. We would also thank the many contributors of articles to the Journal.

LIBRARY :

The use of the Society's Library continues to be extremely popular. Many of the books most in demand are out of print and further copies are practically unobtainable, so Mr. P. V. Collings still has many difficulties in satisfying members' requirements as expeditiously as he would wish. Further books were purchased during the year and efforts made to obtain the more popular books as they became available. We have to record our thanks to Mr. Collings for the considerable time and care given in despatching, receiving and attending to the Library. Members are again requested to please return books to the Librarian as soon as possible. Another member is as anxious as you were to have the use of a book.

MEETINGS :

Meetings were well attended during the year. Our accommodation on occasions was rather cramped through circumstances over which we had no control, but this did not detract from the interest shown; the Lectures were interesting and well received. The two Exchange evenings were popular and enabled many members to obtain useful plants and cuttings. Our thanks are due to Messrs. A. Boarder, P. V. Collings, A. W. Heathcote, E. W. Macdonald and G. Rowley for giving lectures, also to others for their help with talks and on Panels.

SOCIAL ACTIVITIES :

The Annual Dinner was held on 23rd November. Though not quite so well attended as last year it was a great success. The excellent dinner was followed by a showing of coloured slides of members' plants.

SHOWS :

The two Shows held during the year in conjunction with Royal Horticultural Society Shows were well represented and we were pleased that so many more of the members entered the competitions. To make these Shows even greater successes members are asked to endeavour to exhibit, if only in one class. We all have a better plant at home than the one which gained an Award! We again thank Mr. A. Boarder for his unbiased judging at the Shows, also those members who assisted in meeting visitors and answering questions, and also Mr. Walden who has for so many years acted as Show Secretary and has given up so much of his holidays for the Shows.

ROYAL HORTICULTURAL SOCIETY :

We thank the Royal Horticultural Society for their continued help during the year, and also the Press for publishing notices of Shows, etc.

OFFICERS :

We wish to pay tribute to the continued energies of our Honorary Treasurer, Mr. E. W. Young. We thank him for the efficient handling of the Society's Accounts, also for his enthusiasm in so many other ways.

We must also pay tribute to the Honorary Secretary, Mr. K. H. Walden, who has so efficiently continued his good work, without which the Society could not have achieved success during the year.

We thank Mr. Heathcote for the able manner in which he has acted as Chairman at General and Council Meetings, also Mr. S. Naylor and Mr. A. E. Cole for auditing the accounts.

Our appreciation and thanks are also accorded to the many members who have rendered valuable assistance to the Society during the year for the mutual benefit of all members.

Our 26th year has been a completely satisfactory one and we look forward to the continued co-operation of all our members in maintaining and increasing the interest in our hobby.

14th January, 1958.

AWARDS, 1957—Continued from page 42

Mr. P. V. Collings. 2—1st, 4—2nd, 3—3rd.

Mr. J. S. Ausden. 3—1st, 2—2nd, 3—3rd.

Mr. K. H. Walden. 2—1st, 4—2nd, 5—3rd.

Mrs. M. Halford. 1—1st, 1—2nd, 3—3rd.

Mr. W. R. Farwell. 1—1st, 1—2nd, 1—3rd.

Mrs. W. Reed. 1—1st, 1—2nd.

Mr. D. H. Brooks. 1—1st, 1—3rd.

Mr. W. T. Towler. 1—1st, 1—3rd.

Mr. G. L. Hedges. 4—3rd.

Miss M. Hancock. 1—2nd, 1—3rd.

Miss M. Pilcher. 1—2nd.

Mr. R. P. Pohlmann. 1—2nd.

Mrs. F. Pooley. 1—2nd.

Mr. R. H. Shepherd. 1—2nd.

Mr. J. Fletcher. 1—2nd.

Mr. M. G. Reed. 1—3rd.

Mr. G. L. Ibbotson. 1—3rd.

Mr. R. Penfold. 1—3rd.

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THE
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JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 20

JULY, 1958

No. 3

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FROM THE PRESIDENT

This number will be welcome to the members. It has been decided by the Council that the number of illustrations should be increased and Mr. A. S. Jones has been good enough to supply sufficient photographs to fill up a doubled number of illustration pages. The cry has always been for more and more photographs, but few are those who provide them and without these it was impossible to keep on providing illustrations. Mr. Jones hopes to be able to continue to supply photographs for future issues. We all owe him our thanks.

I have included in this number an article twice the usual length, but it is on a subject that will interest most of us and has to do with plants that are coming on the market in greater numbers. While it borders on the "deeper" material, yet it is couched in language that can be understood by the most elementary, and coupled with the admirable drawings and photographs I am sure nobody will want to cane the poor editor!

By the time you are reading this issue of the Journal the June Show will be over and we shall all know who is the owner of the plant that has been chosen by our very good friend and judge, Mr. A. Boarder, to be the subject of the coloured frontispiece and Christmas card as explained elsewhere. I wonder whose? It will be something for that, at present, unknown person to be proud of.

The weather this year has been such that the seasons are very late and I have heard all round of complaints as to the lateness of the development of our plants and their flowers. As I write, first day of June, some of the usual early bloomers are showing their flowers after their buds have been in being for quite a while. A round of my greenhouse shows many of these old friends now coming into bloom. My hooked *Mammillarias* have, however ignored the weather and have delighted me and those who have visited me with their really wonderful show of bloom, their usual habit for many years. I do not think there is any section of Cacti, apart from the large flowering *Cerei*, that provide so much floral pleasure for their owners' delight. I am told that hooked *Mams.* are difficult to grow and to flower. This is true of those with hard textured stems, such as *M. sheldonii* and *M. swinglei*, but those with soft textured stems, such as *M. wildiana*, *M. bocasana* and many others in this section, flowers are profuse. Mr. Boarder has many times reminded us of the prolific flowering qualities of *M. bocasana*, but who has *M. zeilmanniana* has a plant that outrivals Mr. Boarder's champion in colour—but Mr. Boarder also is highly successful in flowering our ruddy floral friend.

E. SHURLY.

CACTUS CULTURAL NOTES

By A. BOARDER

Now that most plants are in active growth make sure that each plant gets enough water. Without this they cannot grow and if some kinds do not grow well they may not flower the following year. Make sure that at each watering the plants have sufficient water to thoroughly dampen all the soil in the pot. If there is little space at the top of a pot it is probable that a second watering soon after the first may be necessary. Whether you use tap water or rain water is a matter of choice and if rain water is available. I prefer the latter and do not like to use tap water straight from the tap. It is far better for the plants if tap water has to be used to allow it to stand for a couple of days so that the effects of chlorination can pass off.

Do not forget that most cacti will benefit from a good spray during the evenings especially after a hot day. As for shading, a lot depends on the position of the greenhouse. Some plants can scorch if exposed to very strong sun especially if they have been growing well during a period of dull weather. The ideal method of shading is with removable blinds, as once semi-permanent shading such as "Summer Cloud" is put on it has to remain for some time. I have found a very good way to shade my seedling frame. This frame is twenty feet long and about seven feet wide. It is raised from the ground and has a foot of glass at the sides. Twelve lights cover the frame, six each side and each is about three feet square. Only two complete panes of glass are in each frame. I have previously shaded with "Summer Cloud" during the warmer parts of the year, but, of course, a certain amount of heat is lost in this way. I have now made blinds of butter muslin which fit inside the frame-light, so that when it is lifted the blind comes up with it. The benefit of this method is that the glass is still clear which enables the sun to shine through and give warmth without the fear of scorching.

These young seedlings can scorch very easily, and even some seedlings of *Euphorbia obesa* were so scorched one spring that they stopped growing for almost a year. They did eventually grow and some sent out off-shoots near the base as the growing centre of the plant had been quite destroyed by the strong sun and this was rather early in the year when I thought that the sun would not have enough power to do any harm.

Many of last year's seedlings have flowered well this year. Some not more than the size of the top of a finger. There are some which are so crowded in the pricking out box that it is quite impossible to see the soil. The kinds which have flowered most profusely as seedlings of a year are: *M. bocasana* and varieties, *M. wildii*, *M. trichacantha*, *M. bella*, *M. seideliana*, *M. pygmaea*, *M. schelhasei*, *M. kunzeana* and *M. multiceps*. One plant of *M. aurihamata* grew so fast in the box that it was crowding out the others and had to be potted up. It flowered in early May and had twenty blooms. The plant was two and a quarter inches across in May this year without measuring the spines, and was from last year's seed. I have also a *Rebutia xanthocarpa citrocarpa* in flower and it is only a last year's seedling. This is unusual for me as I do not flower *Rebutias* until the second year as a rule.

I have just returned to the writing of these notes after having had to break off to go to Bristol to judge the fifth annual show of the Bristol Cactus Society. This was held last Saturday, May 31st, and was a great success. I found that I had to judge 46 classes of cacti and other succulents, apart from giving some special prizes in the shape of cups and diplomas. It was a very difficult task to judge some of the classes as over forty entries were in at least one class. The standard was very good and the plants were clean and well displayed. Some of the plants were staged too close together which did not make it any easier to judge and also rather spoilt the effect from the public point of view. I found more mature plants than I had seen last year and it was very gratifying to me to have to officiate at such a grand show.

Tomorrow I shall be judging our own show in London and I feel sure that I shall not find anything like the number of entries to judge as were at Bristol. I have tried to find the reason for this, but I have noticed it so often before. Whenever I judge a show in a town outside London I find scores of entries and a great deal of support from the members. The only reason I can find for the lack of entries at our own show is that so many of our members live outside London, and of the members who regularly show I doubt if many live within ten miles of the Horticultural Hall.

Perhaps it is this transport question which prevents members from showing. I know that very many have lots of plants good enough to show, but yet never do so. Even the transport question can be overcome. I used to show before the war and although I lived fifteen miles from London I managed to get my plants there somehow. It is possible that in cities like Bristol, Nottingham, Bolton, etc., most of the members live within the boundaries and so do not have very far to bring their plants. Whatever the reason it must be very gratifying for the organisers of these shows to have so many entries. I would very much like to have many of our members visit the Bristol show to see what can be done with a little effort. The support of the Press was also very marked and

plenty of publicity meant that very many people came to visit the show. I noticed that our booklet was selling very well there.

On my return from Bristol I found five more of my *Lobivias* in flower. I see that 16 different *Lobivias* will have flowered for me this year. I am more pleased with this genus each year, as the rather uninteresting plants have such lovely flowers of various colours that I put them among the most fascinating of all the genera. I had flowers which are red, pink, magenta, carmine, salmon, yellow, orange, terra-cotta and some with two shades of beetroot coloured petals. When not in flower many of these plants look very much alike, but once they flower the blooms are magnificent, quite dwarfing the plants.

My *Mammillarias* appear to have flowered very well and are responding to the repotting, which was the first since 1955, for most of them. One or two more large single *Mams.* are beginning to become double-headed. This seems to happen to many plants which do not normally make offsets. There is nothing one can do to prevent this from happening, but it is a good thing in a way as instead of getting rings of flowers round the one head of a plant these double-headed ones provide two sets of rings. Many of the *Mams.* are still producing seed pods from last year's flowers, although many of the *Mams.* sent out pods last year from that season's flowers. There still seem some doubts as to when to collect the seeds. With *Mammillarias* the seeds are not ripe until the pod shrivels, the seed is not ready when the pod turns red. Many of the large seed pods on plants like *Echinopsis*, *Echinocereus*, *Harrisia*, *Epiphyllums* and *Ferocactus* will split at the side when they are ripe, but there is no fear of the seeds falling out as they are embedded in a waxy-like substance which holds the seeds firmly, and how firmly you are not likely to realise until you try to clean them.

I was on the stand for Worfield Gardens at Chelsea for two days in an advisory capacity, and had to answer very many questions on culture. The main one was the old favourite, "Why is it that my plants do not flower?" This crops up with regularity and, of course, I usually find that the plants are kept in a window where there is not enough sunlight available. It is almost hopeless to expect to flower many cacti in a window unless it gets plenty of sunlight. The interest of the public in cacti appears to grow more each year and there was usually a crowd four deep round the stand all the while. The hardy question again cropped up, "I can't see a cactus like mine on the stand"? On enquiry as to what it was like I usually discovered that it was a house-leek or another *Sempervivum* which was the pride of the questioner's heart.

The display of cacti by the Germans at Chelsea was so military in formation that one imagined that if the word of command was given they would all march off with the goose-step. They were very regular in size and shape and were very clean and bright. They gave me the impression that they were stove grown and I dread to think what they would have looked like after a few days of sunshine in their native Mexico.

I have started an experiment with the Malathion systemic insecticide. I also have some Tritox to try. I cannot do much with the latter at present as I have already used some of the Malathion. I sprayed all my plants with this and have seen practically no trace of mealy bug since. It is far too early to be able to give any definite results, but it seems promising. Whether it has any ill effects on any of the plants will remain to be seen. One thing against it is its horrible smell. I only opened the bottle in the kitchen for a sniff and hours after, my wife wanted to know what the awful smell was there. A friend of mine used it in his greenhouse and now his wife will not go in it. The smell lasted for about a week in my greenhouse, but I can put up with that if it keeps the mealy bugs away.

I am busy getting this year's seedlings pricked out. These go into the concrete boxes I have mentioned and they are 14 inches by 7 inches and 3 inches deep. About 130 to 150 seedlings can go into these boxes and they are then placed in the outside frame and given a spray with medium-strong solution of permanganate of potash. After this they are not watered too much until they start to grow but in warm weather the boxes soon dry out. I notice that once again I lost all last year's seedlings of *Melocactus maxoni* during the winter. These are usually set in boxes with other kinds which always survive without any trouble. The *Melocactus* however always seem to fade out; it is, I expect, that I do not keep the frame warm enough during the winter.

I am still trying to grow *Mammillaria microcarpa*. I can get fine strong plants from seed and after about four years they just die off. This happens with several *Mams.* of the same type. *M. longiflora* is another which is very easy to raise from seed and flower well in a year. However, after about four years these plants often die. I knew a grower who said that he had found the answer to the problem, but I heard lately that his had also all died. If anyone has raised a *M. microcarpa* from seed and has it after seven years or more I shall be very pleased to have a note about it together with the treatment given. There must be a reason why so many of the *Mams.* with rather large fleshy tubercles, few radial and strongly hooked centrals are difficult to grow in this country. Many have fine large flowers and I can often flower them well from seed and then after a few years, when they appear to be well established, they die off. I know that they could be grown on by grafting them on to a strong growing stock, but this is not natural and it is surely possible to find a way of growing them here on their own roots.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

This has been up to now a wonderful year for flowers, both on the cacti and the succulents, in spite of the fact that I have done very little repotting. It had got to the stage that repotting into larger pots was a sheer impossibility owing to the lack of space in the greenhouse. I decided the time had come for an extension. At the time of writing these notes, and after much discussion, the proposition is now well under way. It will link up with my other two houses so that by entering one door I shall be able to go through into the others which will be at right angles. I decided that glass to the ground was again essential so that no space is wasted.

There are many shade-loving succulents such as *Aloes*, *Haworthias*, *Agaves*, some *Crassulas* and *Euphorbias*, etc. that will grow quite well in this position, although I had planned to move most of the cacti into this new house and this will give me plenty of room to spread out the stemless *Mesembryanthemums* in their present quarters where they seem very happy, although somewhat cramped.

As with the other two houses, I am again having horticultural glass as, not being a believer in shading, this does help to diffuse the strong sunlight; we must also make sure that there is plenty of ventilation to ensure a good circulation of air through into the other two houses whose doorways will now no longer be open to the fresh air. As with the others, I shall have a concrete floor to ensure that no dampness rises in the winter and also a fairly deep step at the entrance to prevent the rain from running under the floor. I wonder how long it will be before I am crowded out again?

This year, for the first time, I hope to see *Gibbaeum album* in flower. The flowers are now almost on the point of opening, while other years they have always failed to mature, or declined to appear at all. It was repotted earlier in the season and, since the buds appeared I have been watering it quite freely. Most of the *Gibbaeums* flowered very well this year and I was able to get some good colour slides to keep as a record. I have two plants of *Gibbaeum perviride*, both grown from the same seed and quite identical except that one always bears sessile flowers while the other has stalks over half an inch long. I am particularly attracted to the *Gibbaeums* and find they grow fairly quickly if repotted annually and given plenty of water during their growing season, always allowing that the weather is favourable, as many are at their best during the early months of the year. After flowering they seem to like a slight rest with only an occasional watering, this allows the bottom leaves to gradually dry right up. Another interesting little *Mesemb* that I grew from seed a few years ago is *Psilocaulon corallinum*. It makes a nice compact bush and this year has produced dainty little pink flowers from the end of each branch.

My *Stapelias* certainly seem to be making much stronger growth since I have placed them in a sunnier position and are showing a number of flower buds. When grown in the sun, one can afford to be more generous with the water. I find these plants are often very temperamental and it may take quite a time to find the exact spot in the greenhouse that really suits them. If you are not successful with a plant, try giving it a new home, it often does the trick.

I have planted out some *Lampranthus* in my front garden and together with the annual *Mesembryanthemums* they are beginning to make quite a nice show. I am also going to try some of the *Trichodiademas*.

My *Aloe ciliaris*, the Climbing *Aloe*, has flowered well this year. It can be trained up over the roof of the greenhouse and will produce a bright orange-red stalk of flowers from every joint. It likes good rich soil and plenty of water.

The *Lithops* should now be at their best and can take a fair amount of water until after flowering when they should gradually be allowed to go to rest. The same applies to the *Argyrodermas* and *Ophthalmophyllums*. The *Conophytums* will need some water this month, but do not be in too much of a hurry until they show positive signs of growth. *Pleiospilos* will also be ready for some water if the bottom pair of leaves have died away.

I have just obtained two *Khadias*; they appear to be quite interesting little plants with three-cornered leaves crowded together to form clumps. *Khadia beswickii* has already produced a large rose-pink flower. They require similar treatment to the *Faucarias* and are quite suitable for beginners if you can obtain them.

I have managed to flower my *Juttadinteria deserticola* again this year. It has missed the last two. This is not a particularly easy plant to grow. Requires water from about May onwards.

I have one or two nice little *Euphorbia obesa* seedlings coming along. These always appear to be growing up on a stalk for the first few years of their lives. I believe this is nature's way of keeping them up from the damp soil where they can so quickly rot off through over watering. After two or three years most of the stalk gets absorbed and the plant can then be potted in the normal way.

It is never wise to plant out small succulent seedlings into small individual pots, they will do far better if

several are grown together in pans until good sizeable plants. Such plants as *Lithops* should always be allowed to make their true bodies before being pricked out; it is very risky to prick out while the plants are still in their cotyledon stage. Most of the small stemless *Mesemb.* seedlings should be kept growing during the first winter.

Cheiridopsis should be watered carefully at all times and only when they show signs of growth, that is when the two main leaves start to open. The small *Cheiridopsis meyeri* should be treated like a *Conophytum*.

Take a few cuttings now from any succulents bedded out in the garden in case they are too large to put back into the house at the end of the season.

While the summer lasts, it is a good idea to stand all the plants out in the garden while you have a real good clean up in the greenhouse. Pay particular attention to the underside of the staging, for it is here that many of the pests hide away. Wash over all woodwork with hot water to which has been added a good percentage of Jeyes fluid, or something similar. If you cannot remove and wash shingle, give it a good watering with a good insecticide. Clean all the glass and renew putty where drips may occur. If you do not care to stand choice plants out in the garden, do one side at a time and only place outside the commoner kinds. The others can be moved round as you go. Keep all windows and doors wide open if you are using strong disinfectants that may give off harmful fumes. Try and give each plant a check up as you return it, making sure to look underneath the pot where one can often see signs of rootbug around the drainage hole. As far as possible, try and return each plant back to its original home. Like human beings, they do not always take too kindly to changes. Harden your heart and throw out any unhealthy plants and aim at quality not quantity both in choice of plants and condition of growth.

Do not be tempted to go away on holiday and leave your plants standing in deep pans of water as I have known some people do. Give them a real good watering before you go, and providing there is plenty of air in the house, they will be quite happy when you return.

REVIEWS

Since the last Journal was issued two very useful books have been published. Mr. S. H. Scott has written a book "Cacti and other Succulents," which has been published among the Observer's Books by Frederick Warne & Co. Ltd., price 5/-. It is a small-sized book, usual to the Observer series, of 160 pages and it includes 64 plates, many of them in colour. In addition to the usual features, there are chapters on What are Cactus and other Succulent plants, How to start a collection, General cultivation, Pests and their control, Cristate and monstrous forms, Bowl Gardens, Classification, Cultural Notes, Glossary. It is rare to find a book that so usefully explains what is necessary and it is even rarer to find a book which needs so little criticism. My only criticism is that the author states, in his Introduction, "every endeavour should be made to imitate as nearly as possible the conditions prevailing in their native habitats." It is well known that this is just what you should not do as it is impossible for us, in this country, to provide the same conditions and we have to learn to adapt our methods for the benefit of our plants. That I have so little criticism is the highest praise I can offer to our very good friend, the author.

The second book is by my very good friend, Dr. Franz Buxbaum. It is "Cactus Culture based on Biology" and published by Blandford Press Ltd., 16 West Central Street, London, W.C.1, price 37/6. It is a book of 224 pages and includes 23 coloured plates and 95 line illustrations and photographs. It is a very full account of the cultivation of cacti based on biological methods with a special chapter on the cultivation of epiphytic cacti. It also includes Seed Raising, Propagation by Cuttings, Imported Plants, Grafts, Pests and Diseases, Taxonomy and nomenclature and, finally, a Calendar of Work. It is well known that I am usually at loggerheads with Dr. Buxbaum and it is, therefore, a very great pleasure to conscientiously recommend this book of his. It really does explain and help all interested in these plants and I can offer very little criticism. His work is the work of a scientist, but the reading of the book is not just filled with scientific material. It is a very readable book and, except for a few chemical formulas which would be understood by anybody with only very slight knowledge of chemistry, it can be read, understood and made applicable by all. I am sorry to learn, however, that the author recommends broken brick. It is a surprise to learn that the porous flower pot is a murderer of plants, but you must read the book to learn why! I very much dislike grafting and I welcome the opening of the chapter on grafting with "Hands off grafting unless it is absolutely necessary!" and then our author goes on to give thirteen pages of how to do it! I am glad this very excellent book gives me just a little to disagree with "my friend, the enemy." Read the book and learn for yourself, you will not regret the purchase. It will give you new ideas and also the explanation for many things that have been obscure to you.

CONOPHYTUM VIRIDE Tisch. spec. nov.

By Dr. A. TISCHER

(Ficoideae Juss. em Hutch. ; Subfam. Ruschoideae Schwant. ; Gen. *Conophytum* N. E. Br. ; Subgen. *Conophytum* (*Euconophytum* Schwant.), Ser. *Ficiformia* Schwant.).

Planta caespitosa corpusculis valde dense aggregatis internodiis brevissimis; corpuscula cordiformia apice leviter compressa subbilobata incarinata, - 12 mm. alta - 7 mm. lata - 5 mm. crassa, fissura leviter impressa subrhomboidea; leviter glabra viridia, superne punctis obscuris inconspicuis notata.

Loc. et coll. ignoti.

Typus in Botanische Staatssammlung Munchen Mes. Nr. 218. (Stellenbosch S.U.G. 12007).

Plants forming rather dense clumps by offshoots, internodes very short; bodies, seen laterally, somewhat heart shaped in contour, lightly depressed above and broadly rounded bilobate, - 12 mm. long, above - 7 mm. broad and - 5 mm. thick, fissure mostly somewhat depressed and narrow rhomboidal in outline; the bodies resemble much reduced bodies of *C. ficiforme* (Haw.), N. E. Br. or *C. odoratus* (N. E. Br.) N. E. Br. (Type 21-24 of the Type Scheme according to Tischer); surface smooth, bare, dull green to somewhat grey-green, marked on the upper side with a few small, very indistinct obscure dots which occasionally are arranged into an inconspicuous keel line; sides not tinted a reddish colour, fissure edged indistinctly darker, hairless, flower not known.

I received a plant of this new species in 1951 from Herr H. Herre, Stellenbosch, without exact habitat. It acts like a miniature edition of *C. ficiforme* (Haw.) N. E. Br. and distinguishes itself by its heart-shaped form, its broad, rounded lobes, its simple, dull green colouring and the completely inconspicuous dotting, from all other small forms of the species which occur in the southern parts of the Union of South Africa. Due to the plain, uniformly green colouring, the name "Green" has been suggested. Unfortunately, I have not had the good luck so far to get this species to flower. Nevertheless it should be justified to consider it safely as a species not described up to now, as it distinguishes itself entirely from all other species named up to the present. The systematic position of *C. viride* within the genus *Conophytum* cannot yet be finally determined, as long as the flower and the exact habitat are not known.

According to its habit, this species should have its home in the southern districts of South Africa. Its appearance reminds one particularly of the species in the series *Ficiforme* Schwant. I suggest, therefore, to classify it in this group for the time being.

Due to the lack of special markings, *C. viride* does not belong to the specially attractive species of *Conophytum*. Nevertheless, the collector will wish to see the small, green cushions in his collection for the sake of completeness. The knowledge of this species is in the first place of scientific importance.

By the time this Journal is in your hands the June Show will be over. This Show will be important as the Council has decided to have a COLOURED FRONTISPIECE to the current volume of the Journal and this will appear with the October issue. The subject of this coloured frontispiece will be a CACTUS plant which our judge, Mr. A. Boarder, will select from the plants exhibited at the June Show. It may be "the plant of the year," or it may not be, the important point is its suitability for reproduction in colour. It is hoped that the plant will be in flower, but that does not necessarily follow. Mr. Boarder will decide its suitability for reproduction.

The subject of the coloured frontispiece will also be reproduced as a CHRISTMAS CARD which will be sold at 9/- per dozen or 67/6 per hundred. Members for the current year, however, will be supplied at wholesale rates, viz., 6/- per dozen or 45/- per hundred, so it will be advisable to quote your membership number with your order. There will be, of course, a suitable printed greeting on the inside of this Christmas Card. Send cash with order to the honorary treasurer, Mr. E. W. Young, 35 Castle Drive, Ilford, Essex, and we would like you to order early so that we can judge the quantity to put in hand. The cards will be sent you in good time for Christmas. The prices are post free. Branches are requested to order in bulk for sale to their members and so save expense.

A GLIMPSE INTO MY COLLECTION

By W. SCHUTZBACH, Zurich

It was in the best condition that, at the end of April, 1957, I brought my *Mesembryanthemum* collection into the two summer frames. Subsequently I transplanted the major part of my *Lithops*, *Pleiospilos*, *Titanopsis*, *Gibbaeum*, etc., grown in pots. On the 6th and 7th of May stormy weather brought icy cold air into our country. On these two nights the temperature sank to 5° and 6°C. (9°F. and 11°F.) of frost. After this drop in temperature no damage was noticeable. The weather remained very cool until far into the month of June. Thus it was not remarkable that the plants showed no growth yet. Quite a number of the plants began to get a little shrivelled and looked dull. Then I noticed that on some of the *Lithops*, when touching them, the body came away from the roots. I pulled these bodies to pieces in order to get at the growing point, which I found in most cases to be brown, in other words: it had already died off. These plants were dead and the leaves which were present simulated a living plant.

On *Pleiospilos bolusii*, *simulans* and *nelii* I was able to push 90% of the plant bodies off the roots. Half of them were still alive and I was able to re-root them. It was thus the roots, above all, which, on these plants, were killed by the frost.

Glottiphyllum and *Argyroderma* species, which were housed in the same frame, but had not been transplanted, suffered no damage. Also several *Lithops* species, which had been transplanted, survived safely. These were: *L. aucampiae*, *lesliei*, *venteri*, *bromfieldii*, *mennellii*, *turbiniiformis* and *fulviceps*. In the second frame, in which nothing had been transplanted, no loss at all occurred. In this frame were housed: *Haworthias* and dwarf *Aloes*, *Conophytum*, *Conophyllum*, *Crassula* and several thousands of one- and two-year-old seedlings, mostly *Lithops*.

I was able to explain to myself the different behaviour of the plants in the following way only: the transplanted plant, detached from the firm soil, appears to be more sensitive.

The *Lithops* losses I am able to replace from my seedling pans, however, several years will elapse before one has fairly large size plants again. All my *L. ruschiorum*, which I had sown in 1949, and thus were eight years old, have been lost. Of the same age was my *Namibia*, which I had grown from seed. *Herreanthus meyeri*, which were standing close by, was not killed by the frost.

Further plants, which died from the consequences of the frost, are: Nearly all *Dinteranthus*, *Gibbaeum album*, *dispar*, *pilosulum*, *Nananthus* and *Titanopsis*.

The four photographs give some detail views of my collection as it looked before the frost. The whole of the frame space forms a single mosaic, 4 sq. metres in size, of real and living stones.

1. 4—0 *Argyroderma* planted together in one pot. Soil: 1 part sand, 1 part loam.
2. *Pleiospilos bolusii*, having 2, 3 and 4 heads.
3. Species of *Gibbaeum* and two *Nananthus loderwyckii* with buds.
4. *Lithops*: left-hand side *L. jacobseniana*; centre *L. elisabethae* with flowers; right-hand side *L. kuibisensis*. *L. elisabethae* I have reared from seed of the same seed capsule.

Please note how little is to be seen of my number labels.

I hope now that the coming summer will be warmer than those of the past years.

The Murphy Chemical Co. Ltd., Wheathampstead, St. Albans, are manufacturers of many chemical mixtures intended to help gardeners. Recently we have heard of complaints of destruction by slugs among cacti and succulents, and we must not forget that our members have normal gardens as well, and we can recommend their "Slug Pellets" which are particularly effective in controlling this pest.

THRIVING ON NEGLECT

By DAVID R. HUNT

One of the distinct advantages of a cactus collection over all other types of plant collection, in or out of greenhouses, is its tolerance of drought when its owner absents himself for that well-earned fortnight of deck-chairs, sea-breezes and ice-cream. No other horticulturist is permitted such complete freedom from anxiety. The continual absence of certain "cactophiles" (including myself) might, however, cause frowns on Inspectors of any society existing to prevent cruelty to plants, if such is possible. I have been at home about thirty per cent. of the time since I started my collection (though it must not be inferred that the remaining seventy per cent. was spent in holiday-making).

About nine years ago I exchanged a shilling—two weeks' pocket-money and more than I could afford—for a most attractive but diminutive plant labelled "Cereus Silvestrii." The intoxicating florist-shop smell it had acquired lingered around it for some time. I was unaware at the time that I had contracted an incurable disease, a form of addiction, from which (it would appear) others suffer. Long after my parents had convinced themselves that this undesirable cactus craze I had suddenly developed would die as rapidly as it had been born, like all other crazes which schoolboys get, I was debating with my contemporary in 2A (who originally fired my enthusiasm for the plant) whether "Cereus Silvestrii" really could be the same as *Chamaecereus silvestrii*. Not until much later did I discover that the label was thirty years behind the times. We had come to the conclusion, what is more, that Butcher's Broom was not a species of *Pereskia* as had previously been supposed!

The few succulents I had assembled passed the winter and the succeeding winters in my cold north-facing bedroom, where I dared not water them at all for fear my visions of straggling, etiolated stems would materialise. As the spring awoke each year, the miserable, thirsty things were transferred to the back step (aspect southerly) where the temperamental and highly infamous English weather alternately washed all the soil out of the pots and baked the roots.

It was announced that summer that I was to be deported to boarding-school, although I was, I believe, partly responsible for this. As I could not very well take it with me, the rapid extinction of my collection was, perhaps, inevitable until, as the result of a chance acquaintance made in the succulent house at Kew Gardens, a parcel marked "Live Plants—No Delay" arrived one morning whose contents considerably increased the proportions of the back-step desert. Quite a large number of new pots were required and incurred crippling expense, but the group could now no longer be entirely disregarded. Also, it would have been a gross insult to expect the cacti to wilt overnight when I was packed off to school.

At boarding-school my cactophilic tendencies were not altogether curbed, for in my first year I coaxed a *Rebutia* and an *Epiphyllum* into flower on Speech Day (it was sheer luck, of course) and won a prize at the "Hobbies' Exhibition." In later exhibitions I staged small displays of plants and seedlings which aroused interest and generally took a prize. Returning home for the hols. I examined the collection with mingled surprise, satisfaction, and dismay. A delicate specimen had occasionally succumbed to the weather, and marauding cats purposely kicked the odd pot off the step from time to time, but the overall healthy appearance of the plants and their new growth was pleasing. I submitted meekly to the realisation that cherished *Conophytums* and the like were receiving in all respects the same treatment as House-Leeks which as succulents merited pots. *Haworthias* looked red and unhappy in the sun or dry and unhappy in the shade. All the same, the small weekly income of the local cactus-stockists from me remained undiminished. The *Conophytums*, by the way, are thriving still in spite of their garden soil and winter rest-period. One term, a letter from my sister on holiday said she had seen a large number of succulents on sale at a shop in Southampton. I replied by return of post asking her to bring any she particularly liked the look of. The plants she selected were *Lithops peersii* and *Frithia pulchra*! I have heard some people say that the latter is a difficult plant, but it has tolerated my unfair conditions for five years, and last year had four blooms which opened on sunny days for a month. It is a gem among succulents.

Although there is undoubtedly much pleasure to be obtained from a cactus collection on the back step, one gets the impression that the plants are in no hurry to grow or flower, and there are the other drawbacks suggested earlier. I contrived a somewhat insidious attack on the problem. Realising that the hibernation of the plants in my bedroom was distasteful to my mother (and to me), I made them the more conspicuous, firstly by increasing their numbers and secondly by organizing lavish excursions to that highly esteemed watering-place, the bathroom, preferably at inconvenient times. These deplorable goings-on eventually had the required effect. Alternative accommodation was provided.

Within a few days of its erection, my father observed that the greenhouse staging was completely occupied by cacti. It was, after all, 'his' greenhouse, so I must make room for the other exotics—orchids, lilies, tomatoes and seed-boxes—which I anticipated would appear. But on suitably arctic evenings when I am at home I am asked: "Hadn't you better light the stove in 'your' greenhouse?" and there are no non-succulent inhabitants except a sad *Fuchsia* and a few doubtful insects.

The wooden slat type of staging soon proved unsatisfactory as several pots slipped or were accidentally knocked off, and small ones sometimes fell between the slats, so I bought three thin gauge flat galvanised iron sheets, and bent them with hammer and pliers into trays six feet long by eighteen inches wide by three inches deep. These were stood on the staging all round the greenhouse, one per side and one across the end. To fill the trays I ordered a quantity of granite chippings (far too much, in fact) which turned out fabulously expensive, and I sank the pots in these to suitable levels. In persuading myself that my efforts and expenditure were justified I argued that besides the improvement in appearance, the increase in staging area amounted to nine square feet, the risk to pots (and plants) was eliminated, the amount of water required was lessened (owing to its conservation among the chippings) and pot-baking by the sun was alleviated. Results do not suggest that this arrangement has impaired drainage. The trays also seem to present something of a barrier to insect pests.

I have been content since the arrival of the greenhouse to watch the remarkable benefit the plants have received and shown in their free growth, flowers, and freedom from soot and grime. The few new specimens were either gifts or unrepeatable bargains. It is an unfair imposition to be expected to water hundreds of pots whilst their owner is away being (supposedly) educated. Here I should like to say how grateful I am to my parents who have in fact done just this, and the other duties one associates with a greenhouse, without complaint.

After five years at boarding-school, I have now spent a further two at university. Studying Botany has made me aware of the taxonomic problems with which the cactus family is seething, the lack of knowledge concerning their mode of flower formation, and so on. A collection in my rooms is hardly practicable, but the University Botanic Garden has a cactus house, and also the remarkable "type specimen" of *Opuntia cantabrigensis*, a formidable bush which resides out of doors throughout the year. A new friend I met in Cambridge last year gave me a large seedling of each of forty species of stemless *Mesemb.*, he had grown in bulk. I expect few succulent collectors have experienced such generosity. The genera included *Argyroderma*, *Bergeranthus*, *Cheiridopsis*, *Conophytum*, *Cylindrophyllosum*, *Faucaria*, *Gibbaeum*, *Lapidaria*, *Lithops*, *Odontophorus*, *Pleiospilos*, *Stomatium*, *Titanopsis*, and *Vanheerdia*! I made a tiny terraced rock garden in a sunny corner of the greenhouse and put most of the treasures in there. This is much more effective and takes up less space than rows of pots, although I fear some of the *Pleiospilos* and *Cheiridopsis* will soon outgrow it.

I have germinated some seed this year in a greenhouse situated on the flat roof of the Botany Department. The seedlings survived several weeks' drought while I was at home over Easter, as apparently nobody dared water them. Last year I tried growing seed at home, placing the pan under the tank in the airing-cupboard before coming up to Cambridge for the term. Months later in the middle of June I suddenly had an uneasy feeling that I had sowed some seed somewhere. Peering guiltily under the tank I found that there had been almost a hundred per cent. germination of *Cereus peruvianus* and several other species were up too, pale and nearly choked by moss and algae. However, the large majority recovered when they were transferred to the greenhouse.

My next problem will arise when my father retires soon, since we shall probably move house. Anyone who, like myself, finds that cactus-collecting presents occasional difficulties will say like that friend of mine (whom I mentioned earlier as first bringing succulents to my attention) who in extremely trying circumstances said: "Ah well, not to worry." His cacti used to spend the winter huddled together in a dark cellar until a year or two ago when they were buried by piles of builders' debris. He then devoted considerable energy to the construction of a frame to protect his plants out of doors in the winter, and produced an ingenious arrangement of wood and glass resting on assorted bricks and rubble. During the freak gale of last autumn which struck not long after its completion, the frame's potentialities were most unfortunately severely reduced, for in a sudden gust the superstructure migrated gracefully but without warning and alighted disastrously in the garden of a next-door neighbour.

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NOTES ON THE GENERA ENCEPHALOCARPUS, PELECYPHORA AND SOLISIA

By P. FEARN

The genus *Encephalocarpus* is often considered as included in the genus *Ariocarpus*, or very closely related (vide Borg p. 262). The one plant here referable, *E. strobiliformis*, was first described by Werdermann as belonging to the genus *Ariocarpus*.

The membership of *Ariocarpus* is perpetuated by many authors; Bertrand and Guillaumin in "Cacti" mention the name only in the index, referring the plant to *Ariocarpus* without further mention; Higgins in "The Study of Cacti" does not even mention it, presumably believing it to belong to *Ariocarpus*. Buxbaum, as also did Berger before, believes it to be a distinct genus, but places it near *Ariocarpus* because of the form of the tubercles and the fact that the flowers come from the axils between the tubercles. Buxbaum believed that this plant belonged to his *Linea Strombocacti* which includes *Roseocactus*, *Ariocarpus*, *Epithelantha*, *Pelecyphora* and *Neogomesia*.

This, then, is the general picture: *Encephalocarpus* is closely related to *Ariocarpus*, a belief which is generally held today. I believe, on the contrary, that *Encephalocarpus* is not related, even closely, to *Ariocarpus*, but to *Coryphantha*, *Mammillaria* and *Pelecyphora*, being most closely related to the last genus.

Now let us return to a description of the genus and then consider its true phylogenetic position.

The genus *Encephalocarpus* was established by Berger in 1929 in "Kakteen," pp. 331-332 for Werdermann's *Ariocarpus strobiliformis*. The genus was used subsequently by W. T. Marsh as a section referable to *Ariocarpus*. Scheidweiler as amended by him, = *Ariocarpus* Scheid. sens. str. sect. *Encephalocarpus*. The genus includes one species only from Mexico. The name is derived from the Greek; *en*—in, *kephale*—head, *karpos*—fruit, with reference to the fruit being situated at the apex of the plant.

Encephalocarpus Berger.

Plant more or less globular with a napiform root. Caespitose forming small clumps. Tubercles numerous, imbricate (cone like), keeled on the abaxial side, more or less incurved, terminating in a point with a small, oval areole on the abaxial side, furnished with small spines and wool, the axils are woolly from which the flowers arise. Flowers from the apex of the plant, short, narrow tubed, outer perianth segments 5-6, green, ciliate, inner perianth segments elongate-spathulate, broader, margins ciliate, or toothed towards the apex, violet-pink. Stamens few to half the length of the petals, yellow. Style longer, slender, yellowish, stigma with 3-5 short lobes. Fruit drying, Seeds small, light brown.

The description of the genus is also that of the single species: *E. strobiliformis*.

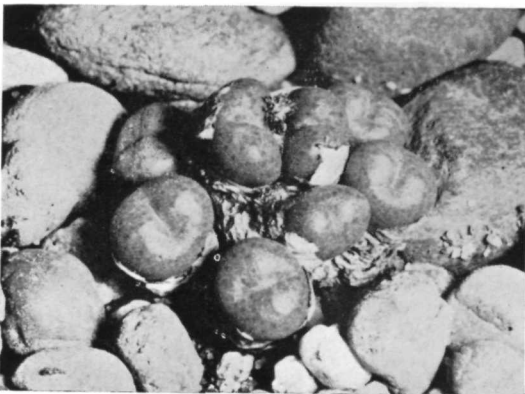
The appearance of the plant can be seen from the photograph (vide Journal Vol. 20, No. 2, and Borg "Cacti" p. 289). The plant has a somewhat similar appearance to *Obregonia denegrii*, but this is a case of convergent evolution as in the latter plant the flowers arise from the areoles, there being no axillary bud. Here may be mentioned the middle Borg got into with *Encephalocarpus*, *Ariocarpus* and *Obregonia*; "In *Encephalocarpus* and *Obregonia* the globular stem is furnished with short leaf-like scales and in *Ariocarpus* the tubercles have a leaf-like fleshy appearance. In these cases there are no areoles with spines, although in *Obregonia* the spines exist and soon drop off, but in the axil there is always a bud producing areole, from which issue the flowers at the top of the stem. Cacti, p. 24." The first sentence is all right, but substitute "tubercles" for "scales." In the second sentence to *Obregonia* should also be added *Encephalocarpus* since the young areoles possess spines which later drop off, occasionally an odd spine or two can be found on the areoles of *Ariocarpus*, especially *A. trigonus*. If the next part of the sentence were true, then obviously these three genera would possess the divided areole of the *Coryphanthanae* Br. & R. and would belong there. However, he still placed them in *Echinocactanae* Br. & R. which has flowers from the new spine areoles at the top of the plant, or at its centre. In fact, *Encephalocarpus* and *Ariocarpus* (not *Roseocactus*) have the axillary bud producing areole inviting transfer to *Coryphanthanae* Br. & R. as, in fact, Berger did (N.B. *Coryphanthanae* in the sense of Br. & R. is an untenable sub-tribe). However, if one inspects *Obregonia* closely, it will be observed that, in fact, there is no axillary bud-producing areole, but the flowers arise from the young spine bearing areoles at the apex of the plant.

Encephalocarpus is a small growing plant, the stems being globular, up to about 2½ inches in diameter. The stems are usually single, but sometimes clumps of several heads are formed. The tubercles leaf like, triangular



June Show, 1958

G. A. Burton



Conophytum viride. (2x natur. size).

Prof. W. Rauh



Rebutia grandiflora

P. C. Ryan

*Argyroderma**Pleiospilos bolusii*

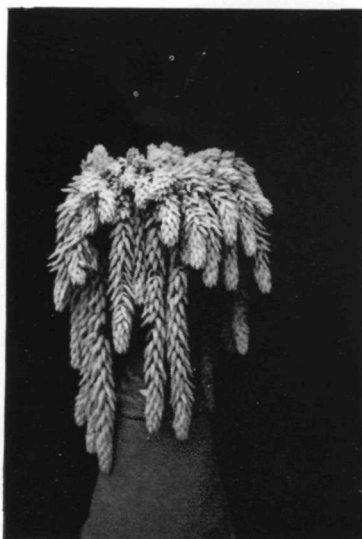
(left) *Lithops jacobsensiana*. (middle) *L. elisabethae*.
 (right) *L. kuibisensis*



Gibbaeum cryptopodium, *perviride*, *pilosulum*, *heathii minor*,
dispar, *nebrownii*, *Nananthus lodewyckii*.



Leuchtenbergia principis.



Sedum morgani

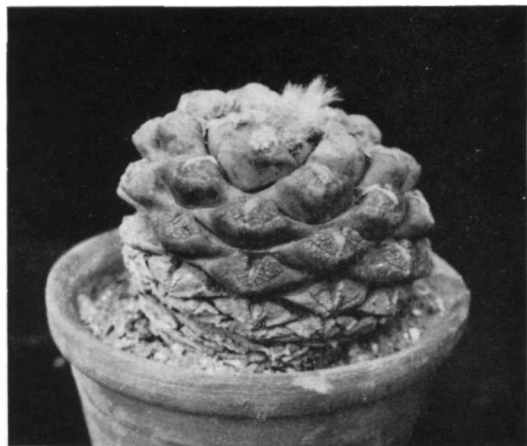


Obregonia denegrii

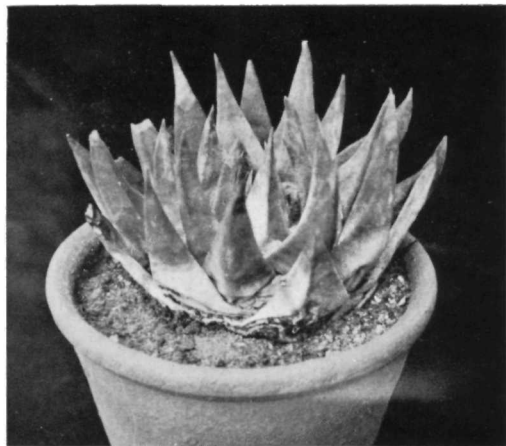


Astrophytum capricorne senile

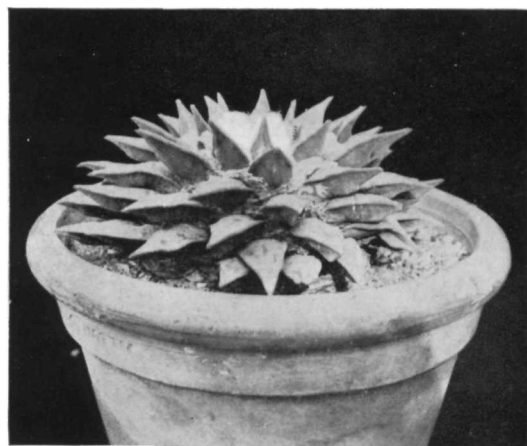
The above four photos and those on the following three pages by Mr. A. S. Jones



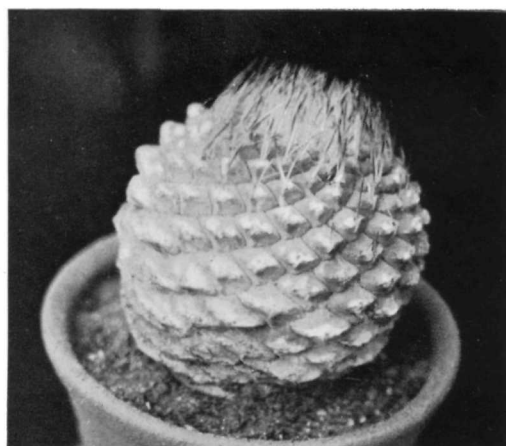
Ariocarpus fissuratus



Ariocarpus trigonis



Ariocarpus retusus

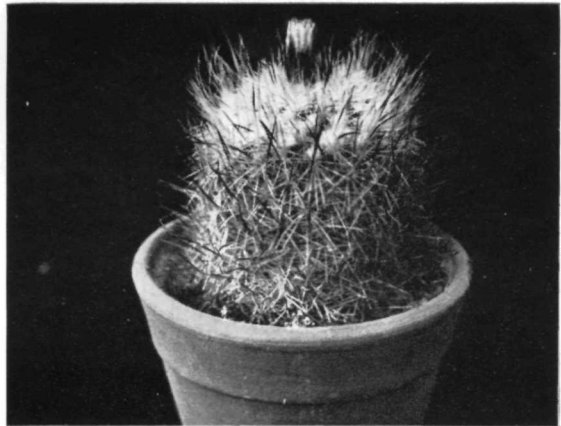


Strombocactus disciformis

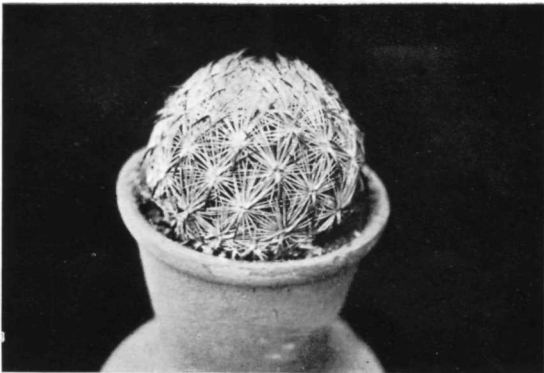
(Photos by A. S. Jones)



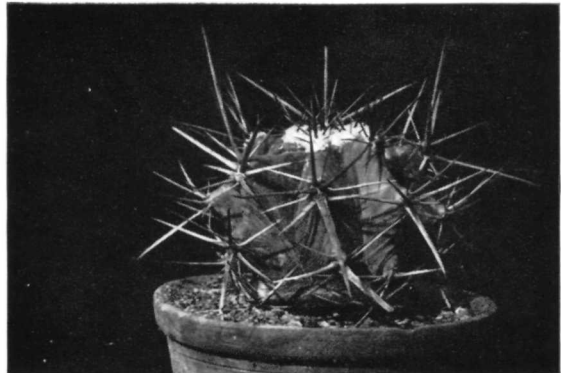
Ferocactus diguettii



Gymnocactus beguinii

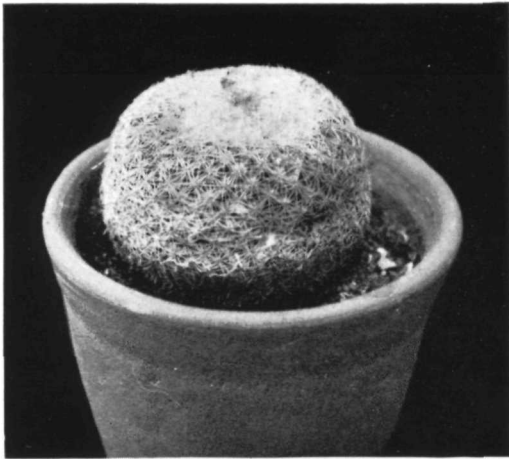


Echinocactus mapiensis

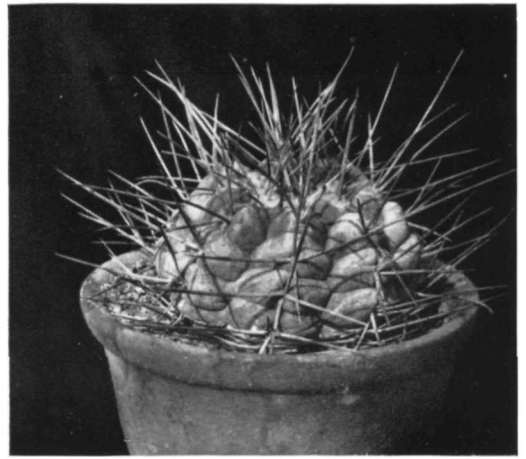


Echinocactus palmeri

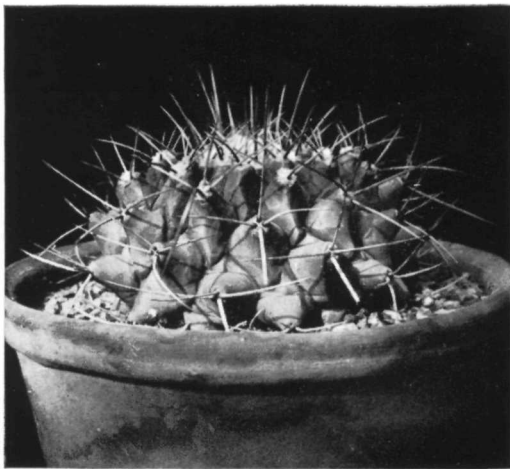
(Photos by A. S. Jones)



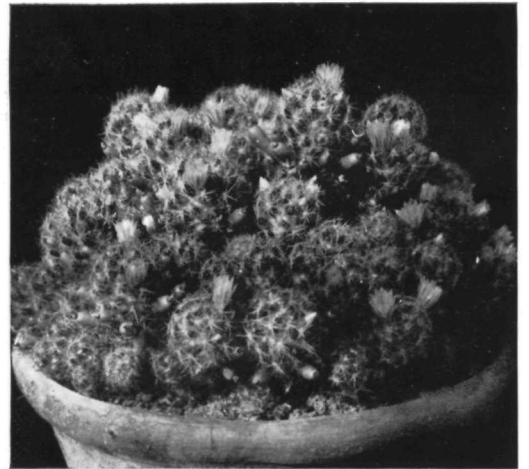
Epithelantha micromeris greggii



Thelocactus hexacantha major

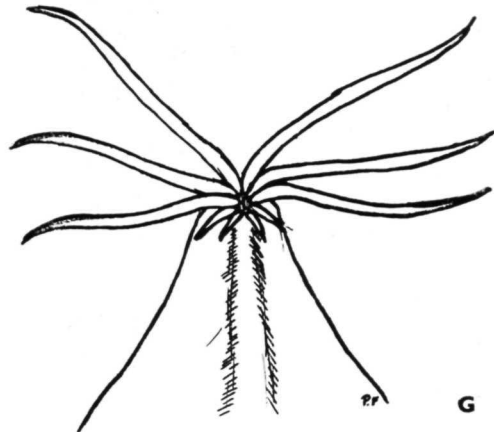
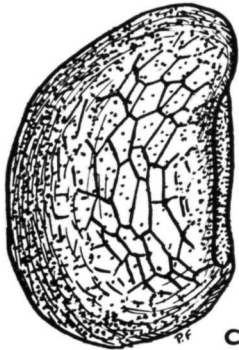
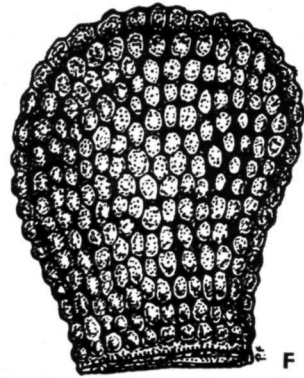
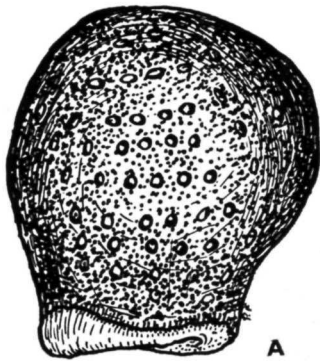


Thelocactus lophothele



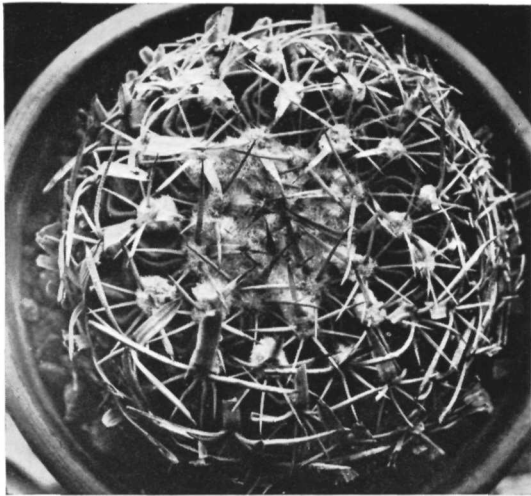
Mammillaria prolifera

(Photos by A. S. Jones)

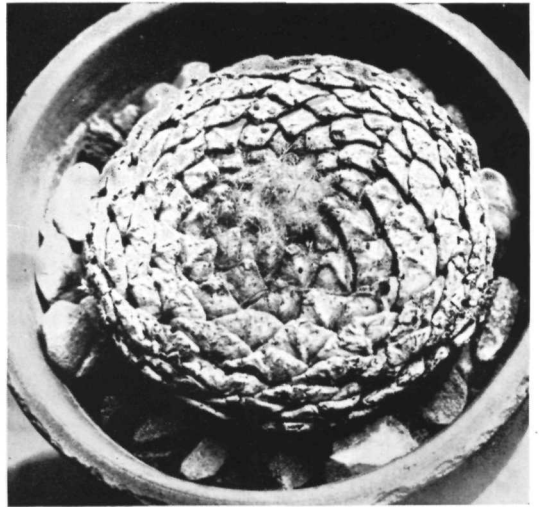


A—Seed of *Neobesseyia* sp. B—Seed of *Encephalocarpus strobiliformis* C—Seed of *Coryphantha salm dyckiana* D—Seedling of *Pelecophora* E—Seed of *Pelecophora aselliformis* F—Seed of *Obregonia denegrii* G—Areole of *Encephalocarpus*

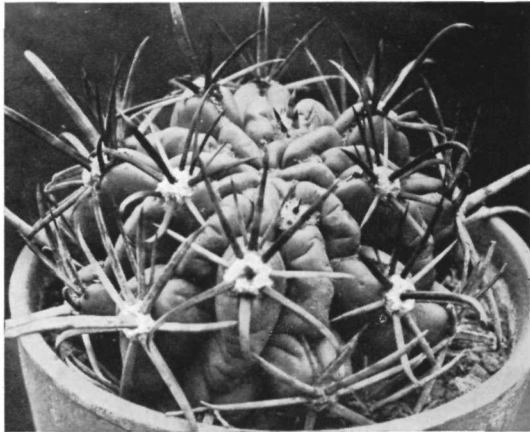
Drawings illustrating the article by Mr. P. Fearn



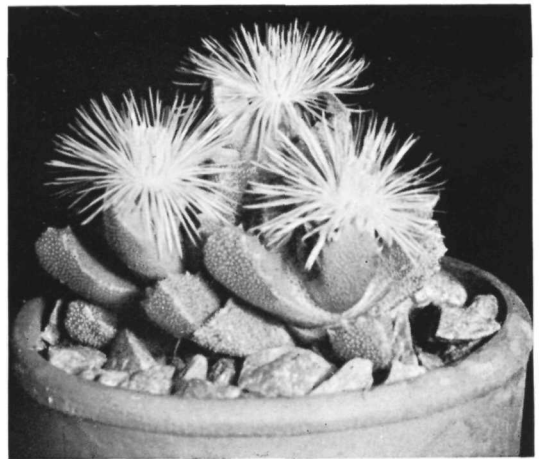
Thelocactus crassihamatus



Encephalocarpus strobiliformis



Echinofossulocactus tricuspis



Stomatium erminium

in shape and curved inwards, being keeled on the back, they are greyish-green in colour. The stem is completely covered by the tubercles which give it the appearance of a globular pine cone. The apex of the plant is woolly since the new areoles which are situated on the outer side of the apex of the tubercles are woolly at first. In addition, these new areoles bear up to twelve small, pectinately arranged spines which are white in colour (see figure). As the tubercles mature the wool and spines are lost. Eventually the tubercles are also lost, giving rise to the swollen stem which arises in the same manner in *Ariocarpus* and has the same function as a food and water storing organ. The tubercles subtend woolly axils and from the young axils at the centre, the flowers arise. This plant obviously belongs to the Sub-tribe *Coryphanthanae*, in the sense of Drs. Britton and Rose.

The flowers are up to about $1\frac{1}{2}$ inches broad when fully expanded, the tube is narrow. The inner perianth segments or petals are of a lively pinkish violet.

EVIDENCE FOR RELATING ENCEPHALOCARPUS AND PELECYPHORA

The main evidence is from the seed. Let us first consider the seed of *Pelecyphora* which is shown in the figure. The seed is greatly curved with a small lateral hilum. The testa is areolate, the cells are drawn out being very long in relation to their width. Turning now to *Encephalocarpus*, we see that the seed (see figure) is very similar to that of *Pelecyphora*. It seems, therefore, that *Pelecyphora* and *Encephalocarpus* might be related.

The pectinately arranged spines occurring on the young areoles of *Encephalocarpus* have already been mentioned. This is comparable to the spine arrangement of young *Pelecyphora* seedlings (see figure).

The flowers of these genera are similar. *Encephalocarpus* has a pinkish-violet flower, *Pelecyphora aselliformis* has a purplish flower, *P. valdeziana*—violet-pink and pale pink in *P. pseudo-pectinata*. The inner perianth segments of both genera have ciliate margins, or, at least, toothed towards the apex. The filaments of both are short, being yellowish for *Encephalocarpus* and white for *Pelecyphora*. The styles in both genera overtop the stamens and bear 3–5 lobes, being yellowish for *Encephalocarpus* and white with a greenish-yellow stigma in *Pelecyphora*. The fruit of both is small, drying and releasing the seed into the axillary wool.

The evidence thus suggests that, on the whole, *Encephalocarpus* and *Pelecyphora* are closely related. The similarity of the pectinately arranged spines of the mature *Encephalocarpus* and seedling *Pelecyphora* also the very close similarity of the flowers and, above all, the small brown kidney-shaped seeds.

PHYLOGENETIC POSITION OF ENCEPHALOCARPUS AND PELECYPHORA

There has been much argument and confusion about these genera which also involves *Solisia*. *Solisia* was originally described as a species of *Pelecyphora* by Stein in 1885. Drs. Britton and Rose separated it in a new genus for various reasons; it is solitary, not caespitose; in having milky sap, not watery; the flowers are small, lateral and yellow, not large, central and purple; the axils of the tubercles naked, not woolly; and the hilum of the seed broad and large, not small. However, although they considered these as separate genera, they considered them as near relatives of *Mammillaria*, but they hinted that perhaps *Pelecyphora* really belonged elsewhere.

A. Berger, in 1926 and 1929, considered *Solisia* and *Pelecyphora* to be related and followed Britton and Rose in considering them related to *Mammillaria*. Berger also brought *Encephalocarpus* and *Ariocarpus*, but not *Roseocactus* as close relations of *Mammillaria*, *Pelecyphora* and *Solisia*. However, *Ariocarpus* and *Roseocactus* are closely related and related to *Leuchtenbergia*, a different evolutionary line to *Coryphantha*, *Mammillaria*, etc. Marshall and Bock, in 1945, retained *Solisia* as a separate genus, however, in 1946 Marshall turned the clock back and omitted mention of *Solisia* when he listed the type species of the genera of the Cactaceae. In 1947 he mentions that he has reunited *Solisia* with *Pelecyphora*.

The next step was taken by F. Buxbaum in 1955, at the I.O.S. Congress, where he reunited *Solisia* as a sub-genus of *Mammillaria* Haw., this change had already been published by Fosberg in 1931 and mentioned by Moran in 1953. Previously, Prof. Buxbaum, in 1951, had placed *Pelecyphora* in his *Linea Strombocacti*, deriving two lines of evolution from *Encephalocarpus*, the first containing *Epithelantha* and *Pelecyphora*, the second *Neogomesia*, *Roseocactus* and *Ariocarpus*.

However, subsequently, in 1955, Prof. Buxbaum, in the third volume of his "Morphology," considers that the seed type does not agree with Backeberg's (1950–51) arrangement, viz, *Roseocactus*, *Encephalocarpus*, *Pelecyphora*, *Ariocarpus* and is of unknown origin but certainly not of the *Linea Strombocacti*.

Thus the position is that *Solisia* is distinct from *Pelecyphora* and is usually considered as a sub-genus of *Mammillaria* Haw., or, at least, of close relation to it. As to the position of *Pelecyphora*, it is generally agreed that it belongs elsewhere, but no one seems to know where.

So far it has been shown that *Encephalocarpus* and *Pelecyphora* are related—on the evidence of seed, flowers

and spines. Further evidence is afforded in that both plants are caespitose, both have watery sap, the flowers arise centrally, are of more or less the same size and that the axils of the tubercles are woolly.

Buxbaum (1955) had seen the seeds of *Pelecyphora* and so concluded that it could not belong to the Linea *Strombocacti*. He had not seen the seed of *Encephalocarpus*, but considered it would be of the *Strombocactus* type and so still considered it to be related to *Roseocactus* and *Ariocarpus*, being evolved from *Obregonia*, the similarity of which has been mentioned. However, as *Encephalocarpus* has the seed form as *Pelecyphora*, it also cannot belong to the Linea *Strombocacti* (see seed figure).

What genera have seeds which bear some resemblance to those of *Pelecyphora* and *Encephalocarpus*? Consider the genus *Coryphantha*. As pointed out by Buxbaum in 1951, the genus *Coryphantha* contains plants having seeds of two kinds; those with very dark brown, almost black seeds and having a pitted testa, and those with light brown seeds with a testa which is finely areolate or reticulate. The former are similar to those of the genus *Escobaria* and the plants also agree in having a similar habit and the flowers having ciliate outer perianth segments (see Br. & R. key for identifying the spp. of *Coryphantha*). The species involved are *Coryphantha deserti*, *C. arizonica*, *C. neomexicana*, *C. chlorantha*, *C. vivipara*, and *C. aggregata*. These are now transferred to *Escobaria*, sub-gen. *Pseudocoryphantha*.

This leaves the genus *Coryphantha* formed by members having the second type of seed. The genus is further divided into three groups on the form of the groove and the presence or absence of glands. In the group *Sulcolanatae* we have *C. salm dyckiana*, the seed is shown in the figure. Let us consider this seed in relation to that of *Pelecyphora* and *Encephalocarpus*. Imagine the seed of *C. salm dyckiana* pulled out and more curved, the cells of the testa would be elongated and become narrower compared with their length, also the hilum would be squashed and become smaller. Surely it would resemble that of *Pelecyphora* and *Encephalocarpus*. This being so, *Pelecyphora* and *Encephalocarpus* can be considered as being evolved from *Coryphantha* and cousins of *Mammillaria* Haw.

SOLISIA

We are now left with *Solisia* which was originally described as a species of *Pelecyphora*, but, as was mentioned, is now considered as a sub-genus of *Mammillaria* Haw., or of close affinity. Is this borne out by the evidence?

The relationship of *Mammillaria* and *Solisia* seems to be based almost entirely on the fact that many of the former have milky sap as also has *Solisia*. This might, however, be only an example of convergence, there appears to be a tendency towards milky sap in the *Echinocactineae* Buxb.—for instance, *Porfiria* also has milky sap. Also, a fact which is usually forgotten is that those *Mammillarias* with milky sap have brown seed (vide Craig, *Mammillaria Handbook*, p. 7) or even those with semi milky sap (loc. cit. p. 10), whereas *Solisia* has milky sap and black seed. The form of the tubercles and the pectinately arranged spines of *Solisia* is, again, only an example of evolutionary convergence towards *Pelecyphora* and *Encephalocarpus*.

Since relationships of the members of the *Echinocactineae* can be inferred from the seed characters, perhaps the seed of *Solisia* will give the key to its true position. The seed is described as being black, smooth, dome shaped; the hilum is broad basal. This recalls the seed of *Neobesseyia* (see figure). The seed, therefore, suggests evolution from *Neobesseyia*. The flower colour, which is yellow, suggests the lack of relation with *Pelecyphora* and *Mammillaria* as these are pinkish-violet and usually various shades of red respectively. However, consider *Neobesseyia* as a possible ancestor of *Solisia*—the flowers are yellow or pink and the seeds are globose, black, pitted shiny with a prominent basal hilum and often a corky arillus tissue. This accords well with *Solisia* being related to *Neobesseyia*—the yellow flowers and the seed form.

The species of *Neobesseyia* with yellow flowers are: *N. wissmannii*, *N. similis*, *N. missouriensis*, *N. asperispina*, *N. filziana*. *Solisia* comes from Mexico and those species of *Neobesseyia*, to which it bears the greatest resemblance, *N. asperispina* and *N. filziana*, which are closely related, also come from Mexico. *N. asperispina* is mostly solitary, globular, the tubercles have only a superficial groove which is bare. The axils are also bare. The tubercles bear only radial spines, 9 or 10 in number, slender, stiff, greyish-white, radiating star like, only very rarely is a central spine present. The seeds are round, glossy black. Here we have a plant which seems to be close to the ancestor of *Solisia*—if, in fact, it has evolved from *Neobesseyia*, which seems apparent.

CONCLUSIONS

Encephalocarpus is closely related to *Pelecyphora* and both are evolved from *Coryphantha*, as emended by F. Buxbaum and both are cousins of *Mammillaria* Haw.

Solisia has been considered as a sub-genus of *Mammillaria* or closely related. It is now suggested that *Solisia* is evolved directly from the Mexican species of *Neobesseyia*.

CULTIVATION

Encephalocarpus and *Pelecyphora* are being imported into England now and are readily available. The plants as imported have very few roots and so need a porous soil. A suitable soil consists of two parts garden loam one part well rotted leaf mould and two parts coarse (Bedford) sand. As regards to water, this should be limited at first, just sufficient to keep the soil moist to encourage the new roots ; when rooted the amount of water can be increased, but excess must be avoided at all times. During the winter, water should be withheld completely.

Solisia is not so easily obtainable and usually does better grafted. However, grown on its own roots a similar soil to that given above, with the addition of some lime is suitable, the notes on watering also apply. *Solisia* should be given as much sun as possible.

All can be grown from seed, but this is a very slow process.

NOTES ON PHOTOGRAPHS

Echinofossulocactus tricuspidatus (Schweidweiler) Br. & R.

Although this name does not appear in any trade catalogue, plants answering to this description are being sent out as *Stenocactus kellerianus*.

This plant comes from San Luis Potosi in Mexico.

Body globose to short cylindrical, up to four inches broad, ribs numerous, 30 or more in number, thin, wavy ; areoles often extremely woolly at first, later naked ; spines 5-7 in number, the upper one thin, compressed, with three teeth at the apex (hence the name), up to $1\frac{1}{2}$ inches long, greyish-red with a dark brown to black tip ; the other two upper spines somewhat flattened, but less so than the apical spine, greyish-white with dark brown or black tip, remaining spines, spreading, straight or recurved, greyish-white when old, translucent white when young. Flowers numerous from centre of plant, small to just over half an inch long, funnel form, yellowish-green ; ovary scaly ; seeds black, shining, reticulate.

Thelocactus crassihamatus (Weber) Marshall and Bock.

This is a problem plant, it was originally described as belonging to *Echinocactus* by Weber ; Drs. Britton and Rose transferred it to *Ferocactus* ; Marshall and Bock, in 1941, transferred it to *Thelocactus* ; Buxbaum, in 1951, transferred it to *Hamatocactus* ; Backeberg, in 1940, had placed it in his genus *Glandulicactus* which he had erected in 1938 for *Ferocactus uncinatus* (Galeotti) Br. & R.

This plant comes from Queretaro in Mexico.

Stem simple, globular to short cylindrical, up to six inches thick, bluish-green in colour, having thirteen distinct, blunt ribs, deeply notched at the insertion of the areoles which are about one inch apart on the ribs, areoles pear shaped continued above by a woolly groove which forms the notch in the rib, the groove is furnished with up to three whitish yellow shiny glands. These glands are low, convex, sunk in the wool and very reminiscent of the glands of *Coryphantha* series *Glanduliferae*, and not the erect glandular spines of *Hamatocactus*. Radial spines ten, lower three stout, hooked, remainder straight, not quite so stout, upper two thinnest, all somewhat flattened, to one inch long, upper two shorter, all stiff, acute, red below to yellowish at the tip, red colour lost when old, central spine one, to two inches long, somewhat flattened below, hooked, red with yellowish tip. Flowers from the flattened top of the plant, appearing from the end of the woolly groove farthest away from the spiny areole, to one inch long, funnellform, petals violet with whitish margins. Stamens and style reddish, stigma white. Seeds black.

Stomatium erminium (Haw.) Schwantes.

Leaves crowded, spreading, to three quarters of an inch long and half-inch broad, narrow at the base, expanded above, upper surface flat, keeled below, upper margins with three or four small teeth towards the tips, leaves pale green with numerous raised transparent dots ; flowers with a short stalk, up to one inch across, petals numerous, yellow, sweet scented, opening at night.

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SUCCULENTS IN THE ROYAL BOTANICAL GARDENS, EDINBURGH

By MARGARET J. MARTIN

During a visit to Edinburgh, in mid-April, I was able to visit the botanical gardens. These are in the centre of the town and cover about sixty-eight acres. Although the gardens are situated in the middle of an industrial city, they are famous for their collection of Alpines, which flourish despite the fumes and soot.

The gardens, which are the second oldest in Great Britain (Oxford is the oldest), were founded in 1670 by a Scottish doctor, Robert Sebbald. He was appalled at the ignorance of the local apothecaries and purchased a plot of land for the cultivation of medicinal herbs.

In 1695, the King's garden at Holyrood House also became a Physic Garden. William III appointed James Sutherland, Professor of Botany at the University of Edinburgh, keeper of the Gardens, thus starting the connection between the University and the Gardens.

Eventually both gardens were abandoned and a single new site acquired. As the gardens expanded the plants were moved to their present position.

The Botanical Gardens are equipped with modern laboratories, a library and herbarium. They cater for university degree students, student gardeners, and last but not least, for visitors.

The gardens are most attractively laid out and all the plants are clearly labelled. Although the rock garden had a beautiful display of species Narcissi and Trilliums, I found the large and beautifully kept greenhouses even more interesting, particularly house No. 3, which contained the succulent collection.

The plant houses date from 1832 but the present construction with a frontage of over 500 feet bears little resemblance to the original. There is a large central house with a corridor running east and west. The smaller houses, each holding a specialized collection, are at right angles to this corridor. This system makes it very easy to see all the houses when one's time is strictly limited.

The centre of the succulent house was taken up by a large bed containing specimen plants: *Opuntia*, *Cerei*, *Trichocereus* and *Echinocactus grusonii*. There were some large specimens of *Agaves* and *Aloes*, but there was not a great preponderance of these large, dull plants over *Cacti*. Between these were arranged some of the small succulents. I particularly remember colourful specimens of *Echeveria derenbergii* and a large monstrose *Cereus*. Although I do not like monstrose plants myself, I must admit this was a most impressive specimen. Either there are fewer succulent collectors in Edinburgh than London, or they must be more scrupulous. Nothing was behind wire netting; a choice selection of *Lithops* was just sitting on the staging, and not a gardener in sight! The *Lithops* consisted of good-sized clusters; since I understand that *Lithops* only split after flowering, they must flower them very well.

All the smaller plants were, of course, grouped on the staging, succulents on one side of the house and *Cacti* on the other. There seemed to be approximately equal numbers of each. They also had a number of *Rhipsalis* growing in hanging baskets as well as the collection on the staging.

One of the most striking things about the collection was a group of *Crassula* in flower which formed a brilliant splash of colour near the entrance of the house.

There was a beautiful red *Epiphyllum* with a white throat in flower and many more in bud. Many of these buds were about three inches long and would undoubtedly be soon forming a display to rival the *Crassula*.

Other plants that I particularly noted were the *Mammillarias*. These were flowering profusely and from the number of berries on some of them, they had obviously flowered well in previous years.

Although Edinburgh is considerably farther north than London, the plants seemed to be as well advanced in new growth and the beautiful display of flowers on some of them shows that succulents can be flowered well even in very smoky, industrial towns.

REPORT OF MEETING—continued from page 73

one of the long sides with some compost and it will stick in position. Repeat with the other side and slide the ends into position. Now fill in the gap with concrete and work in well, especially on the corners. Cut any drainage holes required as before. Leave for at least two days. Run a flat bladed knife round between the inner mould and the concrete to break the seal and carefully remove first the ends and then the sides. Finally remove the outer mould. Again do not handle the finished article until the concrete is white. If moulds are to be used frequently they should be painted.

SHOW RESULTS, 3rd and 4th JUNE, 1958

Class 1. Three Echinocactanae.

1st R. H. West 2nd P. V. Collings 3rd J. T. Fletcher.

Class 2. Three Coryphanthanae.

1st P. V. Collings 2nd G. L. R. Hedges 3rd R. H. West Highly commended G. L. Ibbotson.

Class 3. Three Coryphanthanae (for members who have not previously won a 1st in any class).

1st G. L. Ibbotson 2nd R. H. I. Read 3rd Miss M. Hancock Highly commended T. A. Purdie.

Class 4. Three Cereeanae.

1st R. H. West 2nd J. T. Fletcher 3rd Mrs. F. E. Pooley.

Class 5. Three Echinocereeanae.

1st R. H. West 2nd P. V. Collings.

Class 6. Three Cacti (any genera).

1st R. H. West 2nd N. H. Glenister 3rd G. L. R. Hedges Highly commended P. V. Collings.

Class 7. Three Cacti (for members who have not previously won a 1st in any class).

1st R. H. I. Read 2nd Mrs. T. Watt 3rd Miss M. Hancock

Class 8. One Specimen Cactus.

1st R. H. I. Read 2nd R. H. West 3rd G. L. Ibbotson Highly commended Mrs. D. M. Mallett

Class 9. Cacti raised from seed sown by the Exhibitor on or after 1st January, 1956.

1st D. H. M. Brooks 2nd J. R. Moore 3rd R. J. Martin.

Class 10. One Specimen Succulent other than Cacti.

1st P. J. Measures 2nd N. H. Glenister 3rd Mrs. M. Halford Highly commended R. H. West.

Class 11. Miniature Garden of Cacti or Succulent plants (not mixed) to cover space not larger than 18ins. x 18ins.

1st Miss A. M. Pilcher 2nd Mrs. T. Watt 3rd B. C. Marshall.

Class 12. Six Stemless Mesembryanthemums.

1st P. J. Measures 2nd P. V. Collings 3rd R. H. West.

Class 13. Three Agaves, Aloes, Gasterias and or Haworthias.

1st P. J. Measures 3rd J. T. Fletcher.

Class 14. Three Euphorbias.

1st P. J. Measures 2nd P. V. Collings

Class 15. Three Succulents other than Cacti.

1st P. J. Measures 2nd D. J. Humphreys 3rd Mrs. D. M. Mallett Highly commended Mrs. M. Halford.

Class 16. Three Succulents other than Cacti (for members who have not previously won a 1st in any class).

1st R. J. Martin 2nd R. H. I. Read 3rd J. T. Fletcher

Class 17. Six South African Succulents in pots not larger than 3½ ins. in diameter.

1st P. J. Measures 2nd R. H. West 3rd G. L. R. Hedges.

Class 18. Group of Cacti and/or other Succulents to cover table space not larger than 3 ft. x 3 ft.

1st N. H. Glenister 2nd R. P. Pohlmann 3rd W. T. N. Towler.

Class 19. Three Cacti and/or other Succulents (for Juniors under 18 years).

1st Graham Argent 2nd R. H. Melville 3rd Robert Loder

Class 20. Branch Exhibit (Group of Cacti and/or other Succulents to cover space not larger than 4 ft. x 3 ft.)

1st North West London Branch 2nd Hertfordshire Branch 3rd North Surrey Branch
Highly commended Berks and Bucks Branch.

Amateur Gardening Bronze Medal—N. H. Glenister for Group of Cacti and/or other Succulents.

Amateur Gardening Award of Merit—R. P. Pohlmann for Group of Cacti and/or other Succulents.

REPORT OF MEETING

4th March, 1958. Repotting and Containers : A. Boarder.

Repotting. Mr. Boarder first posed the question "Why do plants need repotting?" Plants should be repotted when their size demands a larger pot; if the owner has any reason to think that there is anything wrong with a plant, i.e., if root bug or other pest is suspected or if the soil takes too long to dry out, and finally and particularly, when it is considered that all the soluble food in the soil is exhausted. The importance of repotting cannot be overemphasised and growth cannot be expected if it is not done. A plant may look all right, but with repotting it would undoubtedly look better.

Plants take up their food in soluble form through their roots. Cacti can continue to live in dry soil, but with no moisture in that soil they cannot feed. Chemicals and salts are required; nitrogen and phosphates in particular and many others in lesser degrees. These are normally present in good loam. The pot has a crock or crocks at the bottom and quite likely up to a third of its contents of broken brick then there are the roots and the base of the plant itself, the food-bearing soil occupying the all too little remainder. If too much water is poured in at the top the surplus runs out at the bottom thus reducing the available nutriment. Similarly, with bottom watering the major proportion of the water is in the lower part of the pot and naturally it drains off when the pot is removed from the water. Thus, again, goodness is lost. If a plant is growing well all the food value in the compost is steadily used up. Mr. Boarder, therefore, recommended strongly the annual repotting of all plants. In a large collection this takes time. He had already started and had completed about half of his *Mammillarias*. Because of the pressure of other matters this work had been neglected in previous years and, in fact, some plants had not been repotted for several years. This was quite apparent from the loss of growth and lack of flowers.

With slow growing types, such as *Ariocarpus*, *Strombocactus*, etc., it was, perhaps, not quite so vital to repot as frequently. Growth is essential for the production of many flowers. For example, *Astrophytums* will flower on every areole and only once on each and *Mammillarias* in their axils, again only once in each. Both these flower from the top, i.e., on the new wood. It follows, therefore, that a plant which is really growing, is steadily making new wood from its growing point, outwards and downwards. This new wood means new areoles and new axils and consequently the potential for more flowers. This alone is sufficient argument for repotting.

Soil : This can be purchased but, if so, it should be obtained from a reliable source in order to ensure as far as possible that it contains the correct ingredients. It can be, as Mr. Boarder prefers, made up. The essentials are :

(1) A good Loam as the basis. This is the top spit, about 9 inches deep, taken from an old meadow without the grass being removed and after having been stacked grass down, for at least six months, and passed through a sieve.

(2) To give the right texture—as otherwise loam alone would pack too hard—Bacterised (or horticultural) peat, passed through a quarter inch sieve and

(3) Sharp, or gritty, sand (Thames Washed Sand or River Grit)—any other kind is not only useless but probably harmful—silver sand, for instance, being too fine.

If the peat is dry it should be damped before use and the best way of doing this is by pouring boiling water on it. If cold water is used the peat will not absorb the water but will float on it.

The proportions which Mr. Boarder uses are slightly different from the John Innes mixes and are as follows :

7 parts of Loam

3 parts of peat and

4 parts of sharp sand (this proportion being the one altered).

After these ingredients have been thoroughly mixed to each bushel (four buckets is a useful guide) is added :

$\frac{3}{4}$ oz. Ground Chalk

1 $\frac{1}{2}$ oz. Superphosphate

1 $\frac{1}{2}$ oz. Hoof and Horn Grist and

$\frac{3}{4}$ oz. Sulphate of Potash.

The most certain way of ensuring an even distribution of these is to first mix them with a quantity of sand and then add to the bulk.

The loam should be sterilised. This can be done quite simply with very little trouble on an electric boiling ring. Mr. Boarder suggested using a baking tin which should be half filled, placed on a piece of metal about one inch thick over the ring. The soil should be gently stirred until it is steaming. The temperature should then be brought up to 180 to 200°F. very quickly, maintained for ten minutes and allowed to cool quickly. If the temperature is allowed to rise above 200°F. not only will the pests and seeds be destroyed, but everything else will be driven out. After preparation the mixed compost should be stored under cover and when used should be crumbly moist, i.e., when pressed into a ball to generally retain its shape without unduly dirtying the hands.

Pots must be scrubbed clean, even if they have only been in store. It is better that new pots be soaked anyway.

Crocks. Use broken pot and endeavour to have one piece only to each pot, large enough to cover most, if not all, of the bottom. This is a great help when repotting on the next occasion as when pressed upwards through the drainage hole the crock acts as a platform and lifts the whole of the contents up with it.

Method. Work with the compost in a pan and have pots of various sizes immediately available to hand. De-pot one plant at a time and examine. If the roots are matted round the pot remove those which come away easily—they will soon be renewed. Work the soil to remove all of it from the roots and throw it out. Check the plant, all of it, carefully and, if needed, treat as required. Above the crock put some of the fibrous material out of the loam. There is no need, unless the pot is overdeep for the plant, to build up to a third of the pot's depth with roughage. Use all the available space for food-bearing soil. Site the plant centrally and to the correct height and fill up to within half an inch of the top of the pot (for watering). Run the soil in with a spoon, especially if the plant is prickly. A toothbrush handle is a useful tool for getting the soil between the roots. Gently firm the soil (with, say, an old table-knife handle) but do not ram it tight. Check the label and replace it if necessary. Mr. Boarder likes to note the month and year of repotting on the back of the label. Then place the pot systematically in order that none is missed. A tiny pinch of paradichlorobenzine just above the crock or rubbed round the pot is an excellent deterrent for root bug which is assisted by the lack of repotting. Do not water a repotted plant for a week; there should be sufficient moisture in the soil to encourage the new fibrous roots which are the main feeders of the plant. If conditions are hot or dry, water by filling up the half-inch space at the top. Large plants may require an additional filling.

Concrete Containers.

Mr. Boarder then turned to his second subject which was one in which many of his hearers had already evinced considerable interest. It was also another example of Mr. Boarder's facility for achieving results which were, officially, not possible. In opening the subject he exhibited an hexagonal pan and a rectangular seed box, both of which, although made of concrete, were no thicker than the corresponding articles made of the conventional materials. With normal handling they had a considerably longer potential life, especially the seed box; their numerous other advantages were obvious. The hexagonal pans, made against the advice of experts, were made originally for large caespitose *Mams.*, and Mr. Boarder had had them in use for seven or eight years. The shape, of course, enables them to be fitted together to fill a given space with the greatest economy. They are particularly useful for caespitose types of *Mammillarias*. A very striking point is that no reinforcement is used for either type—in fact there is no room for any. Good moulds are, however, essential.

For the hexagonal pan six pieces of, say, half-inch ply are required. These were cut to a template and made the six sides. Each piece had to be chamfered carefully to give a close fit on the inside. The pieces were then nailed together to make two equal halves (i.e., three to each). No base or internal mould is required. The two halves are then stood on a piece of paper on a sheet of glass and held together by passing two bands of wire round the outside. It is most important that all wooden surfaces which concrete is to touch should first be coated with oil (e.g., old sump oil which has been allowed to stand). Be most careful not to apply so much oil that it runs down and collects at the bottom or the mixture of the concrete will be affected at the angle leading to the break-up of the container.

Concrete should be made up from one part of cement and two parts of sharp and one part of soft sand, thoroughly mixed and made up to a fairly stiff consistency. Put some of the mixture in the bottom of the mould and work well, spreading to and up the sides to a thickness of a quarter of an inch. Adding more concrete draw up the sides, still working well to get a complete and uniform spread of concrete with no holes or gaps. Cut any drainage holes after about four hours. After two days the wire bands and moulds may be removed. Do not handle the container until the concrete has gone white.

The seed boxes can be made to any size to fit an available space. The outer mould can be made of half-inch ply or equivalent and consists of similar pieces to those required for an ordinary box minus the bottom. The four pieces are then hinged together so that the mould can be folded away from the finished article on completion. It can be secured at the fourth corner by wing nuts or screws or any method giving a similar result. For the box an inner mould is required. This should consist of four separate pieces of wood which, when placed inside the outer mould, leave a gap of about a quarter of an inch. The short ends should fit inside the long pieces. These four pieces should be tapered one-eighth inch to give an increase in thickness at the bottom. One inch thick ribs fastened on the inside of the inner mould pieces will help their removal, but keep shorter than inside pieces of wood.

Set up the outer mould on paper and glass as before and oil the inside. Using a similar mix as for the pan, but a little stiffer for the bottom, fill in the bottom and press out to the sides. Oil the inner moulds and apply

Continued on page 70



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1958

July 22nd Mimicry Plants. Mrs. M. Stillwell and P. V. Collings. Table Show : Mimicry Plants.
(Restaurant, Old Hall. NO R.H.S. Show).

Aug. 12th Raising plants from seed. D. H. M. Brooks. Table Show : Any Genera. (Restaurant, Old Hall).

Sept. 16th SHOW. Evening : Know your plants. A. S. Jones. Table Show : South African Succulents.
(Lecture Room).

Oct. 8th WEDNESDAY. Plant Exchanges. Table Show : Hairy Cerei. (Lecture Room).

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CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 20

OCTOBER, 1958

No. 4

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THE
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ESTABLISHED 1931

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FROM THE PRESIDENT

So we come to the end of a season which will be long remembered among horticulturists, farmers, etc., not forgetting our own clan of cacti and other succulent enthusiasts. The season has been short of sun and with a plenitude of rain and storm. It may be wondered why short of sun? Actually, there has been plenty of sun, but we have had it in short spells, much shorter than the usual summer and, in consequence, it has not done what the good long spells of sunshine can do for our plants. I do not know what has been the experience of other members, but, for myself, the year has been notable for a continuance of blooming with those plants that usually do give a good display, plus flowering by plants I have never flowered before. For some reason or other I have found that, so far as my plants are concerned, the season has not been a bad one, however much I am displeased as a human being with the weather in my daily goings about.

Those who attend our meetings and those who read my remarks from time to time know that I have been in opposition to some who consider, when watering cacti and other succulents, that the water should have the chill off it. Mr. Rowley was the first to tell us that it had been proved otherwise; I have continued that point of view. I wonder how many take in *Amateur Gardening* and read their leader of the 31st July? They put the point so much clearer than I have done. They claim that we are apt to treat plants as human beings and, so far as this point is concerned, consider that a plant runs the dangers of colds and chills if fed with cold water. It is stated that plants are not human beings and their requirements can be the very opposite of the habits of human beings and, in so far as cold watering is concerned, W. J. C. Lawrence of the John Innes Horticultural Institute exploded the theory of cold water dangers a good many years ago when he demonstrated that plants suffered no ill effects from ice cold water.

I hope you will notice the reminder, elsewhere, that subscriptions fall due on the 1st January and that you will help our honorary treasurer, Mr. E. W. Young, 35 Castle Drive, Ilford, Essex, by remitting promptly, in fact he would give an extra welcome to remittances now and so lessen the rush which takes place every New Year.

You will remember that the preliminary notice of the Christmas Cards appeared in the July issue of the Journal and which is referred to in the present issue. This is an expensive experiment which I trust will be generously supported by all members and readers. Please note, in passing, the details and send your orders without delay.

I wish to extend a hearty welcome to our Chairman, Mr. A. W. Heathcote, who has undertaken the task of assisting me in editing the Journal.

E. SHURLY.

CACTUS CULTURAL NOTES

By A. BOARDER

The summer of 1958 has so far been a very bad one, and writing these notes on August 28th, the weather appears to me to be more like November than August, as the sun hardly ever makes an appearance. How have the plants fared during this sunless time? On the whole my plants have made much better growth than they did last year but this is probably due to the fact that all the plants were repotted for the first time since 1955. Many of the larger *Mammillarias* have made fresh growth above a line near the top of the plant. This will spoil the appearance of the plants but will not stop them from flowering and producing seeds. When these plants get a check in growth the growing point gets hard and then when fresh growth appears it has to force itself through the dried ring. At this spot the spines often fail to grow and the plant then looks very odd. Sometimes a plant will make some effort to get back to normal, but many plants are scarred for ever if such a growth happens. It is possible to cut the head off and re-root it once a good growth has been obtained, but it is of no use trying to do this to a plant until there is plenty to cut at. If the head was removed and the cut made too near the growing centre this would prevent any further growth from the top.

I suppose that most of us have a problem plant or two, one which never seems to get going no matter what we do to it. I have a *Mam. droegeana* which I purchased from a dealer many years ago. I do not think that it has grown a quarter of an inch in that time. It looks alive, but yet never makes any fresh growth. I have another plant which has been a bit of a problem, it is an imported specimen of *M. herrerae*. I have had this plant for six years and no fresh growth has been made until this season. Now a couple of off-sets are growing from the sides and so at last I have hopes of saving the plant. I find that any plants I raise from seed invariably grow on with no trouble. Many imported plants have their roots removed and, if they are of a good size, they then take some time to get established again. It is no use planting these specimens in the usual potting mixture. If so, they may be placed with the other plants and get over-watered. It is far better to put the plant in some sharp sand where it can be examined from time to time and so make sure that it has good roots before it is finally potted up. There has been plenty of flowers in the greenhouse this year and the plants do not seem to have suffered in any way through the lack of sunshine.

I have several *Astrophytums* which I have raised from seed and these have made fine specimens, but the flowering of them has been rather erratic. The two rather large *A. myriostigma* have continued to flower profusely, each areole producing its flower as it appears. Both plants set seed all right as long as I am able to pollinate them. One of the flowers is sweetly scented and the other is not, but there is no other difference to be seen. I have two *A. asterias* I have also raised from seed and these have been placed very near to the glass. Both have flowered well, but so far no seed pods have developed. Three *A. capricorne* grow fairly well and flower, but three large *A. ornatum*, also seedlings, have never shown a flower bud at all, although they have continued to grow well. One would have thought that they would have flowered before *A. capricorne*. However it does not do to lose heart as one never knows when the flower will appear.

Many of my *Lobivias* which flowered have produced seeds and the pods soon ripen and so the plants must be carefully watched so that the seeds may be collected as soon as the pods split. This year's seedlings have been growing well. The lack of sun does not seem to have affected their growth as in any case they are always shaded from the sun all through the summer. I have a number of *Lithop* seedlings which were sown in February and pricked out in May and June. They are now half an inch across and are growing well. Some growers recommend that *Lithops* seedlings should not be pricked out the first year. I do not wait as long as this as the plantlets are kept starved and small by so doing.

I wrote in my last notes about the experiments I was making with the use of Malathion for controlling mealy bug. I am still experimenting, so far with excellent results. It is of course too early to say whether any of the plants may have been adversely affected by its use, but so far all appear all right and the mealy bug has disappeared. I suppose that for the past thirty years I have been fighting a constant battle with mealy bug. Before that when I was on my own I never saw one. It was only after the formation of the Society in 1931, that I got my first bugs on plants taken in exchange. Since then I have tried many things such as nicotine and methylated spirit, then surgical spirit, etc. I was never able to find an efficient remedy which I could spray over all the plants without any subsequent trouble ensuing. If the surgical spirit is not washed off some plants soon after its application then the plant can be damaged or even killed.

I used the Malathion at the rate of one fluid ounce to three gallons of water. Using a syringe spray I gave every plant in the greenhouse a spraying. I had been warned to be careful by several people, but I had no ill effects at all myself. I waited until the evening and then quickly sprayed everything. I closed the windows and left the greenhouse closed until the following morning. The smell is very unpleasant, but this is easy to put up with when it means the killing of mealy bug. After the spraying I saw hardly anything of them. I have repeated the sprayings at monthly intervals. No plant appears to have been injured and mealy bugs seem to have disappeared. In all the years I have been growing cacti I have found nothing to compare with the results so far obtained. I feel that the possibility of eradicating mealy bug from a greenhouse filled with cacti will be a great encouragement to many growers who have large collections. When one only has a few plants the occasional bug can be picked off with ease, but when one's collection runs into hundreds of plants, many of which can only be handled once a year, then this is the time when the mealy bugs get busy. In a collection of *Mammillarias* they can be very harmful and difficult to remove. I have known many growers give up growing cacti because of the trouble with them and so I make no excuse for dealing with the subject at length.

I have had various opinions from different growers who have used Malathion, one said that he had killed *Rebutias* with it, but mine are all right; perhaps they were on their way out before being sprayed. Another had his eyes swell up after using the cure, but as a fine mist spray had been used this was asking for trouble. One grower I know waters all his plants with it from a water can with a rose fitting and finds it excellent. Time will prove whether it is all that it is claimed to do but so far I am glad to say that it is the best cure for mealy bug I have ever used.

I have taken the opportunity this year of forking over the top of the soil in most of my pots and find that the plants benefit from such treatment. It is also a good time to remove any weeds which may have grown in the pots. My greenhouse windows have not been closed completely since early June. For most of the time they were full open day and night, but once August was well advanced I partially closed the windows at night but always left some partly open. I am sure that the plants are more healthy when there is plenty of fresh air available at all times. I hope that many growers have been successful at making the concrete boxes which I described in my last talk to the Society. The boxes should be well soaked and scrubbed out before use to get rid of most of the free lime from the cement. I find that I have 144 such boxes with plants in at the present time and I do not think I could have found anything so good and cheap anywhere.

I reported last year that I had painted my greenhouse with aluminium paint and I am glad to say that this has stood up to all weathers better than any other paints which I have used on previous occasions. If I ever make another greenhouse I shall construct it of concrete and glass so that there will be no more painting. The frame I made with concrete frame-work is functioning splendidly and has given me ideas for a greenhouse of the same type.

Many members who are growing cacti from seed seem to be at a loss as to how to treat year-old seedlings. If they were pricked out into boxes when about six months old it is probable that by the spring of the following year they will have grown so large that they touch one another in their boxes. Once this happens they will cease to grow and should be moved into other boxes and given more space. A good mixture in which to plant them out is the John Innes Seed compost with the addition of the necessary fertilisers to make up to the potting compost No. 1. I do not believe in potting up these seedlings as, unless they are put into a pot not less than two and a half inches in diameter, they will not grow any more than they would have done if they had been left in the boxes. Most *Mammillarias* should be an inch across by this time and they soon make fresh headway when they get a move.

Do not, however, over-water them soon after they are moved. Providing a slight watering is given when they are moved into their new quarters they should not be watered for at least a week. Even nice healthy plants can rot off at the base soon after having been moved if too much water is given. When they are in the new boxes they will soon make fresh roots and grow on well.

Some people are disheartened when their seeds do not germinate. This may be for no fault of their own. The seeds may not have been good. I was shown some packets of South African succulents 'seeds,' and on examination found that the packet contained only the dry crushed casing of the seed pod. Naturally one must start with plump seed. Many seed pods form on plants and some seeds form within them. On many occasions I have found that only a few of the seeds have been properly fertilised. The remainder are flat, empty and useless. Some experience is necessary before one is able to tell at a glance if all kinds of seeds are good, but most of them should be fairly plump. The one kind which can deceive the beginner is *Astrophytum*. These seeds resemble a small shell and appear to be empty; however, do not discard for this reason, the seeds will probably be all right.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

Autumn can be a thing of beauty in the succulent world. Most of the stemless *Mesembryanthemums* should be flowering and looking their best, while the colourful succulents should be really ripened off for the winter and given the benefit of the late autumn sunshine. By October all the succulents bedded out for the summer should be lifted and taken into the greenhouse. I have had a fine border of *Lampranthus* this summer giving a continuous show of bloom from small cuttings placed at about 18 inches apart in May. They are far too large now to accommodate in pots, so I shall dig up the whole clumps and store them in old enamel bowls under the staging until next spring when they can be divided up, or more cuttings can be taken to repeat the process as this year. I also found *Trichodiademas* are most suitable for a sunny spot, and flower profusely.

This year I had a little experimental border for cacti and succulents on either side of my front garden path. The house faces south and gets all the sun and small cuttings soon take root and make nice plants, particularly such things as *Echeveria gibbiflora metallica*, *Sedum adolphi*. *Echeveria secunda* and a *Dudleya*, which had stood still for some time, made a most attractive plant, but perhaps not quite as farinose as when grown under glass. I dug into the border a lot of old potting compost to lighten the soil, as our ground is clay and gets very sodden in the wet weather. Another year I hope to try *Faucarias*, *Stomatiums*, various *Sedums*, *Kalanchoes*, some of the shrubby *Crassulas* and a few *Aloes* and *Agaves*. The latter seem to prefer to be outside in the summer where they can get plenty of fresh air.

The extension to my greenhouse is now almost finished and I have moved most of the cacti into it, to leave room for the rest of the succulents in the other houses, which for many years have been sadly over crowded and in need of some re-organization. This year, through force of circumstances, I had to do most of my repotting in June and July, including the majority of the cacti. This gave me some surprising results. I found all the plants seemed to get away far better and did not seem to receive such a check as they do in the spring when they are struggling to recover after their long winter rest. It makes me wonder if it is right to disturb our plants too early in the year, before they have had a chance to make their new little hairy roots and to set their flower buds. This can be regarded as a very controversial experiment which, in my case, paid off. I shall probably make a few more experiments with potting and try to determine the times of the year most suited to the different genera. Incidentally, in my case, it was more a case of potting on rather than repotting as luckily I am fairly free from rootbug, so did not find it necessary to remove all the old soil from the roots.

I have left most of the push out windows open day and night during the summer so as to ensure there is a good circulation of air, but they should be closed from the beginning of October during the night, as those damp autumn mornings may cause too much condensation to enter and settle on the plants, when it is time to start reducing the water for their winter rest.

I have placed my choicest *Haworthias* under the staging in the new extension, which has glass to the ground, so that during the day they are shaded, but they get the benefit of the late afternoon sun which is not strong enough by that time to do any damage.

I had an enquiry as to how to treat *Cheiridopsis*. It is very difficult to say exactly when they should be watered and when rested, conditions under which they are grown govern these factors. Usually they are said to be resting when the two centre leaves are pressed tight together. The lower ones should be allowed to die right away to a papery skin. When the two centre leaves open and the plant shows signs of growth, then you can commence to water. In the case of *Cheiridopsis peculiaris*, the whole outer skin will dry up and enclose the whole body for several months and it is safer to leave it dry until it splits open and starts to grow in its own good time. The same applies to the tiny *Cheiridopsis meyeri*, which should be treated as a *Conophytum*. With all the stemless *Mesems.* and Mimicry plants, it is a case of learning by experience. One cannot say a plant should receive water at a certain specified time, one can only give an approximate time of the year for their growing and resting periods. They should all be treated as individuals and watered accordingly. Do not hope to grow these plants to perfection if you cannot afford the time to study them carefully and really get to know them.

I had a fine germination of *Muiria hortenseae* seed this year. The fat little green bodies were so crowded together that, after nearly three months, I decided to prick them out, in spite of the fact that they still appeared to be in the cotyledon stage. It was very interesting to watch as the perfect little plants proper formed and,

when ready, just pushed off the cotyledon leaves like caps. These plants are said to be rather difficult to cultivate and as yet I have never succeeded in keeping an adult plant for more than a year, but I am hoping for better luck with these seedlings. I am still keeping them slightly shaded under a shelf. I also had a few nice *Monilaria* seedlings. The adult plants need a long resting period. The leaves, which are glistening with pappillae, usually turn yellow and die down about February with me. The plant is then rested until the following August or September when the leaves start to sprout again. Seedlings will probably need to be kept growing for the first year, or at any rate until the leaves show signs of dying off.

At the time of writing, the *Lithops* are looking at their best and many are coming into bud. I like to remove the dead skins as I find they do encourage mealy bug. All my pots have got a top dressing of pebbles and sharp sand mixed with fine limestone chippings. It not only keeps the surface of the soil fresh, but also provides good drainage around the neck of the plant. The same applies to the *Ophthalmophyllums* and *Conophytums*.

I have had one or two nice clumps of *Conophytums* with the central growths dying off. This is apparently quite a natural happening after a number of years. When the plant has made sufficient new bodies, it decides to dispense with some of the old ones. When this happens it is best to break up the clump, remove the old dead growths and start again with the new. It is often better to treat the remainder as cuttings and cut back to the base of the plant bodies and re-root. Cuttings always seem to multiply themselves much quicker once they are well rooted. This operation should be carried out about July, just as the plants are commencing their period of growth. At a recent meeting I was shown a *Lithops* that had not come out of its resting period, and asked my opinion. I can only suggest from its elongated and flabby appearance that it had been kept growing far too long in the season, overwatered and possibly completely exhausted itself in an effort to become an outside plant. We should always aim at growing these plants as true to type as possible and true to colour. Many of the *Lithops* in nature are habitually small and, in my opinion, lose all their true characteristics when given too generous a treatment. It is also most important that they receive plenty of sunshine.

I noticed two of my *Stomatiums* were suffering from an attack of red spider, due to being kept rather on the dry side and in an overcrowded position, where I had not been keeping a watchful eye on them. I painted them both with surgical spirit, which was left on for about ten minutes and then the plants were placed head downwards in a bowl of water, hot enough to comfortably bear the hands in. This may sound drastic, but the plants now seem to be none the worse for their treatment and quite free from the red spider. I have heard glowing reports of the new Malathion for killing all pests, but it must be realised that in the hands of an amateur it can be dangerous and, personally, I prefer not to use these things. I feel if one can find the time to look their plants over carefully at least twice a week, removing the odd mealy bug as it appears, that they will not get a lot of trouble.

With this issue of the Journal will be found a coloured plate intended to be the frontispiece when the present volume is bound. In accordance with the notice published in the July issue, CHRISTMAS CARDS have been prepared with this coloured plate on the front. The price of these is 9/- per dozen or 67/6 per hundred, but members of the society will be supplied at wholesale rates, viz., 6/- per dozen or 45/- per hundred, so it is essential for members to quote their membership number when ordering. Orders should be sent, with remittance, to Mr. E. W. Young, 35 Castle Drive, Ilford, Essex. Order at once to ensure delivery in time for Christmas.

“It may be of interest to hear what happened to my *Echeveria gibbiflora*. It had grown leggy, about 2 ft. 6 in. high so I determined to decapitate it for which purpose I cut a nick at the selected spot and inserted a little hormone (Seridix B No. 1). I then bound the spot round with moss and cellophane in the orthodox manner and about a fortnight later observed that above the seat of the operation the stem had increased to about twice its original thickness, the leaves were much larger and the colour improved. All down the stem nearly to soil level aerial roots had grown from old leaf scars. After about four weeks, I suddenly found that, in spite of staking, the head had bent over on account of its weight so I had to sever it and the moss was full of roots. It is now a magnificent specimen and the colour is superb.”—J. BAGLEY.

NOTES ON MESEMBRYANTHEMUM AND ALLIED GENERA

By Dr. H. M. L. BOLUS

By the courtesy of the Director of the Botanical Department of the Royal Natural History Museum in Stockholm, I have recently had the privilege of examining the one hundred and thirty-five sheets of *Mesembryanthemaceae* in the Sonder Herbarium at Stockholm. Among them is a single plant of the type of *M. fimbriatum* Sond., published in 1862 (Flor. Cap. II, 393), collected by Zeyler near the Gamka River in May, 1840, when he and Burke, who also got it, were on an expedition to the north together. This I had not seen before and it was a great moment, after some fifty years of making notes on members of this Family, when I immediately recognised it as being an early stage in the season's growth of *M. pygmaeum* Haw., published in 1819 and now known as *Ruschia pygmaea* (Haw.) Schwant. The mists that have obscured *Conophytum fimbriatum* (Sond.) N. E. Br. since 1922, when the new combination was made, were cleared away and with them vanished this combination, which proves to have been based on a plant quite distinct from *M. fimbriatum* Sond. N. E. Brown writes (Gard. Chron. 1922, p. 214); "The gland-dotted flowers distinguish this from any other species (of *Conophytum*) known to me. Sonder describes the species as glabrous, from specimens collected by Zeyler. I have not seen Zeyler's specimens, from which Sonder described, but as Burke and Zeyler travelled together, and in most cases collected the same species, the specimens collected by Burke at the same locality are probably identical with those of Zeyler and are decidedly minutely puberulous, as in Zeyler 693, which Sonder wrongly quotes as being *M. minutum* Haw." The fact that both Zeyler 693 and Burke are quoted in his description proves that Brown considered them identical, but there seems to be no justification for thinking these two corresponding collections are "probably identical" with the glabrous type of *M. fimbriatum* Sond. I have not seen Burke's specimens and the one plant of Zeyler 693 in the Sonder Herbarium is devoid of flower and fruit. It appears to me to be much more than "minutely" puberulous, suggesting a drought-stricken form of an undescribed pubescent *Gibbaeum* rather than of a *Conophytum*.

Burke, in his "Journal," published in 1845 in Hooker's London Journal of Botany (Vol. IV, p. 648), writes of their sufferings in the severe drought then prevailing and says "No vegetation could be described but a scanty growth of *Mesembryanthema*." (Burke gives June 28th as the day spent at "Gamka.") Whatever further research may reveal regarding the genus of this intriguing plant, it will require a new specific name, unless it turns out to be a species already described. In the present uncertainty, it seems best to regard it as insufficiently known both generically and specifically, until some enthusiast is urged to make a special search for it and succeeds in finding it.

It may be noted here that Marloth's amended description of *M. fimbriatum* Sond., published in the Transactions of the Royal Society of South Africa (Vol. I, p. 406) refers wholly to a collection of *Conophytum saxetanum* N. E. Br. from Luderitzbucht—a far cry to the Gamka River, which rises in the Nieuwveld Mts. near Beaufort West, follows a course between this town and Prince Albert before it joins the tributaries to form the Gouritz River flowing south into the Indian Ocean.

It also took us a long time in South Africa to discover the whole of *Ruschia pygmaea*, whose history may be briefly given. It was raised at Kew in 1818 from seed sent by Bowie, its first recorded collector, but never flowered and all we know of the type consists of Haworth's description and an unpublished coloured drawing in the Kew Herbarium representing vegetative growth, which, allowing for differences due to cultivation, matches the wild material at this stage of its growth. Haworth considered it was nearest *M. mucronatum* Haw., and the two species are still correctly maintained in the section *Microphylla*. The next collections were those of Burke and Zeyler (Zeyler's is the only one quoted by Sonder for *M. fimbriatum*), lacking any remains of flower or fruit of the previous year's growth. Burke's is in the state of complete rest and in Zeyler's the young growth is still enclosed in the resting sheath, but just visible through the gaps of the latter's deeply "lacerate-fimbriate" upper portion. Then Rehmann got it in the same condition as Burke's in the Karoo, north of the Hese River Pass, so that up to this date neither flower nor fruit was recorded. It was only in August, 1905, when the British Association met in South Africa for the first time, that one of its members, R. H. Yapp, found it growing freely at Matjesfontein in full flower. Later, to complete the cycle, fruiting specimens were obtained in the same locality. It is fervently hoped that it will take a much shorter time to determine, from complete living material, the genus of Zeyler 693.

Another type collected by Zeyler and seen for the first time, *M. monticulum* Sond., also discloses an error—in this case my own. For *M. bifoliatum* L. Bol., described in 1922, from what we now know to have been merely

an early stage of the inflorescence, is identical with a corresponding portion of the type, which is represented by a flowering branch with only a short inflorescence and a few of the basal foliage leaves. When complete plants of several years' growth were collected by H. Hall at Komkans in Namaqualand in 1954 and 1955, and could be identified with the type, there was great joy among us. For, in the interval, about a century, between the two dates (Zeyler died in 1858) no other complete collection had been recorded and its curious inflorescence, unique in this Family, was fully revealed for the first time. This character alone justifies its having been raised to generic rank and been worthily called *Ottosonderia* after Dr. Otto Wilhelm Sonder, who was courageous enough to undertake the task of bringing Haworth's work up to date for the Flora Capensis, as far as this could be done with usually dried material only at his disposal and the many insufficiently known species and confusion of names that existed to perplex him. The illustration shows how the inflorescence continues to branch year after year, the normal pattern being one flower to a branchlet with a bud in each axil for the next year's growth. If, therefore, all the flowers developed normally (without abortion or insect raid) the second year's growth of the original axillary buds would be two flowers and the third year's four flowers and so on. After several years the branching inflorescence becomes a rigid cyme shaped like an upside down pyramid.

In the same year as his discovery of *Ottosonderia monticola*, a second species, *O. obtusa*, was discovered by H. Hall farther north at Walle Kraal. Both species have flowered at Kirstenbosch.

Another puzzle solved in revising the Sonder Herbarium deals with Ecklon 2069, collected between "Hauwhoek and Caledon" in 1858 and represented by one plant. Sonder writes of it "In habit very near *M. micans*," but identifies it with *M. hispidum* L.—now *Drosanthemum hispidum* (L.) Schwant., which is a very different plant and quite unknown from the Caledon Division. Ecklon's label reads "flores crocei" (those of *D. hispidum* being rose-purple) and at a glance they may be recognised as belonging to the group of which *D. micans* (L.) Schwant. is the earliest known species. For the leaves and sepals are similar, yellow petals often occur in the section, and the black staminodes are as numerous and conspicuous as they are in *D. micans*. But instead of the branches and peduncles being rough, as they are in the rest of this section (*Aspericaulia*), they are distinctly hispid, though not so conspicuously as is usual in the section *Hispida*. Perhaps it was this character only which led to Sonder's placing it under *D. hispidum*. Another distinguishing mark to be observed is the globose shape of the papillae on the receptacle, these being elongated in all the other closely allied species. These two characteristics, and there are probably more to be seen in the living plant, separate it from all the other known species in the section having yellow petals and copious black staminodes and I, therefore, propose to describe it as *Drosanthemum insolitum*, the unusual *Drosanthemum*, because of its hispid branches and peduncles and its globosely papillate receptacle. The only plant seen is evidently flowering in its first year, judging by the slender root and the absence of any remains of a previous year's growth and it is less robust than *D. micans*.

DROSANTHEMUM INSOLITUM L. Bol. (*Aspericaulia-Speciosa*). sp. nov.

Planta sicca unica visa, erecta gracillis, laxe ramosa, 15 cm. alta; folia erecta vel ascendente, apice recurva, crebra et sat inconspicue papillata, 1-1.4 cm. longa, ad 2 mm. diam.; pedunculi hispidi, 3-7 cm. longi; sepala subaequalia, 5 mm. longa; petala "crocea," ad 1.6 cm. longa, ad 2 mm. lata; staminodia atrata conspicua crebra, stamina pallida aequantia vel paullo superantia—cetera non examinata.

Cape Prov.; in dit. Caledon; inter Houw Hoek et Caledon, Nov. 1858. Ecklon 2069.

CEPHALOPHYLLUM VANHEERDEI L. Bol. sp. nov. This genus, containing more than sixty species, of which two at least are among the plant aristocrats in that their names were written by the great Linnaeus in the book "Species Plantarum," where plants in 1753 were given a double name (generic and specific) for the first time in the history of botany. Some of the most beautiful of the flowers in this vast Family are to be found in this genus and the present species, named after its discoverer, P. van Heerde, may take its place in the front rank. There is probably no one today who knows Namaqualand and its flora in the same way as Mr. van Heerde does. For he has lived in the very heart of it, at Springbok, nearly all his life, making frequent excursions into remote and less known areas, collecting, distributing and growing a very large number of species—many of these new. The genus *Vanheerdea* is named after him (I regret having misspelt it in the first instance *Vanheerdia*).

The inflorescence of *C. vanheerdei* is copiously branched and a plant with its procumbent branches, each terminating in as many as sixteen flowers, and a prospect of more to come, must be a beautiful sight. One branch only was received, with immature fruit, buds in all stages and fully developed flowers. One of the buds opened

in water and, on the second day of opening, measured 10 cm. in diameter, except for *C. spongiosum* which attains a diameter of 11.5 cm. in cultivation, the largest flower hitherto recorded in the genus. The petals, in one series or with two or three interior ones, a little shorter, in addition, are laxly set, having a slight gap between them and are a clear bright yellow throughout. In habit of growth it is among the more robust species, but much less rigid than *C. cupreum* and the giant *C. spongiosum*.

Ramus floriferus cum floribus 21 cm. longus, internodiis 1.5–2 cm. longis, ad 7 mm. diam., decumbens, compactus ob gemmas axillares bene evolutas; folia saepius erecta, matura subtertia, supra plana vel superne leviter convexa angustataque, lat. visa apice rotundata, glauce viridia, levia, 3–8.5 cm. longa, 5–10 mm. diam.; inflorescentia laxa 4–ramosa, 16–flora; pedunculi inferne patentes, superne sursum curvati, 3–6.5 cm. longi; bractee 2–2.5 cm., rarissime ad 4.5 cm. longi, vagina ad 1 cm. receptaculum breviter crateriforme, ad 4 mm. longum, ad 1 cm. diam. sepala 5, exteriora superne subulata, obtusa, interiora apice compressa, 1–1.7 cm. longa, basi 4–6 mm. lata; petala 1–3-seriata, laxa interiora pauca, inferne e medio angustata, obtusa vel inconspicue emarginata, laete lutea, saepius 4–5 cm. longa, 2–3 mm. lata; filamenta aurea, 3–6 mm. longa, antheris pollineque pallidis; ovarium supra per 2 mm. gradatim elevatum, lobis apicem versus compressis; stigmata 11–12, 4 mm. longa.

Cape Province; Namaqualand; "on one of the Umduas ridges, about 15 miles on the Steinkopf-Klipfontein Rd., Jul. 14, 1958, P. van Heerde (Bolus Herbarium 26574).

Another interesting plant collected by H. Hall in Sept., 1955 at Komkans is *Cephalophyllum primulinum*, growing "on muddy banks in small river bed; flowers pale yellow." This is the only record since the type was collected in 1910 by Pearson and Pillans on one of the Percy Sladen Memorial Expeditions which yielded so many new discoveries. It was still growing freely in Mr. Pillan's garden twelve years later when the description was made. Mr. Hall's specimens were, therefore, the first wild ones I had seen.

We often think there is as much, or even more, of a thrill in rediscovering old species, or completing the descriptions of the insufficiently described ones than in discovering new ones. At any rate, yesterday (Aug. 9th) was a red letter day when Mr. Hall brought a flowering branch with one flower of *Schlechteranthus maximiliani* Schwant. described without flowers, from a plant he got at Oograbies, about twelve miles east of Port Nolloth, not far from the type locality. This so exactly matched the portion of the type Dr. Schwantes had presented to the Bolus Herbarium that we felt confident the determination was correct and Mr. Hall set himself in earnest to induce it to flower, placing plants in different parts of the garden in the hope of finding the most suitable conditions. He at last saw indications of the earliest signs of a flower bud and for several weeks has carefully guarded it from pests and other accidents. Indeed it proved to be only a tiny modest mouse after such a mountain of labour, but precious and cherished because of its interest to science. The following notes were made; flower solitary with no indication of a bud in the axils of the bracts, in general appearance closely resembling a typical *Ruschia* flower: peduncle 5 mm. long, compressed in the lower part which is enclosed in the leaf sheath, bracteated in the middle; bracts unlike the leaves in appearance, concave on the upper surface and clasping the peduncle, margins membranous rose, 6 mm. long, the sheath 3 mm.; receptacle cyathiform (long cup shaped) 4 mm. long, 2.5 mm. in diameter; sepals 6, the sixth aborted and chiefly consisting of a membrane (probably the normal number is 5), 2.5–4 mm. long; petals in one series, arranged in five groups (as often occurs in *Ruschia*), not narrowed downwards, obtuse purple rose, 5 mm. long, up to 0.5 mm. broad; staminodes appressed to the conically collected stamens and slightly exceeding them, acute, purple rose; stamens rather few, filaments pallid in the lower part, deep rose in the upper, papillate a little above the base; nectary annular, rather inconspicuous, denticulate; ovary semi-globosely elevated, the lobes convex; stigmas 9, very narrowly subulate, brownish purple at the apex, 1.5 mm. long; capsule 10-locular.

CONOPHYTUM INTERMEDIUM L. Bol. sp. nov. (*Derenbergia Saxetana*). Plantae visae e 12–20 corpusculis compositae; vaginae persistentes papyraceae, inferne politae, pallideque brunneae; corpuscula obovate cuneata, leviter compressa, supra visa elliptica, levia, glabra sinon circa orem inconspicue ciliata, pallide viridia, inconspicue sparse punctata, 1–1.5 cm. longa, prope apicem 5–7 mm. diam., lobis 0.5–1.5 mm. longis, divergentibus marginibus carinisque interdum rubre lineatis; pedunculus ad 9 mm. longus; calyx non bene visus, marcescens, segmentis 4 (?) subaequilongis; corolla 5–7 mm. longa, segmentis 1–2-seriatis, obtusis vel rarius acutis, rubre cupreis, 1.5–2 mm. longis, ad 0.5 mm. latis; stamina 11–13, 2-seriata, omnia exserta, antheris luteis, 1 mm. longis, apicem corollae fere attingentibus; discus conspicuus, segmentis ca 9–12, obtusis; ovarium concavum, medio tantum conice elevatum; stylus 1 mm. longus; stigmata 4, apicem corollae attingentia vel rarius superantia, saepius ad 4.5 mm. longa.

Cape Province ; Namaqualand ; Richtersveld, Noisabis, Mart 1958, H. Hall 1324. Fl. Maio 6-26th, 1958, Kirstenbosch, N.B.G. 123/58.

Sic nominatum quia corpuscula subgenus *Derenbergia* simulantia, et flores *Euconophytum* simulates, itaque inter haec subgenera intermedium est.

LITHOPS HILLII L. Bol. sp. nov. (*Fenestratae-Arubrae*). Planta e corpusculis composita ; corpuscula late obconica, 1.8-2.2 cm. longa, apice, cum rima per 4-5 mm. divergente, 1.9-2.1 cm. diam., lobis 5-9 mm. longis, basi 1-1.2 cm., apice 1.5-1.7 cm. latis, lateribus saturate columbine griseis, fenestra convexa, "insulis" paucis, leviter prominentibus, griseis, punctisque sparsis minutissimis albis ornata, margine exteriore breviter irregulartiterque laciniata, interiore integra, punctis sparsis vel aggregatis, minutis nigris ornata ; pedunculus 1-1.5 cm. longus, in receptaculum 2-3 mm. longum, ad 5 mm. diam., insensim abeuns ; sepala 5, papillata, superne leviter angustata, obtusa, omnia \pm marginata, inter minima in genere, 4-6 mm. longa, basi 2-3 mm., vel ad 4 mm., lata ; petala 2-3-seriata, inferne e supra medium angustata, obtusa, laete lutea, prope basim alba, ad 1.2 cm. longa, ad 1.75 mm. lata ; filamenta alba, ad 6 mm. longa, antheris luteis ; ovarium supra planum ; stigmata 5, 7 mm. longa.

Cape Province ; Cape Namaqualand ; Stinkfontein, alt. ca. 3000 ped., Sept., 1956, L. J. Hill (Bolus Herb. 26575). Fl. hort. Hill Maio 1958.

L. geyeri Nel proxime accedit, sed corpusculis brevioribus, diametro majore, floribus minoribus, petalis integris (eis *L. geyeri* conspicue emarginatis), ovarium supra planum (eo *L. geyeri* e margine ad medium gradatim ad 1 mm. elevatum), differt.

We have received from Protah Ltd., 1266 Warwick Road, Knowle, Solihull, Warwickshire, details of their new Jurlypots in Polythene. It is claimed that these pots control evaporation of moisture in the pot, eliminate "cold areas," cool slower and the resulting warmer conditions provide better rooting systems, improved growing and earlier and more prolific blooms.

We have received details of another pot from Solar Plastic Applications Ltd., 31 Guildford Street, Luton. It is constructed of plastics and consists of a pot inside the outer pot providing a space between the two to contain water to be used by the plant as required. The water passes into the inner pot, containing the soil and the plant, through a base plug.

Arrangements have been made for the micro-recording of The Cactus and Succulent Journal. The micro edition will be issued by Micro Methods Ltd., of 17 Denbigh Street, London, S.W.1, to whom application should be made. The cost of the micro edition will at present be £1 0s. 0d. per year ; and will start with the 1957 issue, i.e., Volume 19, which will be available in September, 1958. In future the micro edition will usually be available a year after the issue of the first number in each volume. Back issues will be recorded in due course as demand develops. Now that the recording has been completed it will be possible to supply individual issues or articles in photographic form ; these separate copies will only be available from the publishers to whom requests should be made.

Cleaver-Hume Press, 31 Wright's Lane, London, W.8, have issued a second edition of their first Marsden book "Grow Cacti" at 15/-. The only differences are that there is an extended list of common names, the addition of a short chapter on photography and the two leaves at the end on Mammillarias have been deleted and the very welcome appearance of ten coloured and plain photographs.

KALANCHOE SYNSEPALA Baker

By H. HALL

In this Journal, Vol. 9, No. 3 (1947) I contributed a few observations on *Kalanchoes* and *Bryophyllums* written when I was at Manchester. Readers who possess this back number will see that a drawing I submitted bears the caption "*Kalanchoe synsepala*". I made that crude sketch one lunch hour under the warm winter sun in the famous garden of La Mortola on the Italian Riviera in 1932 when I was just commencing my interest in succulents and, in good faith, recorded the name attached to the plant. There was scarcely any literature on *Kalanchoe* in English available to me at that time. During the intervening years I learned that my artistic efforts had merely depicted a portion of *Kalanchoe laxiflora* Baker, a somewhat variable species and, from what I now know, the said specimen was very poorly developed.

Bryophyllum and *Kitchingia* are now united with *Kalanchoe* and in Jacobsen's splendid three volume work, "Handbuch der Sukkulanten Pflanzen," 1954, more than one hundred species are described. *Kalanchoes* are extremely interesting plants, many with great floral beauty, especially fascinating for their varied and often peculiar ways in which they provide for future generations by vegetative means, and the subject of this note depicts one of these peculiarities.

In 1955 I received a collection of some thirty species of *Kalanchoe* from Antananarivo, Madagascar, through the courtesy of Professor Millot. Since they came by air mail they were, in the main, the merest fragments, but all thrived extremely well in our genial Cape climate and I can now admire their many facets of interest, whether growth form, floral charm, attractive foliage or their individual vegetative proliferation. Amongst these new arrivals was one labelled *Kalanchoe synsepala*! This proved to be one of the slowest growers and after three seasons has remained unbranched, has grown scarcely more than one inch of main stem, though building up to a sturdy plant. Most *Kalanchoes* are winter flowering here and this plant flowered for the first time in the winter of 1957 (July-August) so I made a drawing of this 25 years after the first—and regrettable—attempt! The two flower stems emerged in the axils of the oldest, opposite leaves, were scarcely six inches in length, bore terminal clusters of small white flowers which lasted for about one month. No seeds were produced. From a floral standpoint it was not a very thrilling species. The leaves were very succulent, half an inch thick towards the base, three inches wide at their greatest diameter and up to nine inches in length. Their shining green surface is enhanced by a rich chestnut brown, unevenly serrate margin. At the time of writing it is winter once more and about a month ago I observed the appearance of another pair of slender stems emerging from the lowest leaf axils, the pair of the previous year having been discarded by age. Sprouting strongly in opposite directions these smooth, glossy green stems, without trace of bracts, are now fifteen inches long and terminate, not in flower trusses but two pairs of leaves, the youngest well toothed and resembling normal leaves. Their development now tends to promote bending to the ground far beyond the plant itself. It would seem that this is the manner in which *Kalanchoe synsepala* propagates itself vegetatively for these will surely emit rootlets in due course.

A photograph of this species is depicted in Jacobsen's work quoted above (Vol. 2, p. 853) which undoubtedly shows erect flower stems as well as longer, vegetative shoots, the latter apparently curved inwards to facilitate photography. It is a curious phenomenon which I have not met with in *Kalanchoe*. The plantlets on the leaf ends and margins of some, e.g., *K. tubiflora* and *K. daigremontiana* are well known. Others produce myriads of plantlets in the axils of the pedicels on the fading flower spikes, e.g., *K. miniata*, *pubescens* and *schizophylla*, the latter a vigorous climber. In *K. prolifera*, not only are the fading inflorescences smothered in plantlets, but the midribs of the massive leaves will also produce them. Yet another example is met with in *K. gastonis-bonniéri* and *K. suarezensis* for these usually produce a stout young plantlet at the leaf apex, especially where this touches the soil, though such a leaf, broken by chance, will frequently produce others along the margins eventually.

Regardless of the fact that all species can be vegetatively propagated by "cuttings" of their stems, all others seem quite capable of forming plantlets at the base of the leaves after removal for that purpose. The hairy, felted leaves of *K. beharensis*, which grows so vigorously here, are often broken into fragments by winter gales and young plants readily form along the damaged edges.

All this indicates how vigorously the genus *Kalanchoe* strives to perpetuate its species by vegetative means and it would be of interest to know whether some species have not, indeed, lost the power of seed production.

So far as I know, none of our native African *Kalanchoes* show any of the above vegetative proliferation.



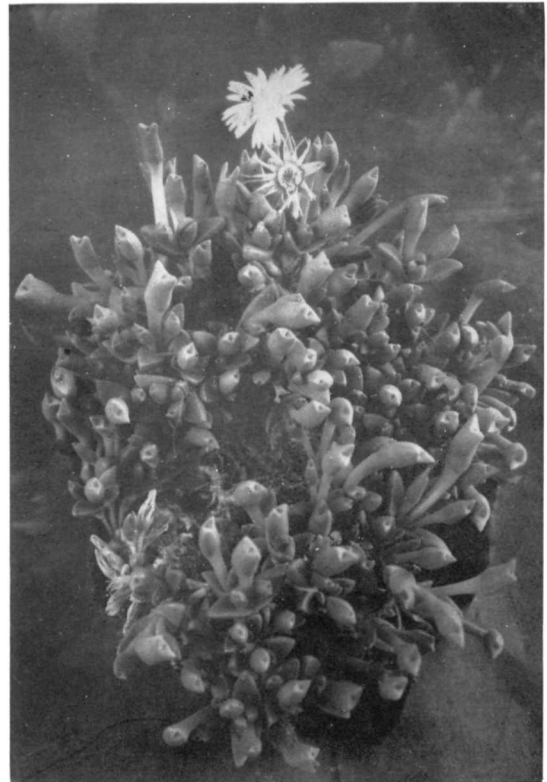
Ottonsonderia monticola



Ottonsonderia monticola

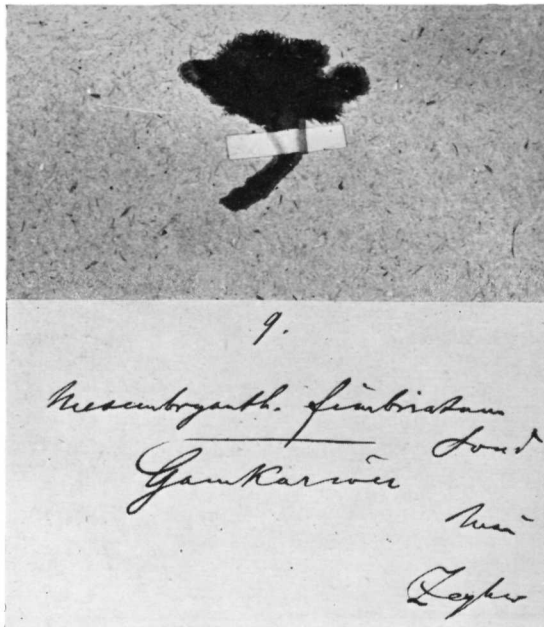


Cephalophyllum primulinum



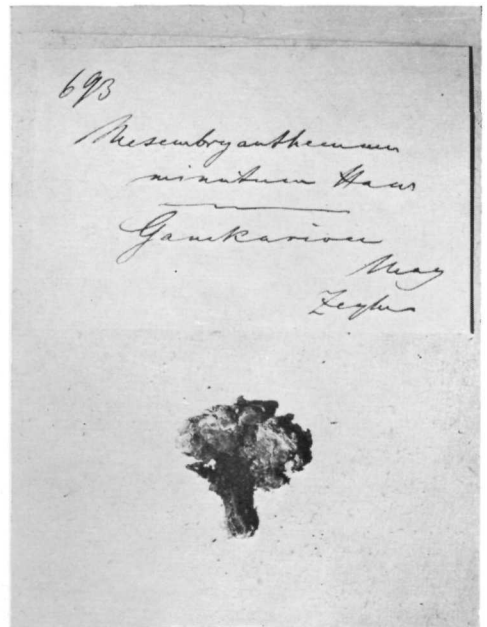
Ruschia pygmaea

Four illustrations accompanying Dr. Bolus' article.



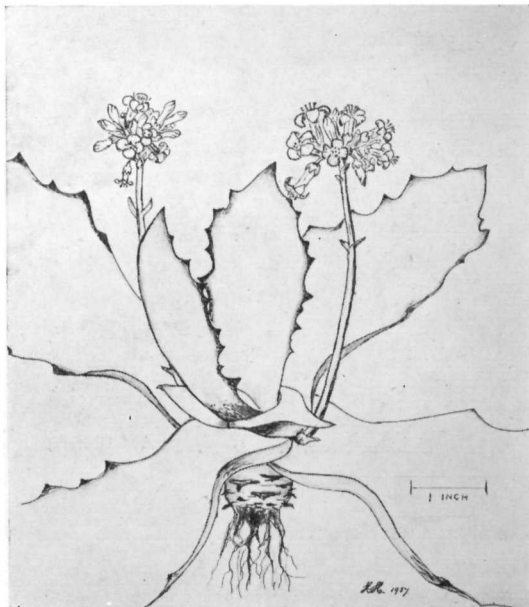
Mesembryanthemum fimbriatum

Dr. L. M. Bolus



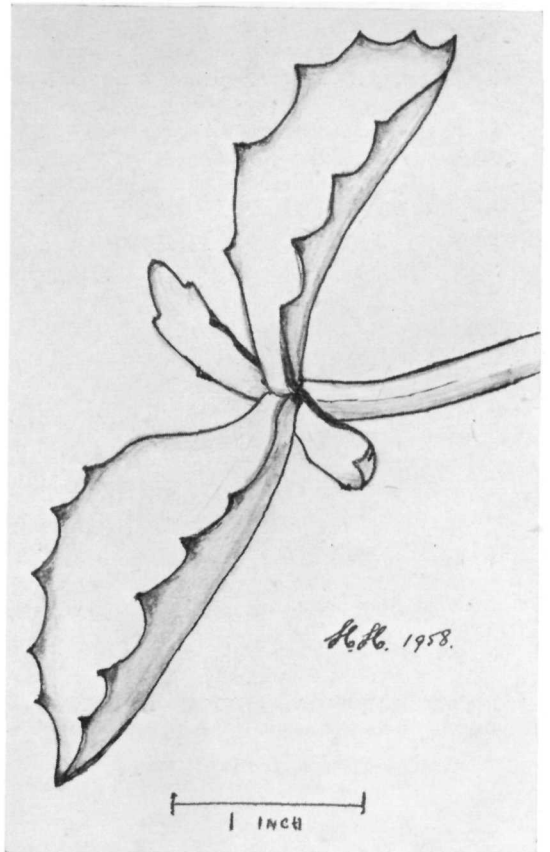
Conophytum fimbriatum

Dr. L. M. Bolus



Kalanchoe synsepala

H. Hall

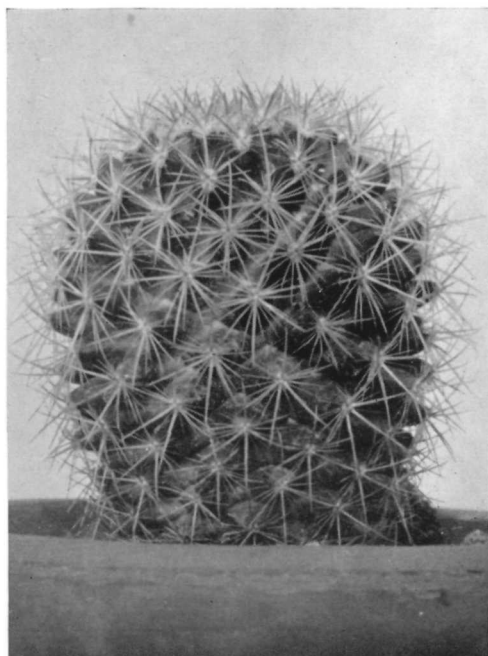


Kalanchoe synsepala (vegetative shoot)

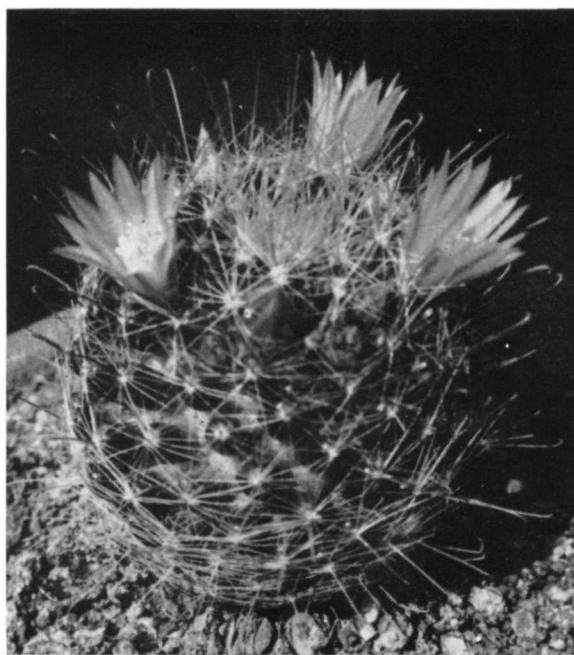
H. Hall



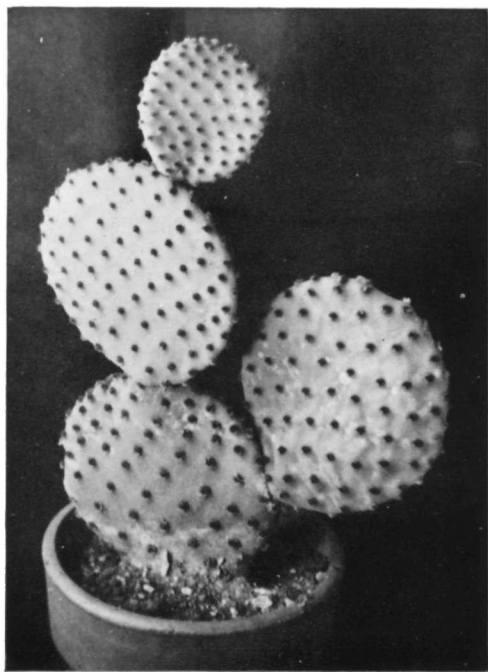
A. *Chamaecereus silvestrii*



B. *Mammillaria rhodantha*

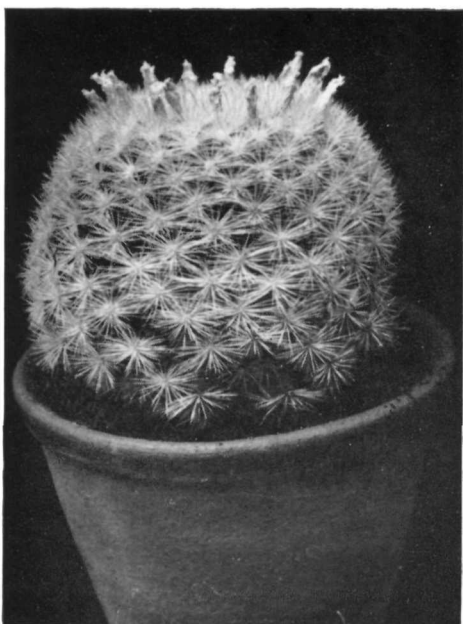


C. *Mammillaria wildii*

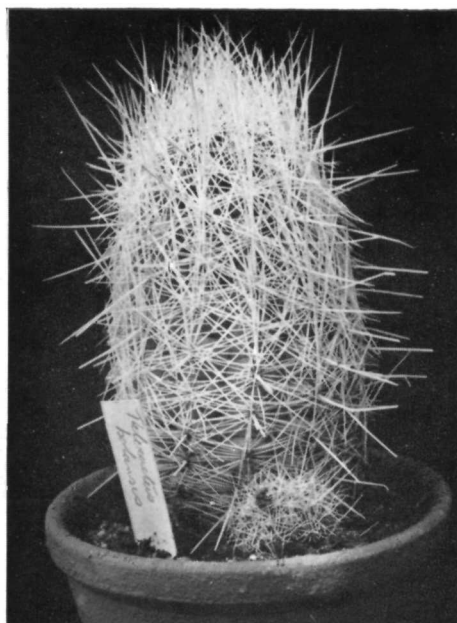


D. *Opuntia herfeldtii*

Illustrating the article by Miss Martin.



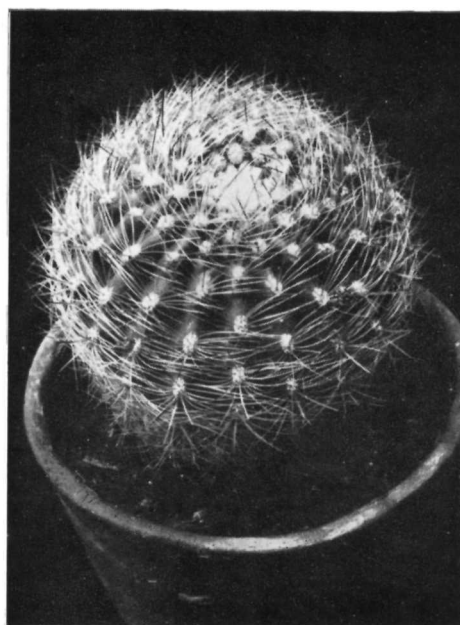
Mammillaria candida



Thelocactus bolansis

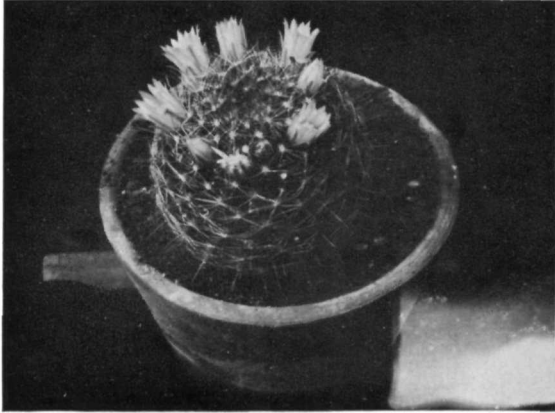


Opuntia diademata

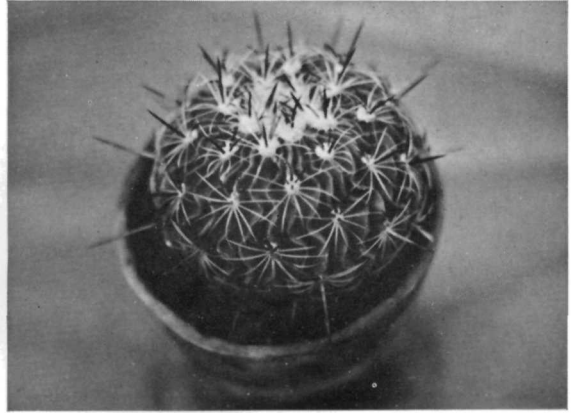


Matucana haynei

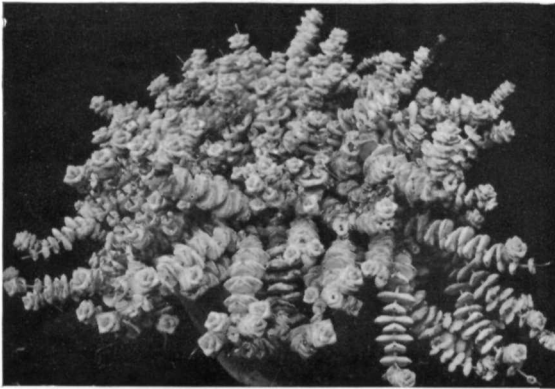
Four illustrations by Mr. A. S. Jones



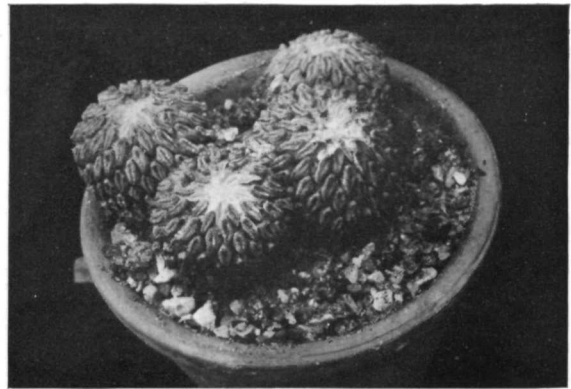
Mammillaria pygmaea



Echinofossulocactus zacatensis



Crassula nealana

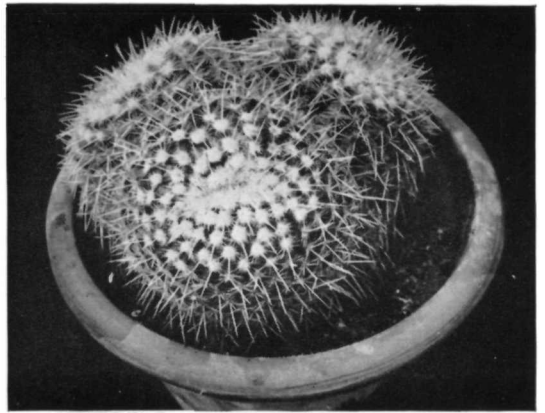


Pelecyphora aselliformis

Four illustrations by Mr. A. S. Jones.



Cotyledon wallichii



Mammillaria parkinsonii



Ariocarpus furfuraceus



Anacampseros ustulata

Four illustrations by Mr. A. S. Jones.



Fig. 1. *Cylindropuntia mortolensis*



Fig. 2. *Cylindropuntia mortolensis*



Fig. 3. Senor Riviere in his garden

Ramon Battles

Illustrating Curt Backeberg's article.



Fig. 4. *Opuntia vulpina*

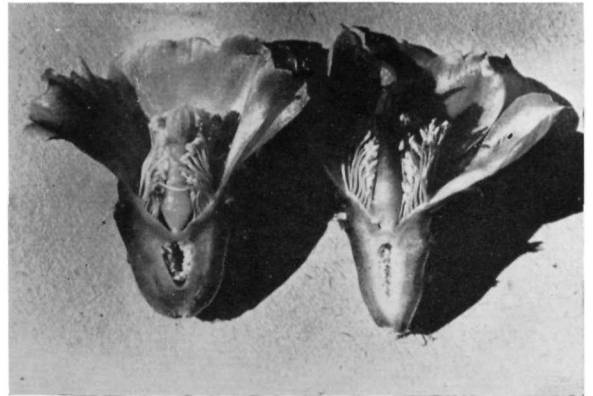


Fig. 5. Left : *Opuntia sulphurea* Right : *Opuntia vulpina*

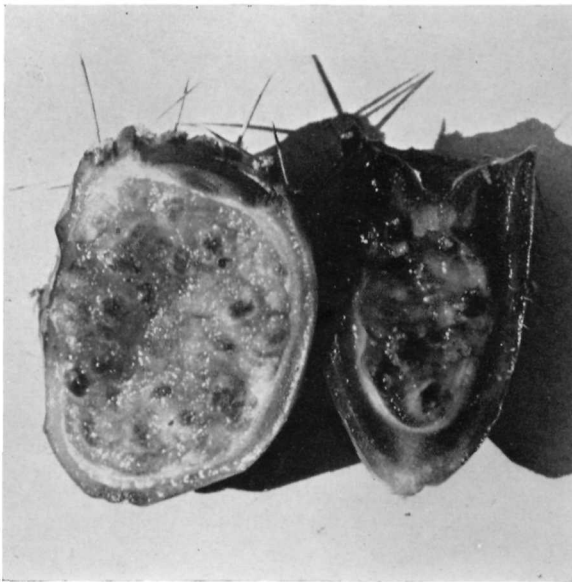


Fig. 6. Left : *Opuntia sulphurea* Right : *Opuntia vulpina*



Fig. 7. Senor Riviere and Curt Backeberg

Illustrating Curt Backeberg's article.

SIMPLE PLANT PHOTOGRAPHY

By MARGARET J. MARTIN

Most articles on plant photography start off by gaily assuming that the reader has a double-extension plate camera, not to mention a battery of photofloods and a spotlight. This is rather discouraging for the owner of a box Brownie who wants to take the occasional photograph of a plant in flower, or a newly-acquired treasure.

However, with a little care and a close-up lens, it should be possible to get a nice full-plate print of one's *Epiphyllum* in flower, using a simple camera, which, if not a work of art, will be a good record of a happy event.

One of the great beauties of cactus photography is that plants are static. The plant can be suitably placed on a rigid support (a pile of telephone directories can be pressed into service), and this eliminates "camera shake," the ruination of many a promising snapshot.

I have found that a two diopter close-up lens is the most useful for plant photography. When purchasing the lens it is advisable to buy also a piece of ground glass. This can be placed in the back of the camera, in place of the film. Although lenses are sold with a table giving the focal distance of the lens for definite camera settings, it is better to check this result by focusing on a small, brightly illuminated object and carefully examining the inverted image on the ground glass screen, with a magnifier. The position of maximum sharpness should then be measured. For a fixed focus camera it is essential to do this as the distance at which the camera is focused is rather indefinite.

When taking a specimen plant it is essential to eliminate any disturbing background. A piece of hardboard, a yard square, makes a good background. It can be painted either black or white, depending on personal taste and paint available. Flat paint, such as undercoating, is best as it is less likely to reflect unwanted light than a glossy paint.

If using a very simple fixed focus camera, the plants must be taken out of doors in a good light, but since many succulents only open in sunlight, this is not such a great disadvantage. However, if the cactus owner is the possessor of a focusing variable speed camera, such as a folding Kodak, there is much more scope. This type of camera usually has a socket for a cable release, and this is most useful since the shutter can be released without touching the camera, thus ensuring that there is no chance of it moving due to a stiffish shutter.

With a variable focus and aperture camera it is advisable to use the smallest aperture in order to obtain the maximum depth of focus, i.e., to have as much of the plant as possible sharply focused. In this case it is of course necessary to give a lengthy exposure. Since the slowest speed on my camera is 1/25th sec., when using outside lighting I set the shutter on "B" and simply snap it on-off, with of course a cable release. Non-flowering plants I often take at my leisure indoors during the evening. I find that 10 secs. in our room lighting gives quite satisfactory results. But these things can only be found out by trial and error. The advantage of using artificial light is that it does not vary and once you have hit on the right conditions, you can be certain of getting good photographs each time.

If the amateur photographer should wish to experiment with more elaborate lighting arrangements, it is quite simple to make a couple of photographic lamps using ordinary 100 watt bulbs, arranged in some sort of holder, such as large tins. This arrangement will give increased scope, enabling side and back lighting effects to be tried out. This is particularly useful for showing up petals and delicate spine formation. By using only one such lamp and a small hand mirror as a reflector, interesting results may be obtained. However, these arrangements are only for the more experimentally minded, and those who just wish for a record, with the minimum of trouble, need not bother with them.

When working at short distances there will be errors due to parallex unless great care is taken. This is because the view finder and lens of the camera look at the subject from slightly different positions. Unfortunately under these conditions, the view finder of the camera is not reliable and the plant must be placed on the axis of the lens, i.e., exactly in line with it. A ruler or some similar straight rod will ensure that this is so. Since the definition of the lens tends to be less good at the edges, especially when a close-up lens is fitted, it is important to have the object in the centre of the negative.

I find that medium speed panchromatic film, such as Ilford F.P.3, is best for plant photography. This will enable considerable enlargements to be made without any "graininess."

Continued on page 97

IMPORTANCE OF PINYA DE ROSA

By CURT BACKEBERG

I know "Pinya de Rosa," the beautiful property of Senor Fernando Riviere de Caralt of Barcelona almost from the beginning, since those days when the far-sighted proprietor began to give this formerly semi-arid valley its present face, conserving the old forest on the high elevation of the southern ridge where I had the pleasure some weeks ago to look, with Mr. & Mrs. Shurly, over the picturesque coast of the Costa Brava; at our feet the little valley, once dry and waste, now a paradise of vineyards around a phenomenon of open-air succulent gardens in the centre, a palm-sided basin reminiscent of the days of the Moors; shady ways down to the sea where an elegant bathing house waits for the astonished visitor, with auto ways for those who want to look down on this nearly incredible creation of a man with good taste and an open mind for the beauty of exotic plants.

Pinya de Rosa shows the visitor that here the nearly impossible has become a fact. This is no exaggeration. One must see the great "fan garden" of flowering *Mesembryanthemaceae*, only shrubby species, to be convinced that a plantation, once deemed to be impossible, now surpasses the imaginative faculty of what can be done in this line. This is really a flood of flowers, a wonder of colours, a realisation of what is possible with these incredible plants.

But I am a cactus man and let me talk about cacti only. And here we have the incredible—a garden of *Opuntias*.

Opuntias—there are only a few even among cactus fans who like these plants, because, in northern countries, we are nearly always unsuccessful in growing them to flower and fruit. But having seen this *Opuntia* garden of Pinya de Rosa growing under ideal conditions, everybody will say: "Incredible—this is the most beautiful display that is possible in the fantastic clan of cacti." Here you see—separated into their dominant forms, globular, cylindrical, platyopuntoid species—that these form groups are three sub-kingdoms of marvellously flowering plants with enormous richness in flowers of vivid colours and, later, with their ornament of thousands of coloured fruits.

Here is shown the enthusiasm of a garden fan, of a man who likes plants and the beauty of an exotic flora. Now a few words about the scientific importance of Pinya de Rosa and its cactus plantations. For the last three years I have gone there to study these beautiful, but difficult plants, difficult for a man who must write a handbook about these plants when he has not seen them as they can be seen at Pinya. I can frankly say that much of my work in this line would have been impossible without my studies in Mr. Riviere's garden, without having seen his rich material of flowers and fruits. To him the cactus author must be thankful for here, many years already, every effort has been made to bring together all species which can be obtained. One must hope that, in the interest of cactus science, these efforts of Senor Riviere will find a world-wide echo and the most active support of all who are able to contribute to the completeness of this unique systematic garden in the sphere of *Opuntia* research work.

Some examples to show how important this is and of some results achieved at Pinya. In the *Cactus and Succulent Journal of America*; 1936; pp. 51–54, Mr. J. Whitehead of the Boyce Thompson Arboretum, wrote that "*Opuntia mortolensis* Br. & R. is nothing else but *Opuntia leptocaulis longispina*." Of course, this must be a long spined plant and there are plants with spines of a length of 4 cm., brownish (the variety with spines of the same length, but straw yellow is v. *vaginata*; there is a variety with three coloured spines which needs a name too.) But *Cylindropuntia mortolensis* (Br. & R.) Knuth is an entirely different plant with grayish green branches, with red spots below the areoles, as are found in some South American *Opuntias* and with hairy areoles at first, the spines shorter. The photo shows a rather low plant with its characteristic branching and a macrophoto of the youngest branches with curly hairs from the areoles. the youngest with about four spines; the longest remain, the others mostly disappearing later. *C. mortolensis* is a very good species and it has to be supposed that Mr. Whitehead had not seen the true plant which was first sent by Mr. Alwin Berger to Dr. Rose from La Mortola. a garden that had once the importance of Pinya de Rosa, but is surpassed today by the *Opuntias* of Pinya.

Another example: *Opuntia vulpina* Web.: Britton and Rose placed this species in the synonymy of *O. sulphurea*, Spegazzini, in his first description in "Cactacearum Platensium Tentamen" 519; 1905, said that the joints were darker green in colour, thinner, spines longer, fruit globular-pyriform, nearly dry, later violet, no smell. In "Nuevas Notas Cactologicas" 30, 1925, he said that *O. sulphurea* and *O. vulpina* are two different species, in that *O. sulphurea* had green fruits when mature, seldom with a reddish tinge, always nearly dry, with an intensive smell of pineapple; *O. vulpina* has violet fruits up to 3.5 cm. long without smell and rather juicy.

I observed that sometimes the data of Spegazzini is not quite reliable. "Nearly dry fruits" would be extraordinary. In Pinya de Rosa we observed the two plants in flower and fruit. They are rather different in these characteristics, but the joints are different in that those of *O. vulpina* are more oblong and—as Spegazzini said—thinner. I have not seen the green fruits of *O. sulphurea* when mature, but only of a light colour with a little reddish tinge and without the smell of pineapple, but globular, as it is said for this species. Perhaps Spegazzini had not observed well, or green fruits were extraordinary, as "dry," for the fruits I have seen were juicy as is normal, pulp of light undefinable whitish grayish colour, thin skinned. The fruit of *O. vulpina* was oblong turbiniform, thick skinned, purplish inside.

But the greatest difference is in the ovary and style: *O. sulphurea*; with roundish ovary and white style. *O. vulpina*: more slender, resp. longer, with oblong ovary and style which is light below, above dark rose, and the stigma lobes have the same colour. Both fruits are odourless. Maybe the fruit of *O. sulphurea* has a slight smell when extremely mature. I wonder why Spegazzini did not observe these differences.

It was an advantage that Pinya de Rosa gave me the opportunity to ascertain such differences which, I believe, are here reported for the first time. And I am very obliged to Mr. Riviere for the opportunity of observing many other interesting details in *Opuntias* which would have been impossible without studying this extremely rich collection in flower and fruit.

Opuntias have been for centuries, and still are the main symbol in the coat of arms of the old Aztec country, Mexico. At Pinya de Rosa it seemed to me that an *Opuntia* could well be the heraldic figure of the proverb "Per aspera ad astra."

We hear astonishing facts about these plants when they run to seed in the wild and that their diffusion is a catastrophe for some districts of South Africa and Australia, but previously I could not imagine this could be. At Pinya I learned how this was possible.

In Volume one of my handbook I have shown the *Opuntia* garden of Pinya de Rosa just after the great freeze two years ago. Fig. 3 shows this garden two years later, without the large specimens (not seen in the photo.) as f.i. *O. ficus indica* which had been frozen down to the soil, but has re-grown within two years to arborescent size! This was, even for me who has seen so much of *Opuntias*, a surprising phenomenon. Unfortunately, in Australia and Africa, species of less beauty have grown wild by their extraordinary power of growth. This is bad for those countries; seeing the re-grown plants at Pinya de Rosa, it seemed to me just the contrary, a symbol of "Per aspera ad astra," as I said before, a symbol of strong hardiness that overcomes all the bad moments in their life, at the pleasure of their owner, of the visitor and of the botanist who occupies himself with the study of these plants which represent in flower—when planted as numerous as at Pinya de Rosa—one of the greatest wonders in the kingdom of plants.

SIMPLE PLANT PHOTOGRAPHY—continued from page 95

Photograph A was taken in the garden using a Kodak Junior II plus a 2 diopter close-up lens. The background was a piece of black-painted hardboard. An aperture of f32 was used and the shutter just opened and closed.

The photograph of *Mammillaria rhodantha* (B) was taken using an Elioflex. This is a variable focus camera, very similar to the Kodak. The plant was placed on the radiogram and the cream wallpaper used as a background. Since the wall was about a foot from the plant, the self-coloured pattern is so completely out of focus as not to be visible. The lighting was the overhead room lighting, which was a 100 watt bulb.

(C) *Mammillaria wildii* was taken with a 35 mm. camera (a Paxette) using a close-up lens. The camera was hand-held at the correct distance, and the exposure 1/50 sec. in sunlight.

(D). This is an example of what can be done with one of the simplest types of camera: a Brownie 127. A supplementary lens of 2 diopters was necessary in order to obtain a large enough image. The focusing distance was about 18 ins. Since with this camera the only speed is "instantaneous," probably about 1/25th sec., the photograph had to be taken outside in bright light.

SUCCULENTS AT CHELSEA FLOWER SHOW, 1958

By GORDON ROWLEY

A sober London Daily described this year's R.H.S. Spring Show as "the biggest and best in horticultural history." Whether this is true or not, it is extraordinary to find in so vast a marquee only two trade stands devoted to succulents and no stand or stall by any of the Societies. Perhaps dealers can already sell more plants than they can grow without resorting to advertising: perhaps they value their plants too highly or have not the time and labour to put on a four-day show. However, having voiced my main grumble at the start I can go on with nothing but praise for the succulents that were on view—they deservedly attracted some of the biggest crowds in the show.

Pride of place must go to Sir Oliver and Lady Leese who justly earned their Gold Medal for a 40-foot naturalistic desert planting in which the Old World succulents occupied one end and those from the New World the other. Magnificent, unblemished *Trichocerei* and *Cereus jamacaru* soared to nearly 15 feet; some *Euphorbias* were not much shorter. Globular cacti were arranged in clumps, one of 28 *Echinocactus grusonii* and another of 21 *Notocactus leninghausii*. Splashes of colour were provided by a fine *Aporocactus flagelliformis* as centrepiece, *Rhipsalidopsis rosea*, *Echeveria* 'Worfield Wonder' (*E. derenbergii* x *setosa*) and a lovely array of hybrid *Epiphyllums*, including many of Mr. McQuown's attractive 'London' series.

Mr. Gilbert of Romford also used *Epiphyllum* hybrids to advantage as centre-pieces for his small but attractive stand. Here we saw *Opuntia basilaris cordata* and many *Mammillarias* and smaller succulents in bloom. It was clear that he was catering especially for the needs of the new convert and small grower, and among his varied selection of small pots fringing the exhibit one could have made up the ideal beginner's collection.

In complete contrast to both these trade stands was the succulent corner of the combined exhibit of the German Horticultural Societies. Here was a novel mode of presentation aimed at setting off the geometrical patterns and colour contrasts of cactus seedlings, which were grouped in squares and rectangles against a fine peat background. Everything was superbly trim and neat: regiments of *Lemaireocerei* and *Pilosocerei* marched into battle with bayonets fixed. Large circular bowls contained specimen plants ablaze with blooms. The overall effect was original and very striking.

Many isolated succulents featured among the stands devoted to rock and alpine plants. A Lindley Silver Medal was well earned by Mr. A. G. Weeks for his wonderful display of hybrid *Lewisias* in delicate shades of pink, cerise and apricot.

A lone plant of a pink *Nopalxochia* hybrid from Mr. F. T. Murphy graced the section for small exhibits from Fellows.

I could not get near the Flower Arrangement tent for crowds until early Friday morning, by which time many of the blooms had a rather tired look. Not so the succulents, which figured in several items. The flower-like rosettes of several *Crassulaceae* were used to great effect.

Finally, I must come down to earth with a jolt and mention Root-knot Eelworm (Nematode). This has been much in the news lately, and a stand put up by the Rothamsted Experimental Station in the Scientific Section showed examples on roots of *Crassula* and *Ferocactus*, with details of life history and control methods.

THE I.O.S. IN BRITAIN

The great exhibition staged at the Royal Horticultural Society's hall in September, 1955, in connection with the Third Congress of the International Organisation for Succulent Plant Study must have been an introduction for many to the work and aspirations of the I.O.S. This was not just another show of prize plants—albeit the biggest of its kind in England—but provided, for those interested, an insight into activities behind the scenes: the collecting of succulents, their naming and documentation and their place in the world flora today. Some took advantage of the occasion to meet the "big names in succulents" in person, and to hear them in action at the Congress lectures and discussions. Of course, the ninety and nine who treasure a few pots of succulents on their windowsills claim no interest in the scientific side of the hobby, but happily there is always a small minority thirsting for new knowledge, and it is through them that the study advances. It is for these enthusiasts whose interest goes deeper than just a pretty flower on a pretty plant that the I.O.S. exists. It is decidedly not just another Society: membership is by invitation only, and from a central Secretariat in Europe new candidates are voted upon by international ballot and the results confirmed at the congresses, which since 1951 have been held biennially in Zurich, Monte Carlo, London and the Hague. A country may be represented by a single national delegate or by a group of members forming a national section. Thus the British Section has as members Mr. J. D. Donald (National Delegate), Mr. R. S. Byles, Mrs. V. Higgins, Mr. G. D. Rowley and Mr. E. Shurly. Meetings are held in members' homes at intervals throughout the year as opportunity and activities require, and guests may be

invited to contribute to discussions, which usually centre around members' plant specialities.

Beginning this summer is a new venture to hold conversaciones at the R.H.S. for the reading of papers or technical discussions not possible at Succulent Society meetings. Guests will be invited but these conversaciones will not be open to the public.

The British Section has so far led the way in publications, which include the annual Repertorium of new names in succulents and two valuable reference works by Mr. Shurly and Mr. Donald. These deserve mention in some detail.

The Repertorium Plantarum Succulentarum appears each year and lists all newly proposed names likely to interest students of succulents. These are classified under families and further subdivided as new descriptions or new combinations. The first issue (now unfortunately out of print) was sponsored by the National Cactus and Succulent Society and appeared in 1951; from 1952 to 1954 the I.O.S. British Section took over the burden of publication expenses and in 1955 Mr. F. Riviere de Caralt paid for the whole edition on behalf of the I.O.S. At the Hague Congress in September, 1957 an important decision was taken to couple I.O.S. membership with that of the I.A.P.T. (International Association for Plant Taxonomy), an international body catering specially for all concerned with the naming and classification of plants. The firstborn offspring of this happy marriage has been the Repertorium in its new form as one issue of the I.A.P.T. Regnum Vegetabile series, in which guise it will become more widely distributed and more permanent. Since most of our problems concern the application and interpretation of plant names, here is an obvious step forward in getting up-to-date information on nomenclature to those who most need it. Something like 300 new names appear every year for succulents alone: many of them published contrary to the Code of Nomenclature or—to put it mildly—on slender foundations. The Repertorium makes no attempt to correct mistakes and supply deficiencies, but it does indicate where all these names may be located and judged on their own merits.

Searching for references and descriptions occupies much time as soon as one tends to specialise in any particular genus, and how often have we wished for a simple handlist giving the necessary facts and figures in easily accessible form! That need has now been met in the case of two cactus genera by the two mimeographed reference works mentioned earlier, that is:—

“A List of Specific Names and Synonyms of Mammillarias,” by E. SHURLY (with supplement) 1952-3 (15/-).

“A Rebutia Reference and Synonymy,” by J. D. DONALD 1954 (Out of print).

The former deals with no less than 1,173 names published under *Mammillaria*, and represents a lifetime's work of documentation condensed into 57 sheets. It is indispensable to *Mammillaria* enthusiasts and should be in every reference library having a horticultural or botanical section. The same can be said of Mr. Donald's index to the *Rebutinae*. Here the author has also included a review of all the genera or subgenera associated with or segregated from *Rebutia* K. Sch. and much bibliographic information concerned with their distentanglement. Although out of stock at the moment, it may be reissued or revised before long in view of the growing interest in these already popular miniatures. Those interested in the Repertorium past issues, at 10/- each, and in the *Mammillaria* index should write to Mr. J. D. Donald, “Villetta,” Wicklands Avenue, Saltdean, Sussex.

One aim of the I.O.S. as yet unfulfilled is an international journal in which members can find outlet for their scientific articles and discussions. Funds have not made this possible in Europe yet, although the enterprising Japanese Section has just made a start with “Succulentarum Japonia” under the editorship of Mr. H. Oku. A first step towards the ideal will be the publication of the papers delivered at Congresses in a collective volume: the Dutch Section has this matter in hand concerning the 1957 Hague Congress reports.

FALLEN BY THE WAYSIDE—OR, HOW NOT TO POST A CACTUS

A kind friend in the Channel Islands recently offered me his *Pilosocereus lanuginosus*, a magnificent flowering specimen which after forty years had outgrown the available space in his glasshouse. In due course a stout, coffin-like wooden box was made to measure and the plant unpotted, wrapped and floated in it in a generous swathing of wood wool. The final packing looked fit to stand the journey to anywhere in the world, and did great credit to the packer—the more so since he is a nonagenarian. However, on opening the box I could have wept at the sight that revealed itself. The top quarter was a shapeless mass of pulp, and all that remained after surgery with a carving knife was an ugly stump—a headless ghost of departed glory, never to return on this earth.

Less than a fortnight later I saw exactly the same thing happen in a friend's collection. Here the victim was a fine tall column of *Euphorbia canariensis*, marred for life by bruising at the growing tip. The moral of this sad little story seems to be that, when packing large and heavy succulents, extraordinary rather than ordinary care is needed. In particular the apex must be protected from damage when the crate is turned upside down and bumped around. A good way is to tie the plant securely to one or more stakes, using ample wadding to protect the spines, and allowing the stakes to project beyond the tip so that it cannot be crushed against the end of the box. Perhaps some readers have already suffered similar experiences in sending plants by post: I relate this in the hopes of sparing others a similar fate,

THE MEANING OF pH

By W. F. MADDAMS, M.Sc., A.Inst.P.

A survey of recent books and periodicals on cactus culture reveals a liberal use of the term pH, but it is evident that the significance of this quantity is not widely understood, beyond the rather vague appreciation that it is related to acidity or alkalinity, usually of a compost. Although the term pH was originally defined for scientific purposes, it is a particularly useful entity for assessing certain properties of composts and allied materials, so that a simple explanation for the non-technical reader should be of value.

Reduced to fundamentals, the property of acidity is due to the presence of an excess of what are known as hydrogen ions, denoted by H^+ . Similarly, alkalinity results from an excess of hydroxyl ions, written as OH^- . When equal numbers of both ions are present, as in water, the substance is neutral. Further, it is known from scientific studies that the ionic product of concentrations of hydrogen and hydroxyl ions in aqueous solution is constant. This simply means that the concentration of one or other, if known, will tell us the acidity or alkalinity of the material in question.

In setting up a scale of acidity and alkalinity, a number of factors have to be taken into account. Clearly, the ionic concentrations present in water should be taken as a standard for fixing the point of neutrality, and preferably for fixing the scale on an absolute as well as a relative basis. We must also decide whether we are going to measure hydrogen or hydroxyl ion concentrations, and must also allow, as will be evident presently, for a very great variation in ranges of concentrations which will be encountered in practice.

At the beginning of the century, chemists decided to use the concentration of hydrogen ions as a measure of acidity and alkalinity, and they christened their scale pH, which is simply an abbreviation for potential of hydrogen ions. In order to cover the great range of concentrations involved, it was further decided to set up the scale on what is known technically as a logarithmic basis. This simply means a scale operating on a power of ten basis, that is, the change in acidity between pH values of 3 and 4, 7.5 and 8.5, 10.2 and 11.2, etc., is by a factor of ten. Similarly, pH changes of 2.0 and 0.5 indicate one hundredfold and approximately three-fold changes in acidity. For scientific purposes, it is of great value to know the absolute concentrations of hydrogen ions, although this is of little interest for succulent plant studies, and for reasons which need not concern us here, the pH value at the point of neutrality was fixed at 7.0. One slight disadvantage of the scale as we have now defined it, in so far as the non-technical reader is concerned, is the fact that it works on an inverse basis, that is for increasing acidity, the pH value decreases. The simple golden rule is that pH values of less than 7.0 indicate acidity, and values greater than 7.0 point to alkalinity.

Having defined a scale of acidity and alkalinity, we must next consider how pH values can be measured, and in the present context this means measuring the pH of a compost or a nutrient solution for soilless culture. Of the various methods available, one stands out for its simplicity, and involves the use of coloured indicators. These are substances that assume various colours, red, yellow, green and blue for various pH values, and booklets of impregnated strips can be purchased from chemical suppliers, such as British Drug Houses (B.D.H.) Two types of narrow range indicator paper, covering pH values of 5.5 to 7.0 and 7.0 to 8.5 will usually suffice. In the case of a nutrient solution, a strip of indicator paper is immersed in it, and the colour it assumes is matched against a series of colours whose pH values are given, printed on the cover of the booklet. Composts should be moistened and the indicator paper buried in them for about ten minutes before the colour is matched.

It is found that the pH values of cactus composts range from about 5.0 for one suitable for *Epiphyllums* to 8.5 in the case of a calcareous medium suitable for a plant such as *Mammillaria plumosa*. This means that the *Epiphyllum* compost is about three thousand times more acid than the calcareous one. However, large as this variation is, it seems quite insignificant when one considers such an everyday material as the acid in a car battery; this is approximately one hundred million times more acid than a neutral compost.

It will not be out of place to consider briefly the factors influencing the pH values of composts. It is fairly well known that chalk confers alkalinity on a compost, but it is not particularly efficient in doing so, as the pH value of a saturated solution in water is only 9.4. Wood ash, valuable as a source of potash, is much more powerful in this respect, as is slaked lime. Humus containing materials such as manure, leaf mould and peat are acid in character, because they contain substances known as humic acids. These are gradually formed as a compost ages, so that its pH value will slowly drop. This is troublesome when attempts are made to grow Cacti under strictly

controlled pH conditions to assess relative growth rates, but the tendency towards increasing acidity can be counteracted by the use of tap water.

It is not the purpose of this article to enter into the controversial field of suitable pH values for composts for various genera ; the interested reader will find ample material in Dr. Buxbaum's new book "Cactus Culture." However, by way of conclusion, one particularly interesting problem will be mentioned, namely the assimilation of iron by plant life. This is a question not confined to cactus culture, as those who have attempted to grow Azaleas on a chalky soil will have discovered. It is fairly certain that iron, in the form of ironstone or simple salts such as the sulphate, cannot be assimilated when the pH is 7 or greater, and the modern practice is to provide this element (and manganese) in a special organic form known as sequestered iron. These complexes seem to be effective at a pH value of 7, and there is ample opportunity for some original work in this field on species such as *Mammillaria erythrosperma*, which are alleged to benefit from rather more than the trace amounts of iron present in ordinary composts.

LISTS RECEIVED.

Wheldon & Wesley Ltd., Lytton Lodge, Codicote, nr. Hitchin, Herts.: a 132-paged printed list of books on natural history with over eight hundred items of botanical works including eighteen devoted to books on cacti and succulents.

B. Quaritch Ltd., 11 Grafton Street, London, W.1 ; a 74-paged printed list of books on natural history, including thirty on botany and allied subjects, and there is also a six-paged separate printed leaflet of books on cacti and other succulents.

R. Blossfeld, Schliessfach 152, Lubeck, Germany : a four-paged printed leaflet of cactus and other succulent seeds. Also lists of other kinds of plants.

Succulenta Nurseries, Suvla, Military Road, Hout Bay, Cape, South Africa : A fifteen-paged printed list of cacti and other succulents, mainly other succulents, also hints on cultivation.

Subscriptions are due 1st January, 1959, and if you want a reminder of the amount, it is 21/- per annum. Bankers Orders are available and save a lot of time as well as ensuring that renewals are made to time and without trouble to yourself. Even though they are not due till New Year's Day it will help the honorary treasurer, E. W. Young, 35 Castle Drive, Ilford, Essex, if you send on your remittance at your early convenience.

The Instituto Paranaense de Botanica, Curitiba, Parana, Brasil, have published List No. 36 ; 1957, giving a revision of the *Ficoideaceae* by Mr. H. Herre, Stellenbosch Botanical Gardens, South Africa. This revision states that *Mesembryaceae*, *Mesembryanthemaceae* and *Aizoaceae* are synonyms of *Ficoideaceae*. This revision separates *Ficoideaceae* into five Sub-families and gives in alphabetical order the names of the 134 genera making up the Family. The items also give useful information. I do not wish to decry the work done by Mr. Herre who is without the slightest doubt an authority of the first rank on South African succulents, but *Mesembs* have suffered more than most Families with revisions and I can only trust that Mr. Herre's revision will be generally accepted for a long time to come.



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1958

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Dec. 9th SLIDES. Plants in my Collection. Mrs. M. Stillwell. Table Show : Any Cactus.

1959

January. No Meeting.

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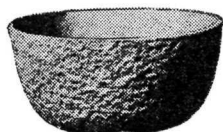
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