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ILLUSTRATIONS SHOWN IN BRACKETS

NEW DESCRIPTIONS IN HEAVY TYPE

THE CACTUS AND SUCCULENT JOURNAL OF GREAT BRITAIN

Established 1931

Vol. 24 FEBRUARY, 1962 No. 1

Contents

Published Quarterly by the Cactus and Succulent Society of Great Britain at 6 Colindale Avenue, St. Albans, Herts.

Price 2/6 Post Free 2/10

Strange the Printer Ltd. London and Eastbourne L8172

THE

CACTUS

AND SUCCULENT

JOURNAL

OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 24 *FEBRUARY, 1962* *No. 1*

FROM THE PRESIDENT

The present issue of the Journal is a little out of custom. I do not know why it did not occur to me in the past, but the first issue of the Journal is obviously at a time when readers are preparing for the new season and it is equally obvious that special cultural information would be welcome. Readers have already been advised that the publication date of the Journal has been advanced one month as from the beginning of 1962, so that the present issue appears in February and later editions will be in May, August and November. This was done so that members of the Society could get the free distribution seed list with the Journal. Seed is always ordered many months in advance of the new season, but members would hardly credit the difficulty of getting delivery of the seed, many of them ordered months before arrive even after the list has been sent out and, consequently, have to be included in the following year's list.

You will see that the present issue is almost entirely devoted to seed raising and cultural information and I trust that our readers will welcome it at this time of the year. I am sure neither Mr. Boarder nor Mrs. Stillwell will give you cultural indigestion because they have been good enough to contribute extra articles in this cause.

As explained on the appropriate page, an insetted list is included in the Journal to members so that it can be carried about more conveniently in the pocket, to the greenhouse, etc. With this list will be given instructions for ordering and we do hope that *every* member will adhere strictly to these instructions as the distributors, to whom we owe a great debt of gratitude, simply have not the time to deal with orders calling for something extra to the instructions.

Mr. S. W. Harris asked for the reproduction of an article I wrote in 1949 and as it deals with the same subject I have included it in the present issue. In his letter to me he pointed out that in the past the Journal has printed articles which, because they were so long ago, have never been read by members. He suggested other articles which will be dealt with in due course. This is a matter which might be useful to members and I am always willing to know whether any particular articles in old issues of the Journal should be reprinted.

By the time this issue has been received by you the Annual General Meeting will have been held and due praise will have been given to those members. as direct officials or otherwise, to whom we owe so much for the progress of the Society. I add my tribute to those of the members, but I would like to thank Mr. Boarder and Mrs. Stillwell for their constant and helpful contribution to the Journal throughout the past year. Both of them undertake other duties than those of contributor, each of them essential and useful to what the Society is doing and, in fact, I do not know how we should get on without them.

I hope readers will not forget the Society's booklet. We have sold over 70,000 of them, now about 75,000, but orders are still coming in showing there is still a demand and I trust every one will help the sales as from these sales members get so many advantages that could not continue for ever without such sales.

My wife and myself have had many kind enquiries how we have got on with our move to St. Albans. Thank you, one and all, we have settled down so far as the furniture and house is concerned, but weather, editorial duties, etc., have not yet permitted me to get my plants in order and they are much in the same condition as when the movers brought them here, but I trust that soon they will be in better order. E. SHURLY.

LIST OF CACTI SEEDS AVAILABLE. 1962

301 Ancistrocactus megarhizus
500 Borzicactus aequatorialis
501 Copiapoa grandiflora
306 Coryphantha vivipara
552 Coryphantha arizonica
553 Coryphantha neo-mexicana
307 Echinocereus primolanatus
514 Echinomastus intertextus
536 Echinopsis decaisneana
537 Echinopsis huoutii
309 Echinopsis kermesina
310 Echinopsis rhodotricha
554 Epithelantha micromeris
312 Espostoa mirabilis
517 Espostoa sericata
314 Eulychnia aricensis
502 Eulychnia iquiquensis
503 Eulychnia spinibarbis
318 Ferocactus rhodanthus
319 Ferocactus townsendianus
320 Ferocactus viridus
538 Gymnocalycium denudatum
518 Gymnocalycium knebelii
519 Gymnocalycium zanterianum
539 Gymnocalycium multiflorum
555 Homalocephala texensis
328 Islaya krainzianus
520 Leuchtenberbia principis
540 Lobivia bruchii
541 Lobivia formosa
542 Lobivia huascha
543 Lobivia longispina
544 Malacocarpus corynodes
545 Mammillaria albicans
515 Mammillaria candida
516 Mammillaria crocidata
521 Mammillaria elegans
522 Mammillaria fulginosa
336 Mammillaria geminispina
523 Mammillaria hahniana
339 Mammillaria karwinskiana
524 Mammillaria leona
509 Mammillaria melanocentra
548 Mammillaria melacantha
525 Mammillaria mexicensis
549 Mammillaria microcarpa
508 Mammillaria neopotosina
513 Mammillaria nunezii
526 Mammillaria perbella
510 Mammillaria pottsii
507 Mammillaria parkinsonii
528 Mammillaria rhodantha sulphurea
512 Mammillaria solisii
532 Mammillaria sempervivi
547 Mammillaria tetrancistra
347 Mammillaria zeilmanniana
511 Mammillaria zuccariniana
504 Mammillaria ziegleri
505 Neoporteria nidus
506 Neoporteria paucicostata
349 Neoporteria robusta
351 Neoporteria villosa
546 Notocactus graessneri
556 Ocotillo seed
354 Parodia macrancistra
529 Parodia sanguiniflora v violaciflora
357 Parodia suprema
358 Pfeiffera varigensis
527 Pseudolobivia ancistrophora
531 Pseudolobivia kermesina
530 Rebutia senilis iseliana
533 Rebutia senilis schieleana
534 Rebutia senilis stuemeriana
551 Sclerocactus whipplei
361 Stenocactus multicostatus
362 Stenocactus vaupelianus
560 Utahia sileri
364 Weberbauerocereus winterianus v australis

LIST OF SUCCULENT SEEDS AVAILABLE

639 Agave franzozinii
640 Agave stricta
697 Agave victoria regina
641 Aloe brevifolia
673 Aloe claviflora
672 Aloe humilis
674 Aloe microstigma
642 Aloe steudneri
643 Anacampseros telephiastrum
403 Antegibbaeum fissoides
675 Argyroderma brevipes
605 Argyroderma testiculare
676 Cyphalophyllum ceresianum
632 Cephalophyllum diversiphyllum
677 Cephalophyllum spongiosum
678 Cephalophyllum worcesterense
405 Cerochlamys pachyphylla
655 Chasmotophyllum nelii
407 Cheiridopsis candidissima
408 Cheiridopsis crassa
409 Cheiridopsis cuprea
413 Cheiridopsis scabra
679 Cissus juttae
656 Conicosia pugioniformis
626 Conophytum bilobum
680 Conophytum calculus
627 Conophytum elishae
628 Conophytum ernianum

629 Conophytum flavum
630 Conophytum frutescens
631 Conophytum wettsteinii
681 Cotyledon wallichii
682 Crassula perfoliata
416 Cylindrophyllum calamiforme
683 Dactylopsis digitata
657 Delosperma brunnthaleri
658 Delosperma echinatum
659 Delosperma mahonii
660 Delosperma saturatum
661 Delosperma steytlerae
684 Didymaotus lapidiformis
685 Dinteranthus wilmotianus
644 Dyckia brevifolia
686 Ebracteola montis-moltkei
645 Echeveria carnicolor
662 Echinus apiculatus
419 Enarganthe octonaria
646 Euphorbia avasmontana
647 Euphorbia officinarum
423 Gibbaeum geminum
621 Gibbaeum haagei
622 Gibbaeum heathii
424 Gibbaeum pachypodium
623 Gibbaeum petrense
624 Gibbaeum pilosum
425 Gibbaeum schwantesii
633 Gibbaeum shandii
625 Gibbaeum velutinum
648 Haworthia papillosa
688 Hereroa odorata
620 Herreanthus meyeri
689 Juttadinteria albata
649 Kalanchoe faustii
650 Kalanchoe marmorata
651 Kalanchoe pubescens
669 Lampranthus aurantiacus
668 Lampranthus falcatus
607 Lithops bromfieldii
610 Lithops comptonii
606 Lithops divergens
600 Lithops divergens v nuwefontein
431 Lithops erniana
612 Lithops farinosa
611 Lithops framesii
433 Lithops fulleri
617 Lithops fulviceps
616 Lithops halenbergensis
601 Lithops insularis
614 Lithops kuibisensis
619 Lithops lateritia
438 Lithops lericheana
603 Lithops lesleii
439 Lithops localis
440 Lithops lydiae
443 Lithops marmorata
442 Lithops marthae
444 Lithops mennellii
445 Lithops meyeri
618 Lithops mickbergensis
446 Lithops mundtii
602 Lithops olivacea
613 Lithops rugosa
449 Lithops salicola
608 Lithops schwantesii
452 Lithops triebneri
453 Lithops turbiniformis
454 Lithops urikosensis
615 Lithops villetii
609 Lithops viridis
604 Lithops weberi
690 Machairophyllum stayneri
455 Malephora crocea v. purpureocrocea
456 Maughania luckhoffii
663 Malephora lutens
664 Malephora thunbergii
691 Nananthus schooneesii
460 Odontophorus marlothii
461 Odontophorus primulinus
671 Oscularia pedunculata
692 Oophytum nanum
652 Oxalis carnosa
693 Psilocaulon rapaceum
463 Pleiospilos nelii
670 Prenia relaxata
653 Portulaca poellnitziana
634 *Rhombophyllum dolabriforme*
694 Ruschia approximata
418 Ruschia derenbergiana
665 Ruschia laxipetala
666 Ruschia piscodora
667 Ruschia uncinella
635 Ruschia vaginata
636 Semanthe lacera
695 Stayneria littlewoodii
637 Smicrostigma viride
468 Stapelia schinzii
469 Stoeberia littlewoodii
654 Tischleria peersii
696 Titanopsis fulleri
472 Titanopsis luederitzii
638 Trichodiadema rogersiae

Insetted in this issue of the Journal sent to members will be found another list of seeds. This s so that the insetted list can be carried about in your pocket, to the greenhouse, etc. With the insetted list will be found instructions for despatching orders for seeds and members are requested to carry out these instructions completely. It will be appreciated that the distribution of these free seeds to members is a huge task and if this is to be effected accurately and expeditiously it is essential that the instructions are strictly adhered to—it is not because the distributors object to answering points—they just do not have the time.

THE 1962 SEED DISTRIBUTION

A FEW HINTS ON CHOOSING SPECIES

By A. BOARDER

The list of cactus seeds available to members this year may hold one or two kinds which are not well known to members and so perhaps a little information on them will prove helpful, especially to newer ones. There will be no need to say much about some of the genera as they are very well known, but among some such as the *Mammillarias* are one or two which may present difficulties to beginners. Looking through the list of *Mams.*, I notice the following which I have never found easy to grow from seed and I advies beginners to leave these alone, they are : *M. leona*, *M. microcarpa*, *M. pottsii* (I think synonymous with *M. leona*), *M. solisii*, and *M. ziegleri*. *M. zeilmanniana* is one which can be flowered the year after sowing the seed. None of the other *Mams.* mentioned on list should present many difficulties.

There is only one *Notocactus* on the list and that is one of the more difficult ones, but one of the most attractive. The *Stenocactus* (should be *Echinofossulocactus*) are not difficult and are very interesting when about a year old. They then have very long curling spines from the growing centre and look unlike the adult plant. The *Rebutias* are too well known to need describing, and these are usually fairly easy to grow, flowering when quite small. The *Coryphanthas* on the other hand are rather slow to reach maturity and unless you have plenty of patience these are best left alone as it might be ten years before a plant flowers from seed. The *Ferocactus* are also slow to develop and one should realise that they reach very large sizes and are not likely to flower perhaps in the grower's lifetime. The *Gymnocalyciums* are very good as a rule and I find that they germinate well, not quick growers but I have flowered one species the year after sowing the seed, but this is exceptional. The *Lobivias* are a favourite plant of mine as they flower when fairly small and the colours are very attractive. You should find no difficulty in raising these from seed. The *Echinopsis* are also easily grown and seedlings soon make sizeable plants, the kinds listed are good ones, the commoner ones are not worth growing from seed as they are very prolific with their off-sets. The *Malacocarpus* are usually easy to grow and resemble the genus *Notocactus*. The genus *Neoporteria* are rather more difficult to rear from seed, but resemble a cross between a *Mammillaria* and a *Notocactus*. Some kinds will flower when small. The *Ancistrocactus* are like some of the *Coryphanthas* but with a central hooked spine, quite interesting to grow. *Borzicactus* are a tall growing genus which are not likely to flower until the plant is fairly large. They are, however, very attractive plants in a collection, helping to give height and having lovely golden and brown spines, not difficult to raise from seed.

The *Copiapoa* genus is an interesting one and the plants are rather globular to slightly conical. They form a thick mass of wool at the growing centre where flowers are produced, not a fast grower. *Echinocereus* are fairly easy to grow from seed and soon make nice plants. They can be flowered in from three to five years from seed. *Echinomastus* are another rather uncommon plant. They are generally small and globular with deep notched ribs covered with warts. The purple flowers are produced at the growing top of the plant. Not a plant for the beginner. *Epithelantha micromeris* is an old favourite but a very slow grower. They usually germinate well, but are rather difficult to get through the first three years. After then they give little trouble. They must not be over-watered at any time.

Espostoa are tall growing types with many fine hairs and coloured spines. A must in most collections, fairly easy to grow from seed, but not flowering until rather tall. *Eulychnia* used to be under the genus *Cereus* which gives an idea as to their growth which is often thin and spreading, something like *Echinocereus* to look at, quite interesting plants to grow. *Homalocephala* grow to a fairly large size, similar to *Ferocactus* with strongly hooked spines. They are very slow to reach maturity when raised from seed in this country, but make handsome plants in about five years. The *Islaya* is similar to a *Parodia* and these two genera are usually small seeded and not too easy to grow. The seeds must on no account be buried and, as the plants remain rather small, they are not quick growers. However they offer a challenge to the amateur grower. *Leuchtenbergia* is not as difficult to raise from seed as some might imagine, the seedlings look little like cacti, but then neither does the adult plant. The *Pfeiffera* are like *Cereus* with angled branching stems, quite a novelty in a collection. *Pseudolobivia* are rather similar to *Lobivias* and present no problems for the grower. The *Sclerocactus* were once included in the *Echinocactus* genus which will give a clue as to their shape and growth. The plants are usually globular, but may group and have purple flowers. The genus *Utahia* was also once in the genus *Echinocactus* but are a small type, globular with small yellow flowers, not an easy plant to raise from seed.

I have not been able to describe fully all the kinds offered on the list but have tried to indicate those which can be grown by beginners and those only suitable for experienced growers. Whichever kinds you try I wish you the best of luck.

WHAT TO GROW FROM SEED

By Mrs. M. STILLWELL

How many times have you glanced down an eagerly awaited seed list to be confronted with a long string of names that meant absolutely nothing to you? The purpose of this article is to try and give you a brief description of some of the less familiar ones that appear on the Society free seed list. All those I shall mention are quite easily grown from seed and will make nice size plants in a short time. They will also reward you with a fine show of flowers.

Cerochlamys pachyphylla is a fine, strong-growing stemless *Mesem.* with thick, chunky green leaves with a waxy coating. The flowers are a rosy purple on long stalks and appearing right at the end of the year when all flowers are welcome. This will always be a favourite with me.

Cephalophyllums are shrubby *Mesems.* which are said to be rather shy when it comes to flowering, but when they do oblige they produce some of the finest flowers of all the *Mesem.* family. One of the loveliest is *Cephalophyllum spongiosum* with vivid scarlet petals and bright golden anthers.

Conicosia pugioniformis, locality said to be unknown, is a plant full of interest. The erect stem branches sparingly. Its yellow flowers are from the lateral branches. While it is very easy to grow from seed it is not too easy to keep and seems rather short lived. The growing period is late summer and early winter. This is a plant that should be grown more in the hope of finding out more about it.

Cylindrophyllum calamiforme is a quick growing, very free flowering succulent with long finger shaped leaves, cylindrical as the name implies. An excellent plant for beginners to grow from seed.

Any of the *Delospermas* are soon raised from seed and most can promise a good show of flowers. Many have rough papillose leaves, which in themselves give the plant character. *Delosperma mahonii* has light violet flowers growing several together in a forked cyme.

Ebracteola (Malephora) derenbergiana has a thick tap root and bluish green leaves united into a long sheath. The flowers are a shining light pink. It is an asset to any collection. It has now been put into the *Ruschia* group. *Ebracteola montis-moltkei* has violet pink flowers.

Echinus apiculatus is one of the dwarf creeping shrubs whose leaves have a velvety appearance and are united a quarter to half their length. The old leaves persist for some time. Flowers are pink. Rather a slow growing plant.

Enarganthe octonaria is a shrubby *Mesem.* not too well known from Namaqualand. Short branching habit and a solitary flower, worth trying as something different.

Hereroa odorata was once known as *Aridaria odorata*. Branching glabrous shrub with delightful scented flowers which open at night. A pleasant asset to a summer evening. It should flower the second year from seed.

Malephora crocea var. *purpureo-crocea* comes from Cape Province and is of branching habit with crowded pale green pruinose leaves. It has a fine bright red flower and should be quite easy from seed.

Prenia relaxata is a low shrubby *Mesem.* with fleshy stems, bluish green keeled papillose leaves and light red flowers, in groups of three to five, rarely solitary.

Semanthe lacera is one of the larger growing shrubs, bearing rose red flowers in June and July.

Stoeberia littlewoodii is again another of the shrubby *Mesems.* The flowers are probably white. Cultivation as for *Ruschias*.

Smicrostigma viride is a little shrub that becomes woody with age. The leaf pairs are united at the base into a compressed sheath. The leaves are slightly three angled with a recurved top and a reddish terminal spine. The flowers are said to be pink.

Psilocaulon rapaceum has thick tuberous roots and branching jointed stems. Solitary white flowers.

Ruschia approximata is found near Montagu Baths and is described as a lax glabrous shrub, the upper surface of the leaves are somewhat concave and the apex is blunt and often tinged with red. The pink flowers are short stalked and solitary.

Antegibbaeum fissoides is a thick succulent plant forming clumps with somewhat unequal curved leaf bodies. They are some of the easiest to flower and fairly fast growers. They seldom miss a year without producing their lovely rose red blooms, even on very small plants.

Didymaotus lapidiformis is an extremely succulent stemless *Mesem.* and is usually classed as one of the more difficult ones. In appearance they are similar to a very small *Pleiospilos*. Slow growing and needs very careful watering and a bright sunny position. Not suited to beginners. It is not too easily flowered in this country.

Dactylopsis digitata is another plant best left to the experts. In their native habitat they are found on the edge of the salt pans near Van Rhynsdorp and, therefore, it is suggested that as an aid to their cultivation two per cent of kitchen salt be added to the compost. It is of course one of the choicer stemless *Mesems.* and should be kept dry during most of the summer.

CACTUS CULTURAL NOTES

By A. BOARDER

As this Journal will not have reached you until February, I expect that you have forgotten any new year's resolutions you made at the beginning of this year. I usually make one or two, but rarely have kept them for long. The most important one I made was to spend more time with my own plants and less travelling around the country helping other people. I had come to the conclusion that it was senseless to have a collection of plants which I was only able to handle, at the most, once a year. It is only when one is able to pick up an individual plant and examine it at close quarters that its beauty can be assessed. Also the fact that it has grown and flowered may be quite lost. I have sometimes found fruit pods on plants in my collection which I do not recollect having seen in flower. Whether I shall be able to keep the resolution remains to be seen. I have already accepted judging appointments for 1962, and it is still in December, 1961, as I write these notes.

In my last notes, October, 1961, I mentioned a speaker who had recommended a potting mixture of peat and sand in equal parts. I should, of course, have included the fact that fertilisers were added to this mixture. Sorry about that but this kind of thing is easily done when one types straight from thoughts without making any note beforehand. In passing I must say that I have used and recommended an equal mixture of peat and sand as a striking medium. I have used this for years now and my method is to place the pot of the mixture in a saucer and only water from that. The cuttings are placed in a sunny place and roots usually form quickly. I then pot up in my usual medium as I do not consider that the peat and sand will make a firm enough basis in which the plants can make firm anchored roots. I have also found that the peat holds too much moisture and another point which may be lost sight of is that peat has the ability of absorbing moisture from the atmosphere. I put some perfectly dried peat in the greenhouse after having weighed it. After three weeks it had increased considerably in weight through moisture it had picked up from the atmosphere. This proved that too much peat in the potting medium might cause some danger in the winter when the greenhouse temperature dropped rather low. My greenhouse was down to 30 degrees F. on the morning of December 28th, 1961, and this with an oil lamp and cable heaters. The outside temperature had dropped to 12 degrees F. and I have left on slight ventilation to assist the burning of the oil lamp. As everything was very dry I did not anticipate any trouble through the low temperature.

At this time of the year the question of repotting will crop up. Whether to or not must be the grower's own problem. There are many growers who do not believe in repotting cactus plants very frequently and leave some of their plants for four years or more without a shift. With my own plants I have liked to repot all young growing plants at least once a year and even more often if the plant has reached the side of the pot. With older plants it is perhaps not as necessary to repot as often as this. In 1961, I tried to repot all my plants, but the time factor put a stop to this. I only managed to repot a few of the plants and the rest must wait. Whether by luck or judgment it is quite noticeable that those plants which were repotted made much better growth than the plants which were not treated. Whether the whole collection is repotted is a matter for the owner of the plants, but there are sure to be some plants which can benefit from a move. Where a collection is rather large, running into well over five hundred plants it may not be possible to repot all the plants. The method to adopt in such a case is to look over the plants and deal with all those plants which do not appear to dry out as quickly as the others after watering. This is a danger signal and, if ignored, may mean the loss of a plant through the rotting of the roots. Next look for all those plants which have reached the side of the pot. These should be repotted as it is impossible to examine the soil in such a pot to see if watering is needed. If the plant in question is a tall *Cereus*-type it may become top-heavy through having out-grown its pot. Such a plant needs repotting.

I hope to deal with all those plants I was unable to finish last season. The use of plastic pots is still a problem. I find that generally they hold the moisture longer than ordinary clay pots. Whether this is any advantage for such plants as cacti is a debatable point. More care must be taken when watering such pots or there will soon be a coating of green algae on the surface of the soil. This can tend to make the soil unhealthy and later harm the roots. It can be argued that the clay pots will suit the plants just as well as long as more water is given, and with that idea I am inclined to agree.

I hope that many members are already taking special care of those plants which they intend to exhibit this coming year. It was rewarding to note that many fresh members showed some plants in 1961 and it is to be hoped that many more will have a go at the summer and autumn shows. When talking to some members I get the opinion that many do not yet appreciate the points I look for when judging. I use the method as recommended in the

R.H.S. rules for judging as far as practicable but I use discretion when considering some aspects of the task. What is required is a healthy well grown plant which shows every sign of life and traces of buds, flowers, fruits or dead flowers on such plants as one would expect to find on them. The plants should, as far as possible, be free from damage to body and spines. A healthy growth should be apparent from top to bottom but this does not mean that old plants should not show normal barking or natural discolouration at the base. I know that my own plants can show brown markings at the base in age, but I am sufficiently experienced to be able to tell whether this browning is natural or has been caused by bad growing at any period. Where such plants as *Mammillarias* have withered shrunken tubercles right at the base, this is perhaps natural with some species, but such a withered ring some way up the plant means that at some time the plant had a bad check. This would mean the loss of a few points.

In my search for the perfectly grown plant I have often to overlook a badly damaged imported plant. This has led to the belief that I do not like imported plants. This is quite wrong. I am always willing to reward an imported plant providing it is in perfect condition. So few imported plants reach this country in perfect condition. I am perfectly aware that a few favoured members are able to import good specimens of cacti from America and that they receive them in good condition. However that does not prove that all such plants reach this country in an undamaged state. I have seen too many in my time which have been anything but perfect. I have a good friend who is a dealer and grower importing many specimen plants from abroad. When ordering he used to make up to six plants of a kind, but found that every time he received four fairly good ones and two bad ones. The two were absolutely unsaleable and having seen some such specimens I realise that no self-respecting collector would give them house room. What then can the dealer do with such plants? If he keeps them for twenty years they will not have grown out of the damage by then and so they are a dead loss and an encumbrance. What the dealer has done is to order three of a kind and so get landed with one bad plant instead of two.

There is another idea which has been noised abroad and that is that I do not like grafted plants and that I usually pass them by when spotted during judging. If one examines the points allowed one will notice five points out of the twenty-five for "True to type". How can any points be allotted to a grafted plant for being true to type when no plant is grafted in nature. Then there are five points for difficulty of growth; if a plant is being sustained by another plant how can it expect to obtain points on the growth score. The only section of the points chart with which I do not agree applies to the five points for "Rarity." A plant can already have gained five points for difficulty of growth and if it also gets five for rarity it can have collected as many points as the absolutely perfect common species no matter in what condition it is as far as spines and general health are concerned. In my opinion it would be far better to allot five points for rarity and difficulty of growth together and so give the common well grown plant at least a fair chance of competing.

I have often remarked on the very fine cactus shows held in the past by the Bristol Cactus Society. I am now very sorry to announce that there has been a bad split in the Society and due to some disagreement between some of the members a group has broken away and formed a new society. This is to be known as the West of England Cactus and House Plant Society. At the outset I suggest that this is too big a mouthful for a society. I have never been happy about the length of our own title and would have preferred by far a simple title such as The British Cactus Society. Going back to the Bristol affair, I consider it a great pity that sufficient tolerance was not forthcoming to enable differences to have been overcome and so prevent the splitting up of what was one of the finest societies in the country. I would remind members that strength lies in unity and there is not room for two societies in Bristol. What is such a great shame is that many members are still bewildered about the cause of the split and as they have many friends in both camps they are the sufferers although innocent ones.

Seed sowing will be getting under way and there is plenty of time yet to get any seeds sown. Make sure that you are able to maintain a good temperature before sowing the seeds. I consider that this should be 70–75 degrees F. and then as long as the seeds were good and sufficient moisture has been available the seeds should germinate well. Do not sow too thickly and give some air as soon as some are up. Do not disturb until the cactus proper is forming on the cotyledon, and prick out when the seed cotyledon or food bag has been absorbed. By this time a good root system will have formed. If seeds are sown by the end of February the seedlings should be ready for transplanting by the end of May or June.

Give an occasional watering with Malathion to keep down mealy bug, but do not make this a regular practice. If you do you may assist in the formation of a race of bugs which are resistant to the Malathion. If no pests are seen do not use an insecticide. I still find that by rubbing Paradichlorbenzine round the inside of all pots when repotting I am able to keep root bug at bay. I still use a covering of peat at the bottom of my pots and boxes.

This peat retains moisture for the benefit of the roots during hot weather and also assists in drawing away surplus moisture from the base of the plant where it can become dangerous.

If you flower *Harrisia* plants always try to pollinate them so that fruits will form later on. I find the flowers are self fertile as a rule and the large highly coloured fruits are one of the most attractive sights in the greenhouse all the winter.

Start to water as soon as the weather is fairly mild and the plants show signs of new growth. Once watering is in full swing do not be afraid to give plenty of water to growing plants at a time and give no more until the soil dries out. Little sprinklings of water to a fair sized plant can do more harm than good, bringing all the fresh roots to the surface of the soil where they can be dried up. Make sure that the whole of the soil is wetted at each watering even if this means going over all plants a second time.

MAMMILLARIAS I HAVE GROWN *(continued)*

By A. BOARDER

M. falcata is given as a synonym of *M. magnimamma* by Craig. I bought my original plant from the London Garden Stores in 1928, and my present plant is a seedling raised from seed taken from the original. This plant is now quite large with several off-sets and it flowers very freely with large seed pods to follow.

M. fuauxiana is one of my favourite plants being so beautifully white and almost covered with spines. I have not found it a very quick grower however, but it is well worth trying for to add to the attractiveness of a collection. I raised my plant from Winter's seed in 1950.

M. fera rubra bears some resemblance to *M. rhodantha rubra*, but it has much more white wool at the growing point. The incurved red spines above this wool make the plant very handsome. My plant is from seed sown in 1947, and it has now formed a double head. For some time it seemed to stop growing, but has made new growth this last season and now appears to be going well.

M. fertilis is a plant I have almost completely forgotten. I see by my records that I had my first plant from Griffin in 1932, but I cannot recall its shape, etc. I have sown several batches of seed since then, but have no seedling plant except from 1961 sowing, which plants are growing all right.

M. fischeri is given as a synonym of *M. karwinskiana* by Craig. I raised my first plant from seed obtained from Endean in 1929. My present stock was raised from seed collected from this plant. The flowers are fairly large formed in rings near the top and the rather large red fruits add colour when the flowers have faded.

M. flava is supposed to be a synonym of *M. tomentosa*, but the plant I raised from seed is very similar to a very soft, long spined *M. spinosissima*. The white spines are long and almost soft to the touch and completely cover the plant. Whether this plant deserves a specific name or not I do not know as it is rather near to a *M. spinosissima*. I cannot find any trace as to where I obtained the seed but I think that it would be about six years ago.

M. floresii is another problem plant for me. I have sown some seeds of this plant, but cannot trace any seedling plant among my collection and so must surmise that none have been raised. I have a fine plant of this species which was sent to me by my good friend Mr. Churchman. It is an imported plant and, although I have had it about ten years, it does not make much new growth although remaining perfectly healthy. It is a simple type plant, but it has not yet flowered for me.

M. flaviflora appears in my seed sowing book but I have no plant of this species in my collection and so must have had a failure with the seed. I cannot trace any *Mam.* with this name and so it may be a wrongly named packet of seed I had.

M. flavovirens was raised from Winter's seed in 1933, and used to flower quite freely. My present plant is from seed saved from the original plant.

M. formosa has been raised from seed during the past ten years, but I cannot trace its origin. In the early 1930's I started a fine card index system which I still have. I have plenty of spare cards, but have not found the time to bring my records up to date. I keep trying to do this but somehow never get down to it.

M. fraileana is a real favourite with me. The lovely large white flower is really fine and once seen never forgotten, when the flowers first open they are a distinct pink, but the colour fades to almost white after a day or so. This is one of the difficult to grow hooked spined *Mams.* and bears a strong resemblance to *M. sheldonii*, *M. heeriana* and *M. swinglei*. It is a very slow grower and liable to rot off when young if given too much water. It grows rather tall and has large hooked central spines.

M. fragilis is the name used by Craig for what most of us know as *M. gracilis*. I suppose that there are few collections of cacti which do not possess a plant of this species. I had my first one in 1905, and, as far as I recollect, my present plant is part of this original plant. This plant is so prolific with its off-sets that dozens of young plants are usually to be found round the base of the plant. The flowers are not very large or significant and the plant does not form many seed pods as a rule.

M. fragilis pulchellus has a much wider white spine than the above but is otherwise very similar. The off-sets are freely produced and are very easily knocked off. Both plants have a few strong spines near the top of the plant when they become mature, but these are missing on the small off-sets.

M. fragilis v. minimi is a very small variety of the type and remains a miniature although producing as many off-sets. The top of each off-set is thickly covered with short brown spines snd altogether I consider this plant to be a very attractive one. I cannot find any trace as to where my plant came from.

M. fuliginosa is an upright growing type and so far my plants have remained simple. The plant bears some resemblance to *M. kewensis*. I raised my plant from seed in 1948, and the source was Winter. The seed pods often protrude the following season to the flower. An easy plant to grow from seed.

M. fuscata is rather similar to many of the *M. rhodanthas* and is a simple type. The fine strong spines have a reddish tinge and as there is some white wool at the growing centre this adds to the attractiveness of the plant. I see my original plant came from Taylor in 1929, and my present one is from seed saved from this plant.

LISTS RECEIVED

I have received a very beautiful set of Cactus Spoon and Fork from Stainless Developments Ltd., 65 East Barnet Road, New Barnet, Herts., which they supply in a red leatherette box for 11/6. These are of a size that are eminently suitable for cactus cultivation. This firm also supply stainless garden and other kinds of tools in great variety. They also supply widgers. Can be recommended to all interested in succulent plants.

Kaktimex, Fislisbach AG, Switzerland; a four-paged mimeographed list of cactus seeds.

J. Marsh, of Trows Lane, Castleton, Rochdale, informs me that he has obtained the British and Commonwealth agency for containers made by Les Jardins Riviera. From their list the containers are certainly useful and decorative.

K. Uhlig, Lilienstrasse 5, Rommelshausen, krs waiblingen, Germany; a nine-paged mimeographed list of cactus plants and seeds.

I have received a list from the Seedcommissie of the periodical "Cactusweelde" to which is attached a long and very interesting account of how to grow our plants from seed. I do not know if they supply these seeds to non subscribers, but subscription to "Cactusweelde" is well worth while. Their list indicates varieties that are not readily available and, therefore, have special value. If you understand Dutch their instructions for growing from seed are very well worth while. If you are interested write to the secretary of the Belgian Cactus Society:— F. Guldemont, Bollaertstraat 24, Lier, Belgium.

I have received a letter from Mr. T. A. Marshall of Gravesend in which he gives a very long list of *Mammillarias* which he states offset and flower in the axil. As already stated I am compelled to suspend my statements in regard to the divided areole of *Mammillarias* as I feel the subject needs much more careful study. The short duration of the time during which the site of the flower and offset can be accurately studied can cause incorrect statements (I am not stating Mr. Marshall is incorrect) and I am not prepared, at this stage, to comment further. Mr. Marshall also informs me that he has seen a *M. centricirrha* with two and three flowers per axil. Another interesting phase which Mr. Marshell comments upon is that an old tubercle of *M. bocasana* was rooted and now is a fine plant about the size of a golf ball. He also states that his *M. plumosa* got dry rot, but the loosened tubercles frequently rooted and have since grown.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

You will be reading these notes one month later than usual and it is hoped by then that the worst of the winter will be over. It was a severe test on our heating apparatus around Christmas time when the weather was so cold. I had all the electric tubular heaters going, plus three small oil stoves spread over the three houses, and even then found difficulty in keeping the temperature in the lower forties as the icy winds were so penetrating. Everything was kept bone dry and as far as I can tell at the time of writing everything has survived, although many look very shrivelled and in need of water, but it is better to be safe than sorry as any dampness when the temperatures are low can often prove fatal. Maybe that is the time when a polythene lining might prove beneficial and would conserve some warmth. There is always the danger that if the house is too tightly sealed with polythene the plants will suffer from lack of oxygen, as the extra stoves will be burning up most of it. I do not like the look of polythene in a greenhouse, so cannot speak from experience as I have not tried it, but for our plants I feel that it is better to do without it in the winter if you can possibly keep the heat up.

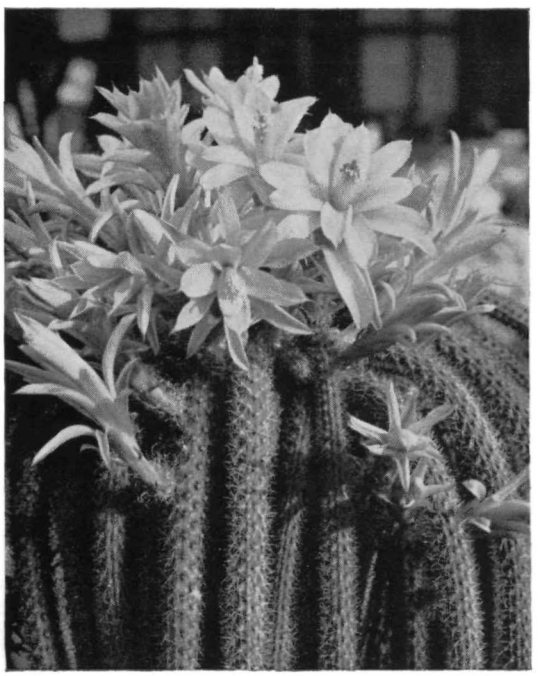
Many of the stemless *Mesembryanthemums* were still blooming well into December, including *Lithops*, *Conophytums*, *Glottiphyllums*, *Argyrodermas*, *Pleiospilos* and *Fenestrarias*. Several *Gibbaeums* were in bloom at Christmas, including *G. pilosulum*, *G. cryptopodium*, *G. shandii*, *G. perviride and Antigibbaeum fissoides* in bud. I had been watering them all through the autumn up to the cold spell. If you have a look at your *Pleiospilos nelii* about January or February, you will probably see some buds between the new pair of leaves. Just leave the plant alone and do not water it or move it until you see the flowers almost ready to open. This plant thrives on neglect at the beginning of the year. That is the secret of getting the rather temperamental flower buds to open. You can give it a little water if you wish when you are really certain the buds are advanced enough to ensure them opening. All other *Pleiospilos* should have made their new leaves, which are being nourished by the old ones and will, therefore, not require any water until towards the end of the summer. I shall give the *Conophytums* one good drink about March, as I always do. This consists of immersing the whole pot in water until the bubbles stop. You must ensure that the ball of the root gets really wetted. It is no good pouring a drop of water on top of the pot after a plant has had a longish period of rest as it will not drain away quick enough and will probably do more harm than good.

Monilarias should be kept dry from February when the leaves turn yellow and drop. Many of the *Lithops* flowered very late last year and in consequence were very late going to rest. It may be they will not be ready for watering quite so early. Do not worry if your *Lithops* during the resting period almost disappear down into the soil as they have contractile roots which pull them down into the earth to give extra anchorage and protection during the dry season. *Lithops* resent too much root disturbance and can be left in the same pot or pan for several years. Incidentally while on the subject of repotting, it is always advisable to wait until a plant has had its first watering before repotting for there is always the danger of damaging and breaking the roots when the plant is absolutely dry and hard after a long rest. The roots are often grown to the sides of the pot. After watering you will find the roots become more flexible and the plant is much easier to remove from the pot. Let several days elapse though after the watering before you commence operations. As most of you know, I always advise giving all the plants a check over first for pests, etc., before thinking of repotting, if you can afford the extra time it takes you will find it is really worth while.

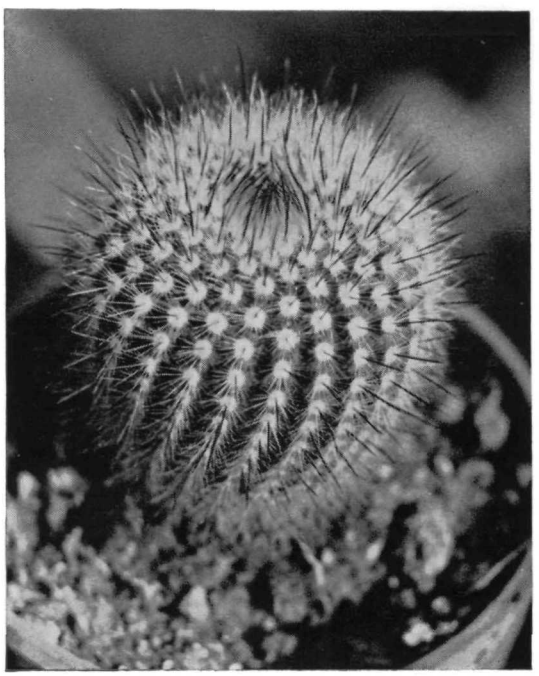
I found the *Stapeliads* made fine strong growth and flowered well in the Eclipse No-soil compost with about a third sharp sand added. I shall certainly use the same medium this year. I also found that cuttings soon rooted in this and seedlings soon reached adult size. It is essential to water from the base as during the summer it dries out very quickly and if watered on top, it stays too long on top of the soil. I found that a little and often given from the base just kept the soil right, but you must be careful not to leave pots standing in a lot of water or they will become sodden. *Epiphytes* also like this soil mixture, but I would not advise using it for all cacti as there does not seem enough body in it, especially for larger plants, but it is up to each individual to try these things out for themselves.

Many people find *Hoya bella* difficult to keep through the winter. We are told that it should not be allowed to dry right out, this is often difficult if we have a very hard witner, but if you can put it in a fairly warm spot where it can have just enough water to stop the leaves from shrivelling and dropping, then your difficulties should be over, especially if it is an adult plant. It is usually the young freshly rooted cuttings that succumb, often owing

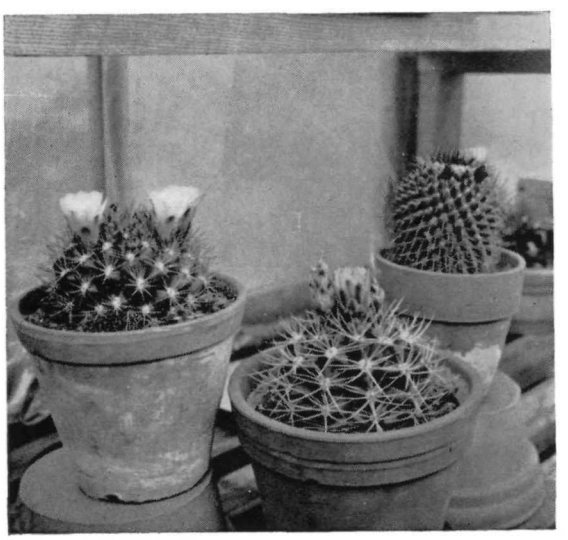
Notocactus mammulosus D. Stringer



Aporocactus flagelliformis D. Stringer



Notocactus scopa v. ruberrima D. Stringer

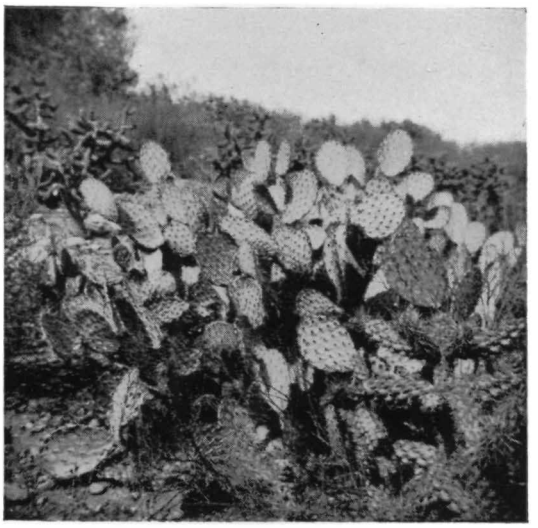


Left: *Weingartia cumingii*; centre: *Gymnocalycium multiflorum*; right: *Mammillaria hidalgenis* C. Jackson

Assorted *Mammillaria*

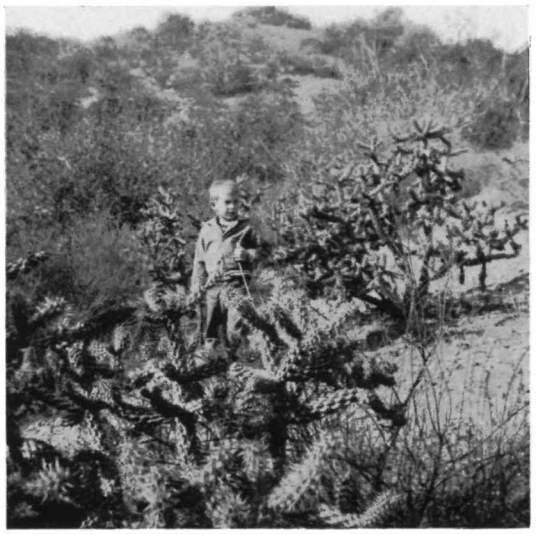
Mainly *Trichocereus spachianus* for grafting.

Soehrensia bruchii



Opuntia littoralis

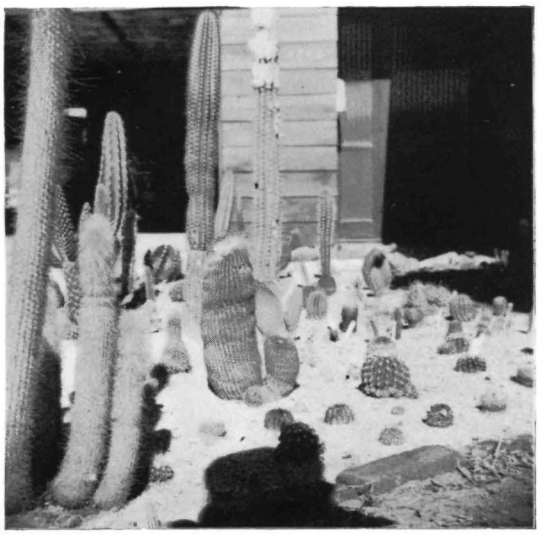
(Four photos. by Richard Russell)



Fearfully spined *Opuntia acanthacarpa*

Typical cactus country

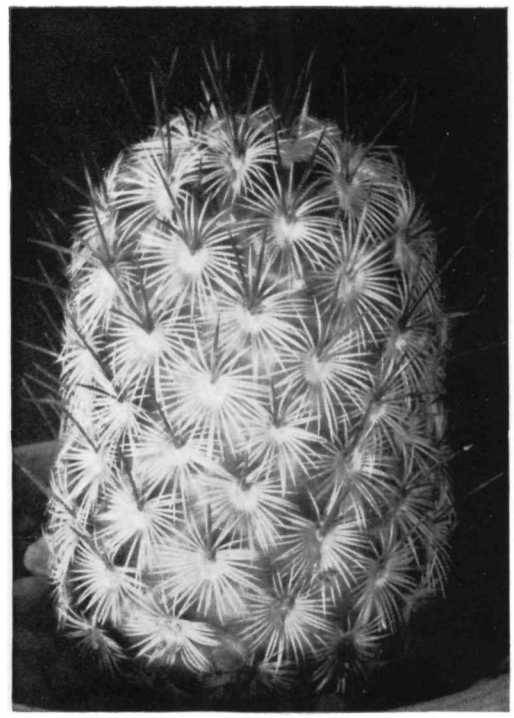
Ferocactus viridescens



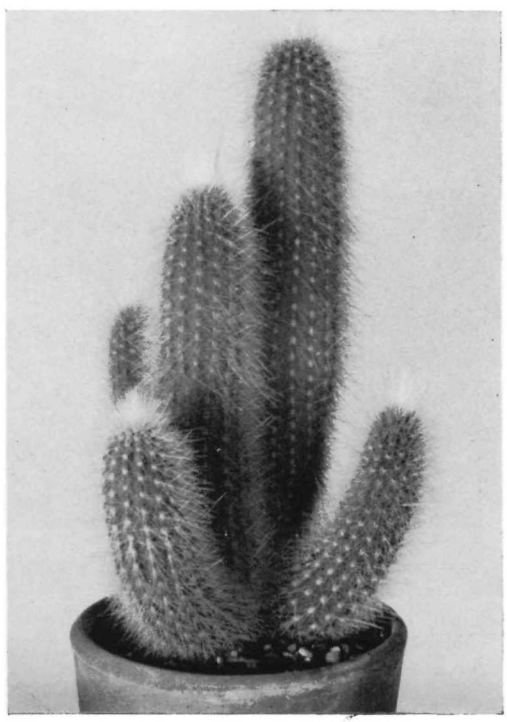
Part of R. Russell's Cactus Garden

(Four photos. by Richard Russell)

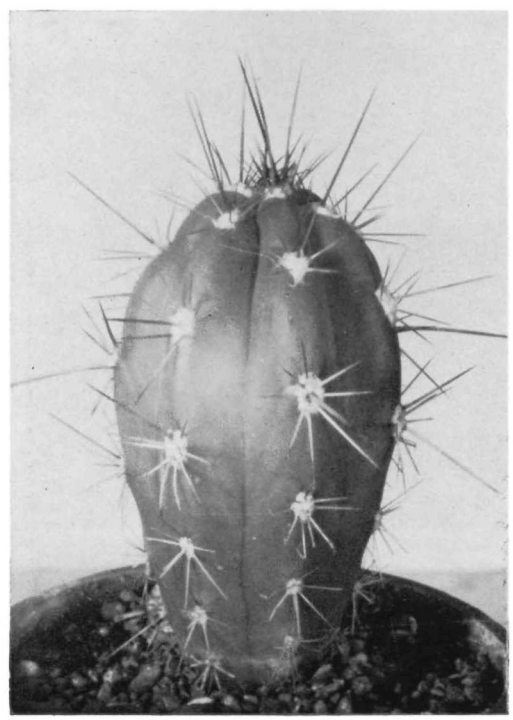
Mammillaria moellendorffiana ?



Mammillaria microheliopsis

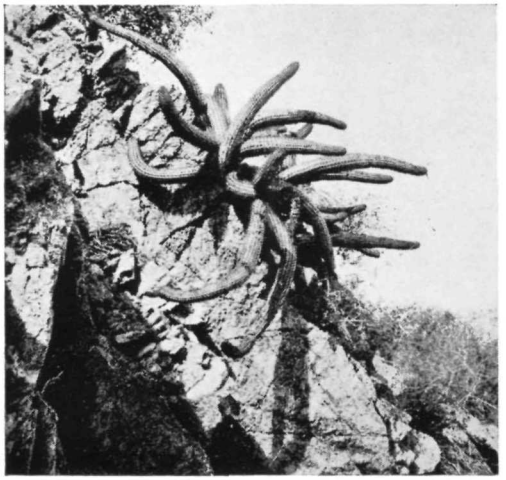


Cleistocactus straussii



Stetsonia coryna

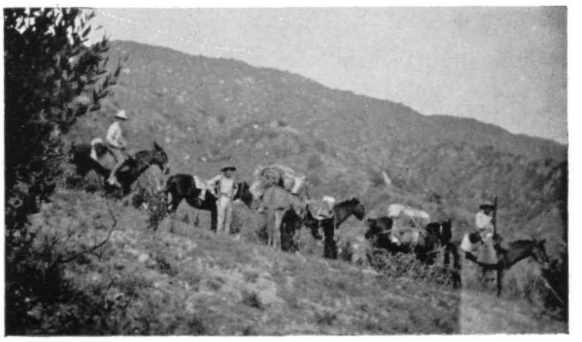
(Four photos. by Richard Russell)



A mountain cactus

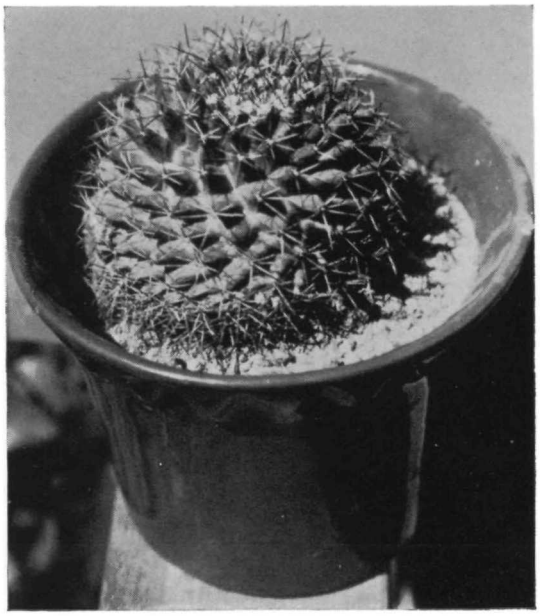
Joshua tree or *Yucca brevifolia*

Cactus country

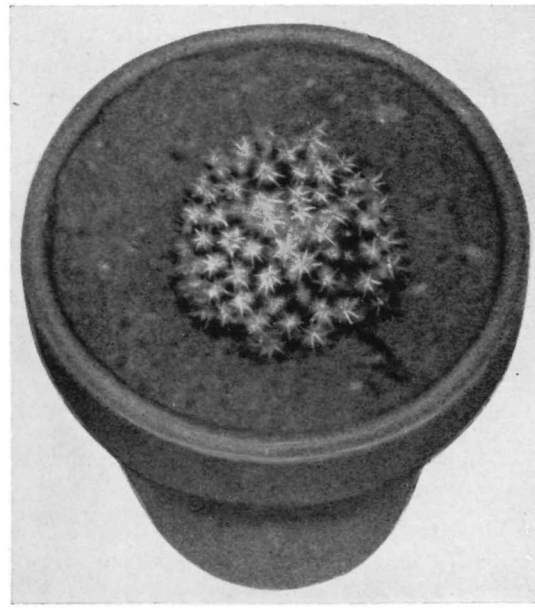


A cactus pack train

(Four photos. by the late Howard Gates)



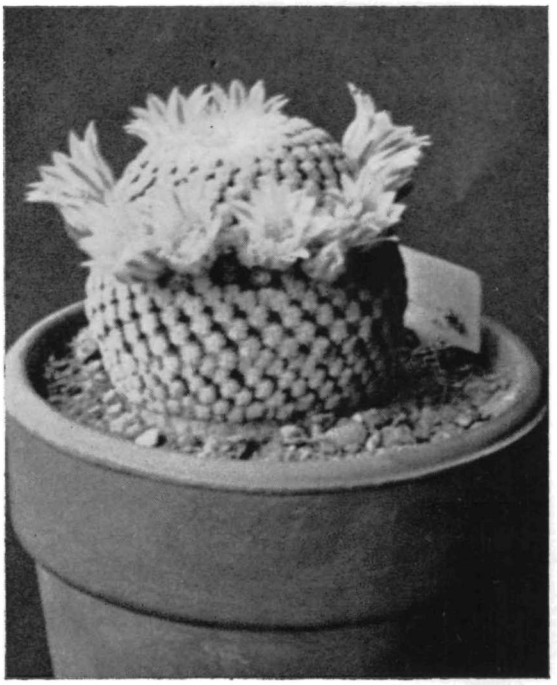
Mammillaria eppeliana (not yet described)
Eppele and Cowper



Navajoa Maia

Mammillaria wrightii D. Eppele

Gymnocalycium ardoa J. Fletcher

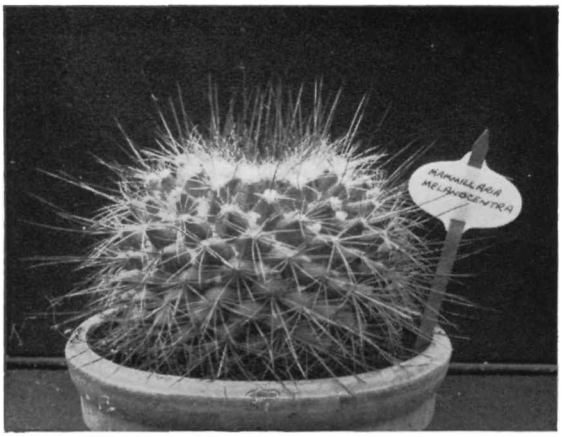


Solisia pectinata D. Airton

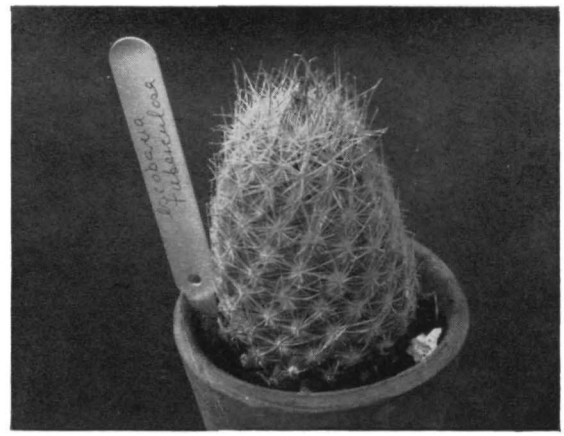
Echinopsis eyriesii J. Fletcher

Echinocereus baileyi W. Beeson

Coryphantha sulcolanata W. Beeson

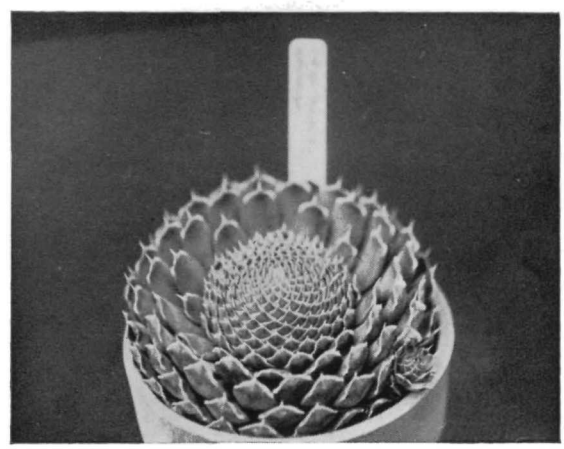


Mammillaria melanocentra



Escobaria tuberculosa

Echinofossulatus tricuspidatus



Orostachys spinosus

(Four photos. by R. H. I. Read)

to the fact that they were taken too late in the year and are not fully established. This is often the reason why people complain that they lose *Euphorbia splendens* (*milii*). It is seldom one loses an adult plant.

Many *Echeverias* flower during the winter. If the house is fairly warm it does help them to retain their bottom leaves which they will lose if kept very dry. This is a natural happening in nature for the plant uses this method of living on itself during the periods of drought. *Dudleyas* will also lose their bottom leaves, but unlike the *Echeverias* they remain firmly attached to the stem and have to be removed by force.

A lovely little succulent well worth looking out for is *Sedum hintonii*. It is a native of Mexico and resembles a dwarf *Echeveria setosa*. It forms cushions, is pale green in colour and is densely covered with white hairs. It is still quite rare in collections, but as I said well worth waiting for when you do manage to obtain a small one as I have. It is doing quite well at the moment in our old friend the no-soil compost. Another very beautiful little gem is *Sedum bellum* with delicate white farinose leaves. It is said to bear numerous white flowers in January or February but, as yet, I have not had that pleasure. This often despised genus can boast of several little treasures if you are keen enough to try to obtain them.

Do not be in too great a hurry to sow your succulent seed unless you have a really reliable propagator. Why not try some of the shrubby *Mesems.* this year? They are very easy to grow from seed and will provide you with some of the most colourful flowers you have ever seen, and in great profusion. Try some *Lampranthus*, there are dozens to choose from giving you flowers in white, pink, yellow, orange and red. These will grow and flower well outdoors for the summer. If you feel they take up too much space with their rather spreading mode of growth, they can always be cut back after flowering or fresh cuttings taken for use the following year. Try some of the very free flowering *Oscularias* which will delight you with their masses of pale pink scented flowers in the spring. One of the most free flowering *Mesems.* I know of is *Sphalmanthus fragilis*. I believe it has now been renamed *Nycteranthus fragilis*. It bears large creamy yellow flowers, which last for several days, with plenty more buds following on. The shrubby *Mesems.* are strongly recommended for beginners as there are no tricky watering times to worry about as there are with the stemless varieties. Finally I would like to suggest *Erepsia inclaudens* from seed, it is a beautiful species with shiny purple violet flowers.

Have a look at the free seed list issued by the Society, who knows, you may find some that I have mentioned.

Mr. Backeberg writes me:- "Mamillaria–part in Vol. V":– "In addition to the fair and correct review of my esteemed old friend Shurly, I beg to make some comments. I stated expressly that the correct spelling in following the rules would be 'Mammillaria', but in the foreword to this genus I explained the reasons why I had to give 'Mamillaria' as it was necessary for this edition and for the index for various reasons. As to the interspersion of unnumbered species, I followed the example of Dr. Craig in his 'Mammillaria Handbook', i.e., I only numbered the species which are fully and correctly known. As Craig's key could not be changed by adding new described species which were needed to be added in the volume, I gave them in such a way which I believed facilitates finding these new species. The interspersed and 'little known' have been given without numbers to indicate that they are not sufficiently known, those at the end of the section to emphasize they were little known, those interspersed to give some idea of the species to which they are closely related. As with some of them it is not certain whether they are true species or not (f.i., Craig is of the opinion that the interspersed *M. bergii* Miq., may have been already described as *M. ortegae*), such names could not be cited under numbers. I take this opportunity of thanking Mr. Shurly very much for so much kind work in revising the proof sheets".

I wonder how many of you know of the existence of the International Succulent Institute whose secretary is Mr. J. W. Dodson, 921 Murchison Drive, Millbrae, California, U.S.A. Its objects: the distribution of lesser known cactus and other succulents. They issue periodical lists giving descriptions and prices. This Institute is not a profit making concern as it is run by cactus enthusiasts for the benefit of collectors and so make available to them species that, otherwise, would be difficult to obtain. If you are interested I suggest that you get in touch with their British representative: N. E. Wilbraham, 178 Black Road, Macclesfield.

TABLE SHOW RESULTS, 1961. First, R. H. I. Read, 17 points. Second, P. V. Collings, 13 points. Third, Miss M. Sparks, 9 points.

FROM NEW YORK TO SAN DIEGO

By RICHARD RUSSELL

What are the experiences of an avid Cactus collector when he moves from New York City (with climate comparable or worse than England's) to the heart of the world's finest Cactus growing territory in San Diego, California? At the age of sixteen the author first contracted the "Cactus-bug". For many years I attempted to grow these wonderful plants and experienced varying success. Of course, the soot, the dryness of the city apartment and the severity of the seasons worked no small amount of hardship on my Cacti. In the final analysis, I was simply not satisfied. It was necessary to content myself (in my mid-thirties) to starting the New York chapter of the American Cactus and Succulent Society and to gathering one of the best collection of books on cactus literature available (privately) in the States.

Finally, last August, the great move came. Having had far too much of the "Big City" and its adversities, I packed my family, and out we went on the three-thousand mile trip to sunny San Diego. The change was little short of amazing. Here, on the edge of the desert, Californians are experiencing one of the worst droughts in many years (eight inches of rain since 1958)! Everywhere I looked I saw Cacti of the most magnificent proportions. Moreover, despite the great dearth of scientific interest, I noted that people in this area use Cacti much as they are used in Mexico—simply as articles of convenience. With the great scarcity of water, grass lawns are a tribulation in San Diego. The way to economy is gravel, succulents and Cacti.

To one used to studying Cacti in mediocre Eastern U.S. botanical gardens, the County of San Diego is a never-ending source of interest. Giant *Euphorbias* and *Cereus* tower above motels and gasoline stations. Stands of *Ferocacti*, *Mammillaria*, *Notocacti* and *Cleistocacti* adorn the gardens of the uninitiated, For instance, one of the finest specimens of *Notocactus leninghaussii* I have ever seen perches by the side of a house near our post-office. Mounds of the glistening golden columns (up to three feet high) shimmer amid crowns of dozens of flowers and buds. Two houses away, a giant *Opuntia leucotricha* (four feet high) sways in the sub-tropical breeze. A mass of *Epiphyllum oxypetalum* (in a wooden tub) sits on the opposite side of the street.

Of course, I immediately set about getting my new house in order. Letters went off to the gardens of Johnston and Gates and others off to Mexico. In the space of three months I had a growing collection of over three hundred different Cacti. Ah, but I had a lot to learn about growing plants here in San Diego.

In this part of the country plants do not rot, they dry up from lack of water! To my amazement I noted that San Diego nurseries soak their plants (all planted in tin cans) until the soil is practically muddy. And the result, they grow, bloom, grow and grow. Many Cacti grow right through the winter with little if any rest!

The temperature during November is as low as 50 at night, but the local people continue watering their Cacti with seemingly no harmful effects. Evidently, the mixture of fresh (dry) air and hot sun allows Cacti in this area to survive and thrive with a great deal more water than in other parts of the country. Not only do they survive, they need the water and lots of it. And I am not talking about *Epiphyllums*, I am talking about everything right down to desert types such as *Opuntia ursina*, *Ferocacti*, white-spined *Mams.* and *Homalocephala texensis*. Out here, Cacti are watered with a garden hose or with a regular garden sprinkler!

One is immediately struck by two things in San Diego: (1) the plants are not the beautiful, unscarred specimens of the English greenhouses. (! ! ! Ed.). They are often marred by brown spots, bug-holes, sun scars, etc. (2) The plants here are heavy flowering, heavy spined, heavy bodied, and true to type (unlike many of the almost unrecognizable English plants).

The attitude of San Diegans toward Cacti is a bit discouraging. Many people regard them as little more than weeds, although I believe there is a rise in (unscientific) interest. Few San Diegans know much about Cacti, despite the prevalence of these plants on the local scene.

Within the actual city limits of San Diego, a number of native Cacti are to be found. The "Coast Barrel", *Ferocactus viridescens*, is everywhere among the neighbouring hills. It grows in a rocky soil, has a tremendous root system, and survives the most incredible periods of aridity. The dryness of the San Diego hills has to be seen to be believed. Perhaps only the student from another part of the country can appreciate it. The earth pulverizes in one's hand—it is coarse, rich in organic material, and dry, dry, dry.

Opuntia littoralis is common here as is *Opuntia echinocarpa*. The giant *Opuntia ficus-indica* has escaped cultivation and is literally part of the countryside flora. Many use it for fences.

(To be continued)

GROW, DO NOT KEEP CACTI

By E. SHURLY

(I have been specially asked to repeat this article which appeared in this Journal, 1951: pp. 22 and 23).

Of course, you have read innumerable articles that deal with this subject in pieces, it is really rare to get something to read that, in itself, deals with growing cacti. So many of our collectors have many plants, but because they have many, it does not mean that they grow their plants.

I believe it would be a good thing to have two pages devoted to this subject in a simple way. The majority of the membership of all Cactus Societies are people who have no scientific knowledge, and do not understand the why and the wherefore of the processes that cause their plants to grow and, because of this, so many fail to give their plants proper treatment.

I am quite aware that this article does not give you the scientific reasons and details, but if you take full note of the advice given you will have absorbed sufficient for you to apply proper treatment, and this treatment includes, and provides, for scientific purposes.

In the first place, it is necessary to point out the great diversity of habit of our plants. Everybody knows that the structure of cacti, and other succulents, is an adaptation by nature to cope with what can be called drought conditions. At the same time, it must be remembered that all our plants do not live in arid habitats. Some are epiphytes and live in quite moist conditions. It is, however, true that the majority of our plants live in what might be called various degrees of drought conditions. Take one genus, *Mammillaria*. You will find the "open" type of plant, such as *M. magnimamma*, where the plant is not obscured at all, and the green body of the plant easily seen; these plants live in a habitat where they get much more rain than the more arid types. The other extreme is the hooked spine type, such as *M. Wildiana*, where the plant, very often, is completely hidden by wool, spines, etc., and the centrals of which are hooked. These plants live in real arid conditions. Another distinction is the root. With plants living in less arid conditions, the root is simple, what are generally called fibrous roots, these are merely channels for transporting food from the fine hairs round the tip of the root to the stem of the plant. With the other extreme, the hooked spine type, the root becomes a tap root, or its most extreme form, shaped like a molar tooth, which is really a number of tap roots attached to a storage body which gives it that shape. The bulbous part of the root is really not a root at all, but an underground stem used for storing moisture. If the structure of these roots and underground storage stem is examined, it will be found there is a kind of valve at the base of the upper stem which controls the intake of moisture from the underground storage stem.

You will, therefore, see that plants, even in the same genus, vary considerably, and their treatment varies equally considerably. In addition, one has to remember that growing conditions with the various collectors also vary considerably. Plants are grown in rooms, window-frames, greenhouses, frames, etc., and they will be found in structures that are exposed to full sun and weather conditions, others are very shaded. Then the site of the growing place can be placed in so many different situations, a valley, hill top, etc., etc. Added to this is the mentality of the collector himself! The cultivation of our plants is subject to so many different conditions that anybody advising you of standards to work to is giving you bad advice invariably. You cannot standardise the treatment of succulents because of the diversity of form and habit. Our Cultural Notes contributor, Mr. A. Boarder, gives sound advice which should be followed and studied, but he would agree that this advice has to be varied by the conditions of the particular cultivator, and it is intended that such advice should be so accepted.

Consequently, the treatment of your plants must be standardised by yourself, but there are static principles to which your treatment must conform, and it is my object, in this article, to give some idea of these principles.

Any succulent needs proper understanding of its requirements in soil, water, sunshine and air, and if these things are understood and properly applied, cacti and other succulents can be well cultivated. Without this understanding, the result will be badly-grown, starved and anaemic plants which are met with in some collections. These unfortunate appearances are sometimes due to the diversity of types all, whatever the types, getting the same treatment, doing fine by some and killing others. It is, however, extremely difficult to kill cacti! And when you hear of the treatment some give them, well, it makes you realise how really hardy our plants are.

Soil and water, in themselves, are as useless as gold in a cactus desert, far from human habitation—it can buy nothing and serve no useful purpose, but combined soil and water are the very life by which we keep our collection of plants in being. Soil is composed of earth, loam, etc., sand, chalk, etc., and a variety of mineral and other salts.

They are all in solid form, but there is, in addition, certain gases made available by bacteria (sterilising kills these.)

In solid form our plants cannot absorb these salts, and other forms of food and the presence of water is absolutely necessary in order that they can be made soluble in which form they are suitable for absorption into the plants. In soluble form, the food is absorbed by the fine lateral hairs to be found near the growing tip of the roots. The roots themselves are means of transport or of storage as explained above. As a consequence, your soil must have these solid foods, and Mr. Boarder's advice to use John Innes Compost adjusted, as sold by our advertisers, is excellent. Provided this food is replaced by Liquid Feed or by re-potting in fresh soil, it is ideal for our purpose. Water varies considerably. Rainwater is, obviously, better than tap water, but this varies accordingly to locality, while tap water brings to your plants certain ingredients from river or reservoir, and while in your own house, that lack other ingredients which the normal rainwater does provide. You know the difference and value of soft water over hard. Temperature of water is also important, and the same temperature as the surroundings of your plants is the best.

It seems hardly necessary to stress that sunshine is absolutely necessary for the well-being of cacti and other succulents, but it is not generally understood how different is our sunshine to that usual in their homelands. Where our cacti live, naturally, in full sun, they get long bouts of it, days and weeks of it on end, and the sun can ripen and grow the plants to perfection, but under climates like our own we find that we rarely get long periods of sunshine. You know yourself how much better you feel when you have enjoyed periods of sunshine, and your plants are equally responsive. Sunshine is even more important to plants, as it plays a leading part in forming the green plants, chlorophyll, in our plants, and it also is necessary for the internal process of changing starch to sugar, without which the plant will not live. Under the necessity of growing our plants under glass, we suffer many disadvantages, not least of them being that sunshine has to pass through our glass. Ordinary horticultural glass prevents the passage of very important rays beneficial, and necessary, to the growths of vegetable life. Vita glass is always best as it permits the passage of these certain rays. When you realise the difference between the natural, open, free sunshine in their native habitats it will be better understood how impossible it is for us to duplicate their natural conditions, and our cultivation must have its effect on our plants.

In my opinion, air is the most important factor with which we have to contend, because it is so little understood. Few people realise how confined are our conditions. We have to keep our plants in greenhouses and it is rare to find one of these structures with ample and sufficient aeration. It is, of course, always wise to keep all the windows open as much as possible for the free current of air. Otherwise, the air becomes vitiated and stagnant and the normal plant processes are unable to operate and our plants become sickly and in many other ways deteriorate. It is the chief reason why our cultivation is made more difficult. This lack of air is the main cause for bronzing plants. Few people can install electric fans which would maintain a circulation of fresh air through the greenhouse. It is for this reason that frame culture obtains so much better results as the tops of the frames can be adjusted to suit the weather, and if the tops are removable they can get the benefit of rain water as well without the necessity of using tanks with their consequent pollution. I wonder how many collectors realise that fresh air is so vital to the plant's economy ? Plants absorb carbon dioxide from the air, but if the atmosphere is confined and vitiated, the plant cannot take in this gas which is essential to growth and the plant's internal processes.

I have endeavoured to give you the principles on which cultivation of cacti and other succulents must be based. How these principles are to be carried into effect is a matter for you; you must adapt these principles to your existing circumstances, and they can be so varied that it would be impossible for me, in the space, to convey an adequate coverage to all the possibilities, but if the principles are acted up to, plus the admirable cultivation advice you get with every issue of the Journal, bearing in mind the necessitious variation of circumstances, you should be able to grow and not just keep your plants. And you will get more and more flowers. I believe that all cacti could flower under our conditions if we observed fully all the requirements covered by the principles explained, but time and care must be expended on our plants to get the best results, and it pays to give due consideration to all the circumstances of your cultivation. My experience proves that not only do plants grow and flower better under frame culture because of the fresher and freer air, but they root better.

The suggestion has been made that we should once more provide space for questions from readers and to give answers from the appropriate expert. If you have any question you would like to put please send it to the Editor and he will publish the appropriate reply by somebody competent to deal with it.

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April	4	Plant exchanges		
May	2	Epiphytes	Mr. C. G. Innes	One Epiphyte.

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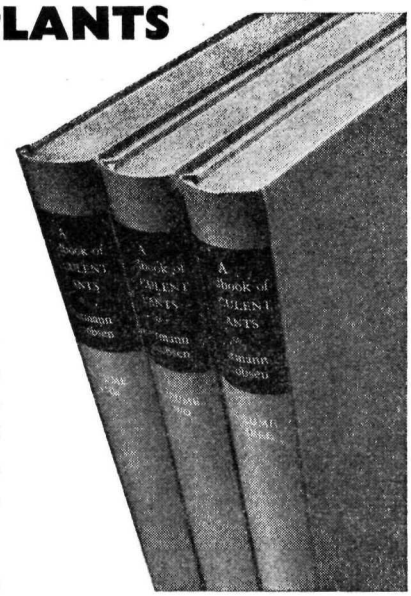

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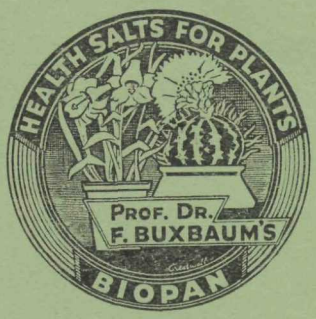

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Established 1931

Vol. 24 MAY, 1962 No. 2

Contents

Published Quarterly by the Cactus and Succulent Society of Great Britain at 6 Colindale Avenue, St. Albans, Herts.

Price 2/6 Post Free 2/10

Strange the Printer Ltd. London and Eastbourne L8330

THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 24 *MAY, 1962* *No. 2*

FROM THE PRESIDENT

My particular advice at the moment is—do not move! Apart from the usual difficulties one has a collection of cacti and other succulents to attend to and one must not assume that removers know all about our plants and that they understand all about them. If one has a rather big collection it means that a lot of single pots have to be removed, with labels, etc., and they go into a lorry in trays or other receptacles. They are not usually specially packed because of time, etc., and they move in the moving. They fall over, labels jerk out and dealt with by ignorant hands chaos ensues! I moved last October and I am still in the throes of trying to get order out of the chaos! If I trust the labels I get extraordinary results! That is in addition to the chaos created by the move, the removers just putting down plants where there is room. I have been occupied up to now in trying to get my plants in order and I have just been able to arrange my *Mammillarias*. The rest of my collection awaits arrangement, with four large trays available to arrange them. What shall I do? At the moment my idea is to put the large overshadowing plants in two trays and smaller, low-growing plants in the other two. How that will work out will have to await the result, but a haphazard placing of the plant often means that small plants are overshadowed by the larger growing ones and, consequently, the smaller plants suffer in not getting sufficient watering and lack of sunshine and light. For reasons of policy I have scrapped my soil bed and all plants are in pots. Before my move I gave away and sold over 500 plants, but I find my new site full up, but pleasantly so, with a little more room for light, air and water.

Since the last issue of the Journal I have received details of a new effort by the Mammillaria Society. They have issued a form giving in great length details of *Mammillarias*. One can always criticise the details and arrangement, but it is a noble effort. A specialist society must, obviously, obtain the greatest amount of detail in regard to the plants in which they specialise. I shall be very interested in the result and I would urge all members of the Mammillaria Society to support their executives' effort. There are a considerable number of plants masquerading under false names and this effort will expose the masquerade, but the effort is a well worthwhile one and after the society officials have gone through the forms sent in they will be able to not only get details of plants under certain names, but they will get an idea of what plants are masquerading under the wrong names and will be able to give valuable information to their members. Specialist societies are really needed, but a terrible lot of preliminary work has to be done to get matters in order and they have my sincere wishes for their success.

E. SHURLY.

I have just purchased some Crocking Discs which are perforated zinc discs for placing in the bottom of your pot with or without crocks. I have tried them out and find that without crocks they do hold the soil and, consequently, provide better drainage and more soil for the plants. (Ed.).

CACTUS CULTURAL NOTES

By A. BOARDER

During the early part of the year some of the *Mammillarias* suddenly start to bleed at one particular spot. There seems no reason why this should happen and it is usually those with a milky sap. I have noticed that the types similar to *M. magnimamma* will do this and the only reason for it as far as I can see is that the sudden rise of sap at the beginning of the growing period causes a swelling up of the plant and a rupture occurs at a weak spot. The milky sap soon dries up but it will leave a nasty scar on the plant for a long time. I know of nothing which can be done to stop this trouble unless it is the warming of the greenhouse during the whole of the winter to a growing temperature of at least 50 degrees F. Once the sap bursts through the skin it is no use trying to staunch the fluid as it would continue to bleed. The only thing to do is to let it heal by coagulating. It seems that one is neglecting the plant, but I do not see what else can be done. The wound is usually well covered with spines and so it would be awkward to get a tiny plaster in position and this would stop the natural drying up of the fluid.

Another annoying happening is when red spots or patches appear on certain species of seedlings during the winter. They usually appear on the lower parts of the plant and start with a small red patch. This can spread all round the base of the plant. It does not often prove fatal and stops when the weather turns warmer. It is therefore something to do with the cold as I have noticed that it only occurs during the winter and is checked once the warmer weather arrives. Young plants of *Echinocactus grusonii* are particularly susceptible to this trouble as also are seedlings of *Ferocactus latispinus*. The red patches are quite dry and seem to be immune to the ordinary mildew prevention treatments. It seems that if a winter temperature of 50 degrees F. is kept up the trouble does not occur. It is strange though that only certain types are affected and other seedlings in the same box thrive without any trouble.

Speaking of temperatures brings me to one of my pet hates. Why are the Met. people trying to get us all to change to the Centigrade thermometer? Who do they think we are to be kicked around? It is said that "Old dogs cannot learn new tricks", well I would be quite prepared to try providing anyone could show me why any good reason for the change is justified. The Fahrenheit thermometer is far more efficient than the Centigrade type, actually by 80 per cent. It is far better for delicate work and, as a matter of fact, it is useless to try to use the Centigrade instrument for fine work. There must be thousands of Fahrenheit thermometers in use throughout the country. All hospitals, doctors and nurses use them among many other professions. I was surprised to find that I had ten instruments in use marked with the Fahrenheit markings. I have one on a barometer in the hall, three maximum and minimum ones in use; one in the greenhouse, one in the outside frame and one in the seed propagating frame. I have a clock-face type in the greenhouse for easy reading. I also have a long unmounted one for testing water for my fish breeding activities and one for testing very hot liquids, etc., which I use for testing when sterilising soils. Then I have three thermostats in use in the various sections of my plant establishment. At a rough estimate it would cost me about £15 to replace all these instruments and if the Met. people think that I am going to do this just to please them or the Common Market, they have another think coming to them. If we all refuse to take any notice of the proposed change it may be that it will eventually be dropped.

Having failed to get all my cacti repotted during last year I made an early start this year once I had my main crop of seed sown. I managed to get over four hundred kinds sown and still have a few more oddments to sow. The germination has been very good although the weather has been far from suitable. It is well known that seedlings do not grow as well in frosty weather as they will when the outside temperature is warmer, notwithstanding that the heaters may be on in the greenhouse. It has been a particularly cold winter in most districts. I have worked an allotment or kitchen garden for the past 42 years and have never had Brussels Sprouts killed by the frost as has happened this winter. Stems as thick as a child's wrist have been killed completely which proves that we have had something exceptional in the shape of weather. My coldest reading was one of 4 degrees F. I managed to keep the greenhouse just about or above freezing point and, as all my plants were quite dry, I do not anticipate much trouble. There are a few seedlings which will not put up with this low temperature and I often lose the first year's seedlings of *M. mainae*, *M. pennispinosa*, *M. gulzowiana* and *Melocactus maxoni*.

To keep my outside frame at 50 degrees F. for the whole of the winter would be very expensive as it is twenty feet long by seven feet six wide. It is also five feet high in the centre and a foot high at the sides. It does not seem worth almost double the cost just to grow a few species which are more difficult than others. After all there are hundreds of kinds which I can grow quite well, but it is rather a challenge to try to succeed with these few tricky ones.

Up to the first week in March I have managed to get the rest of my *Mammillarias* repotted. Many had made good growth last season but I still think that most of those I was able to repot last year grew better. I am finding that a little peat at the bottom of the pot is a good idea as it attracts any surplus moisture down away from the base of the plant and yet is able to supply the roots with the necessary moisture when needed. Some growers still recommend the use of leaf mould, but this is not as safe as peat which is neutral and holds no disease, seeds, pests or bacteria harmful to plant-life. I believe that it is a good plan to water over-head frequently during the growing periods. This can be done with a syringe or with a fine rose watering can. Use rain water always if possible and if this is not available then have a spare tank so that tap water can be left to mature a little before being used. This tank should be covered to exclude the light as otherwise the water will become very green through the presence of tiny single-celled plants known as green Algae. These plants can only live in the light and so the cure is obvious.

During the flowering period it is essential to visit the greenhouse as often as possible when the flowers are out so that pollination can be carried out. Clean your brush as you go from one species to another as some kinds can hybridise quite easily. The production of seed pods can be as rewarding as obtaining flowers as many of the pods are very colourful and last a long time. Those of the night-flowering kinds are very handsome, like large red plums, and they stay on the plant all through the winter.

Once the weather gets really warm is the time to consider taking cuttings or re-rooting specimens. When taking any cuttings try to remove parts which will not leave a bad scar in the most noticeable part of the plant. Always dry the base of the cutting and have a suitable receptacle for striking in. A plastic trough makes a good striking box. Put the usual crocks at the bottom, although a container without drainage will be suitable. Then add a layer of your ordinary potting mixture and then have at least an inch of a mixture of peat and sand in equal parts. The cuttings should be rested on this medium so that only the base is in contact. Do not water too much and keep the container in as sunny a place as possible. For long cuttings a stick will be necessary so that the cutting can be supported without having to be pushed into the medium. If only one or two cuttings are to be taken you can use a pot and then stand this in a saucer of water. Do not water at all from above. The moisture from below will encourage the roots to form and draw down towards the moisture.

The necessity for shading the greenhouse will be the next problem. A lot will depend on the situation and the amount of sun which normally reaches the house. Where only the morning sun gets to the house there is no need for any shading. It seems that the danger time is during the early afternoon. The sun can really scorch plants under glass at this time of the day. Some kinds are more susceptible than others and it may be possible to keep these in such a position that taller plants give them the necessary shade. If shading is required for most of the summer I know of nothing better than "Summer Cloud". This is painted on the glass, which must be quite clean. It will usually last for the whole season when it can be washed off with warm water. If thicker shading is necessary some butter muslin can be made into a blind which can be supported by stretched wires inside the house close under the glass.

During fine spells of weather see that the windows are open to provide plenty of fresh air. This is much more important than many people realise. I cannot understand why it is that many of the makers of greenhouses today fail to realise that most plants need plenty of ventilation. They usually have only one rather small window in the roof which is totally inadequate for the size of the house. A friend of mine has just bought a greenhouse 15 feet by 9 feet and it has only one small window in the roof and one at one side. One would have thought that it was perfectly obvious to these firms that two windows at least were needed in any house more than six feet long. Bottom ventilation is also missing in many cases, but it is not very difficult to make an opening in a suitable position. It may be that the door will provide the easiest spot for a ventilator and this can be made by boring a few holes in the lower part of the door and fitting a slide covering for adjustment when necessary.

The question is sometimes asked of me as to which is the best time for watering. Often there is little choice as if one has to go to work for most of the day then it is usually late in the evening before the task can be done. It is always possible for the grower to get up half an hour earlier in the morning for the purpose of watering, but I expect that many collectors would sooner lie in bed and contemplate the job rather than get up and do it. I don't think that it matters much to the cacti when they are watered. During very hot weather any small pot can dry out completely in a few hours and so in such cases it seems better to water during the evenings so that the plants can get the benefit of the moisture during the night and not lose most of it by evaporation. After a real sunny day the plants benefit from an overhead watering and then the house can be closed nice and moist

and with a good growing atmosphere for the plants. See that the glass is kept quite clean as a great deal of light can be lost by leaving dirty glass uncleaned for long periods.

Plants grown in a sunny window will benefit from a good spraying in the open air on sunny days. This removes the dust and freshens up the plants considerably. If the plants in the house are in such a position that they do not get much sun it is better to try to arrange a position out of doors where they may spend the summer. You should make a bed of ashes to deter the slugs and then stand the plants where they can get the sun for much of the day. Any rain will not harm them and you will probably find that they will grow much better in the open air than they would have done in the house. Those without a greenhouse could easily make a small frame in the garden for housing their plants during the summer. They could be put out about the end of May and brought in about the middle of October. A simple frame can be made and instead of using glass the new plastic type such as polyglaze can be used and this can be cut with scissors and is lighter in weight than glass. Even if a frame cannot be made it is still a good plan to stand most of the plants out of doors for a few months when it will be found that many have grown well in the fresh air.

LISTS RECEIVED

Wheldon & Wesley Ltd., Codicote, Hitchin, Herts.: a printed list of over 2,600 natural history books, including some on cacti and succulents.

B. Quaritch Ltd., 11 Grafton Street, London, W.1: a printed list of 750 books on botany, including some on cacti and succulents. Also a 16-paged printed list of inexpensive and popular books on botany and gardening.

G. Hoeckx, Manebruggestraat 257, Deurne, Antwerp, Belgium: a four-paged typewritten list of cactus and succulent plants.

H. Winter, Frankfurt A.M.-Fechemheim, Germany: a forty-paged illustrated list of cacti and succulent seeds.

S. V. Smith, Wyck Hill Nurseries, Stow-on-the-Wold, Glos.: a three-paged typewritten list of cacti and succulent plants.

K. Uhlig, Lilienstrasse 5, Rommelshausen B. Stuttgart, Germany: a two-paged typewritten list of cacti and succulent seeds.

Tillotsons Mouldings Ltd., Slater Street, Bolton: a five-paged illustrated leaflet of fibre mouldings including pots stated to be "just the job for cactus." Do not break, look well, cheap and light, requires less watering.

British Uralite Ltd., Whitehall Place, Gravesend: a Press Release with photo of New Minigarden Shell Containers.

Mr. Young pointed out to me an error in the date of the May meeting in the February Journal where it was given as May 2nd. The date, of course, should have been May 1st. I can only apologise for the error. The printer confused the alteration of 1961 to 1962 with the date (1st) in May, mistaking it, possibly, for a scratch. I should have spotted the error in checking the proofs, but it was the first time I took the wording of the Society News page for granted as I always check with the membership card and also type a separate sheet for the Society page. I apologised to the meeting on May Day and was forgiven. I pointed out that it was the first time in sixteen years of editing the Journal that such a mistake had occurred. I felt terrible before the meeting as Mr. Innes was delayed a quarter of an hour by traffic troubles as I started to think that he had taken the meeting as May 2nd, but he did arrive and we had a really good meeting with a "full house", more details in the next issue. Obviously the members rightly took the date on the membership card instead of from the Journal.

PARODIA

By MARGARET J. MARTIN

One of the most rewarding genera for the collector with a small greenhouse is the *Parodia*. These plants never outgrow their welcome, they have beautifully coloured spines, and produce many large, brilliant flowers. In addition to all these virtues, the *Parodia* is a comparatively small genus. It would be possible to house all the species that are available, together with all those that are just tantalizing names in Borg, in any amateur's house. Just imagine trying to accommodate all the *Opuntia* that are available in this country in one small house! Let alone those that are still only known in their native America.

After this glowing description of the *Parodia*, the reader may justifiably wonder why every greenhouse has not its quota of these choice plants. The answer to that is the difficulty of obtaining specimens. Many nurseries do not list *Parodia* at all, or else only two or three of the commoner species. However, by persistence, I have been able to build up a collection of fifteen plants to which I hope to add gradually. By going through catalogues sent out by the smaller nurseries who do their own seed raising, I have obtained many small plants quite cheaply. Also *Parodia* seed is available, although the seed is dustlike and the seedlings very prone to damp off. I have a number of healthy plants about the size of a shilling which I have raised myself, and I consider the effort worth while. I am not a successful seed raiser and I have no doubt that many of our members could do a great deal better. Although it is possible to obtain many different species of *Parodia* by buying seedlings and raising one's own plants from seed, it does mean that one has to wait for the flowers. So far I have flowered only four out of my fifteen specimens, but each year they get a little bigger, and I hope that this summer at least two more plants will have reached flowering size.

Parodia are natives of S. America; Argentina seems to be particularly well blessed with these cacti. The plants are solitary, globular in shape, and very spiny. The genus may be divided into two classes, depending on whether their spines are straight (rectispinal) or hooked (uncinatal). In my collection I have only two straight spined *Parodia*, *P. chrysacanthion* and *P. nivosa*. Since Borg only mentions six out of the twenty-eight species described, we can safely assume that the hooked-spined plants are in the majority. The *Parodia* has a certain amount of wool in the areoles on the top of the plant, and the flower buds are produced from this wool. A plant three inches in diameter can produce a couple of dozen flowers, which appear to be self-sterile; at least none of my plants has ever set seed.

It is difficult to recommend species of *Parodia* due to the limited number of plants available. The following four have been flowered by me when less than two inches in diameter. *P. aureispina* is a bright green plant with pale yellow spines; it is a comparatively fast growing species with a good root system. The flowers are an intense yellow and my own specimen, which is three inches across, produced two batches of a dozen flowers each last summer.

P. catamarcensis is a particularly beautiful specimen, owing to its blood red spines. The flower buds are pale orange, opening to give flowers of a pretty old-gold colour. This cactus grows quite vigorously.

P. chrysacanthion is one of the straight spined *Parodia* and forms a beautiful golden ball. The flowers are also yellow but smaller than those of the two preceding cacti. Although my plant flowers well, it has not the vigorous habit of growth of my other *Parodia*, and the root system leaves a lot to be desired.

As a change from these yellow flowered plants, *P. sanguiniflora* has glowing blood-red flowers. This is a vigorous free-flowering plant with brown spines. Although these are the only four *Parodia* I have flowered, many of the seedlings are well worth growing for their beautiful spines alone. *P. maasii* has very long, hooked spines; my own plant is about one inch high, and the spines are as long as the plant. This cactus has the reputation of being a shy flowerer. Time alone will answer that question; according to Borg the flowers are red.

P. nivosa is one of the smaller growing *Parodia*, and even as a seedling it is covered with sparkling white spines. The flowers are said to be brilliant scarlet; they must look particularly attractive against the silvery spines.

I have described some of the *Parodia* that I have found easy to flower, or attractive. There are many more in existence which I hope one day I shall have the opportunity of growing.

The Servicio Municipal de Parques y Jardines, Avenida Marques de Comillas, Parque de Montjuich, Barcelona 4, Spain has received two lists, one of plants desired for exchange and what can be exchanged. There was no name and address on the two lists and if any of our readers sent it to them will they please write direct indicating that the lists were from them.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

I never before remember being so late starting both repotting and watering as I was this year. With the extreme cold in early spring it was too risky to disturb the plants. There is far less risk that they will die from lack of water than there would be by creating a damp atmosphere, together with a low temperature. At the time of writing, which is the second week in March, I am still systematically going through the collection and inspecting everything individually and watering where required at the same time. Once I start repotting, this big operation tends to get left and I think it is far more important at this time of the year, after a long rest, when pests such as scale and mealy bug start to breed.

It is surprising what you find if you really look for it. I noticed buds on several *Glottiphyllums*, *Pleiospilos nelii*, *Tischleria peersii*, *Nananthus malherbii*, *Cephalophyllum alstonii*, several *Titanopsis*, *Cheiridopsis*, and *Gasterias*, etc. A number of *Gibbaeums* have already flowered, while several others are either in bud or out in flower. *Gibbaeum perviride* has had a flower on each of its ten heads. *Antegibbaeum fissoides* has a large showy rosy red flower, and has several out at the time of writing. The *Gibbaeum heathii* types should be splitting in March, to disclose the new growth inside and possibly flower buds. *Gibbaeum album* is once more showing buds, but they often have a nasty habit of not maturing.

I noticed a number of *Kalanchoes* suffered during the cold weather, particularly the younger plants, they lost practically all their leaves. An adult plant of *Kalanchoe marmorata*, in a five inch pot, completely died with the exception of one small branch, which I am hoping to save. I was sorry about this, as it was a most attractive plant with its chocolate spotted leaves and large tubular white flowers.

Most of the *Stapeliads* came safely through the winter, being kept absolutely dry, many of course became very shrivelled, but they soon recovered after their first watering. They appreciate being repotted as soon as growth begins and often flower better if some of the old growth is removed. I intend to use the Eclipse "No soil" compost again for these plants as they really do make some fine growth in it. I still find it difficult to keep these particular plants free from the very woolly form of mealy bug that settles just on top of the soil at the base of the plants. Last year I watered the soil with malathion several times, but still they seem to come back after a while.

I found last year what appears to be quite a good remedy for red spider. As soon as I saw any sign of it, I covered the whole plant with flowers of sulphur. This was left on for about two weeks and then washed or sprayed off, or even in some cases just blown off. It certainly seems to get rid of the red spider, but whether it kills them or just drives them away, I would not like to say. I also find every spring certain plants get attacked by a very fleshy green scale, which, if left, gets very large and almost like a young limpet sitting on a nest of cotton wool. It is only of recent years that I have ever seen this large type of scale. That is why it is so important to have this spring check up, so as to remove by hand any of these offending pests before they do too much damage. The particular type of scale I have mentioned leave no marks when removed from the plants, but, if allowed to reach adult size, breed very rapidly and in large numbers and can draw a considerable amount of sap from a plant. They are particularly fond of *Titanopsis*, *Glottiphyllums* and *Crassulas* and are usually found under the leaves and often escape the eye unless the plant is picked up and carefully examined. They usually breed right at the base of the plant and then the young, looking like small pale green dots, spread themselves upwards to the fresh new growth.

This is the time of the year when we usually have a lot of old potting compost to dispose of. Why not make an outdoor succulent garden by selecting a well drained bed and digging it well in plus a good proportion of sharp sand and some peat if the soil is very heavy. Wait until all danger of frost is passed before planting. A good effect is obtained by building it high at the back to take the larger plants coming down to the small creeping ones in the front. A layer of very coarse grit or pebbles on top of the soil would prevent the plants from getting muddy and splashed when it rains. I would also suggest a generous amount of slug pellets around each plant. Boots the Chemists sell one of the best I have tried and it really does do the job. Having got rid of one pest there are still the cats and birds to contend with. If your old bean rods are due for renewal this year, break them up into eighteen-inch lengths and stick cross-cross into the ground, two or three rows deep. This gives quite an effective rustic edging, and one cats look at twice. Birds can be scared off by various methods, one is to erect a high piece of trellis at the back of your border and thread strands of black cotton from this slanting downwards to your rustic work border or edging. If you use fine cotton it is hardly visible and does not spoil the look of your handywork.

If you live in a mild climate it is possible to leave a well established outdoor garden untouched all the year round. If it contains plants that you are not too worried about, why not experiment in this direction. In the autumn make a polythene frame on some slats of wood, with long dowelling rods at each corner to push deep down into the soil and to hold it firmly in place. If you are very ingenious you may be able to make sides or front that will roll up in the day time. In very cold weather thick layers of newspaper could be spread over the plants inside the polythene for extra protection, but care must be taken to renew them as soon as they get damp, or you will be in real trouble. It is surprising the plants that will survive these conditions, but only if you are prepared to spend a little time every day seeing that all is well and giving as much air as possible, for air and light are most important to our plants.

This week I gave all the *Conophytums* one good watering and within a day or two they had soon plumped up. I am sure this helps the new growth forming inside. They will receive no more until about July or when ready. This year I have done the same with *Pleiospilos* and I am sure they look better for it. The *Lithops*, to me, seem rather late this year owing to the poor season last year, no doubt, the adult plants will not need water before May and some possibly even later. Do not repot your *Lithops* too often, they hate to be disturbed. *Argyrodermas* look to be going ahead well this year with plenty of new growth. *Mitrophyllums* and *Conophyllums* should be allowed to go to rest as soon as growth stops and the outer skin turns papery. *Monillarias* will not start growing again until about August. *Fenestrarias* can take quite a lot of water during their growing season and I am sure they flower better for it. Be careful with *Frithia pulchra* and always water from the base. This is the ideal method for all our plants if you have the time and the space to provide a saucer for each pot. I can usually tell by the look of the plants when a person waters from the base, you are not so likely to get a lime deposit around the base of the plants.

Mr. Boarder writes: that he has examined many hundreds of Mammillarias and taken off thousands of fruits and in every case, he finds that the offsets and flowers spring from the axils.

Mr. Denis Cowper, of Belen, New Mexico, U.S.A., writes: The other day I was stripping seed from fruit of *M. johnstonii* which I had left on the plants when I was surprised to find that some of the seeds had germinated inside the fruit, one fruit having five small plants growing in the pulp. I carefully removed the little plants to a seed pot and they seem to have survived transplanting. This is not an uncommon matter in some species, but I have never before encountered it.

Some months ago I referred to the efficiency of St. Bride's Institute in sending letters to us although it is thirty years since we had our founding meeting. Now I have received another letter from America with four of the new U.S.A. stamps on for Arizona illustrating cacti and flowers. It was sent to my old Elstree address and from there it has been forwarded on to me at St. Albans.

Dr. Louisa Bolus, the well-known botanist of South Africa who has done so much for our knowledge of succulents growing there writes that there are now a team of energetic and knowledgeable collectors exploring new localities, as well as going over old localities to rediscover some of the old types that still remain insufficiently known. "Due to the ravages of grazng, cultivation and civilisation generally in this country, much of the flora is disappearing and there is no time to be lost now in securing good material for preservation". As is well known Dr. Bolus has been responsible for assembling the material for the Bolus Herbarium.

MAMMILLARIAS I HAVE GROWN *(continued)*

By A. BOARDER

To continue my record of the *Mammillarias* I have grown I now come to the letter "G". On looking over them I found that I have not been able to get a few kinds since the end of the last war. I have not even seen any seed offered but I always live in hope and this part of the hobby is the fascinating part, as one is always searching either for a plant possessed years ago or a new discovery.

M. gabbii, I had from Neale in 1933, and have not been able to replace it since the war. This was one of a number of plants imported by Mr. Neale in the early thirties. I remember at one of our annual exhibitions he put on a fine display of plants all down one side of the Old Hall at Westminster. He had representatives of practically all the Genera as named by Britton and Rose. I should like to get this plant again.

M. gasseriana is another plant I have been unable to find again. I had my first plant from seed obtained from Winter. From what I can remember of it it resembled a rather short spined *M. sinistrohamata.*

M. Gates No. 500. This was a plant I obtained from Neale in 1933 and was one of a number of new discoveries found by Howard E. Gates in Lower California. I do not know what name it was given eventually but remember the plant as one with strong straight spines on an open type dark green body.

M. geminispina was a seedling raised during 1932, from Haage's seed. I am almost sure that the plant I have of this is a descendant of the original and it was raised after the war and is now a nice specimen. The white spines make this plant particularly attractive.

M. gigantea I raised from seed sent me by Mr. Shurly in 1936. It is one of the widest growing *Mams.*, I know. A real beauty. Mine has not made any off-sets and so may remain single. It flowers well and makes seed pods.

M. gladiata is rather a problem plant as I cannot find much about it. I was given my first seeds of this plant by the late Mr. Farden. He had many *Mams.*, and he gave me several lots of seeds from his plants. I think that Britton and Rose would include it with the hosts of those in *M. magnimamma* as it is something like some of these plants. However it has made a very large plant with many off-sets which all flower well and provide many red fruits later on. I raised my present plant from seed saved from the old plant lost during the war.

M. glochidiata, is a small growing grouping type which never seems to last very long in some collections but flowers very well. I raised my first one from seed in 1931. My present is from seed sown in 1948.

M. glochidiata v. crinata was obtained from Cooper in 1927, but I have not been able to get another one since the war.

M. grandidens I raised from seed from deLaet in 1931, but have no plant of this name at present. It was included in the *M. magnimammas* by Britton and Rose, a species which it certainly resembles.

M. gulzowiana is a problem plant for me. I raised my first from seed from a Mr. Jennings and since then, 1937, have had several attempts to keep one of these going. I have grown good plants and flowered them well but they have never lived more than a few years. The plant bears a strong resemblance to *M. bocasana* but the flower is enormous for a *Mam.* It is quite two inches across and is a fine self purple. I consider it to be the most outstanding flowering *Mam.* of them all. Why it should be so much more difficult to grow than *M. bocasana* and several others nearly like it I do not know, but as sure as some of these seedlings are put in a box they start to go off whilst other *Mams.* in the same box thrive well.

M. galeottii is given by Craig as a variety of *M. tetracantha* but my plant is different from the plant I have as *M. tetracantha.* My plant is a simple type almost like a *M. hidalgensis* and I raised it from seed in 1948. It flowers well with a ring of red flowers near the growing centre and handsome fruits follow these later on.

M. gilensis is rather a new one for me as I only had it from seed in 1955. It is rather an attractive plant as the spines, some hooked are a greenish yellow. The spines are not over long and the plant is caespitose soon making a good group. It flowers easily, producing a few the year after the seed was sown. I find it is very similar to *M. calleana.*

M. guerreronis is a tall growing handsome species with long white spines, some hooked. It is one of the most outstanding of the *Mams.* as it grows so much taller than the usual *Mam.* I have had several attempts to raise plants from seed during the past 20 years but find it very susceptible to rotting off during the first winter. The seedlings grow very quickly until then but I usually lose most of them before the end of the winter. Most of the seed has been purchased from Winter.

M. guaymensis is a rather new introduction and those I have raised from seed have made fine plants. They have an appearance something like a *M. melanocentra* but have long rather winding spines. This plant is very attractive, but I have not found it very easy to grow.

Continued on next page

QUESTIONS AND ANSWERS

In the February issue of the Journal we announced that it had been decided that the Journal should give the opportunity to readers to put questions as to their problems and the appropriate expert would reply to them. So far, only one reader has taken advantage of this new venture, Col. D. M. A. Herbert, who sends us two problems:

Question 1. I have two plants of *Lithops optica* v. *rubra*, one of four heads and one of three, but I cannot get them to flower early enough to obtain seed. For the past two seasons flower buds were produced during December and developed very slowly. Two flowers of one plant half opened one sunny day in February 1962 and then all the flowers dried up. I nursed the plants with a little water now and then to keep the flowers growing, perhaps I should have been more generous, but I was afraid of losing the plants. I maintain a minimum temperature of 45 degrees in my greenhouse.

Answer by Mrs. M. Stillwell. This is a question that besets many. The whole thing relies upon the weather and the amount of sunshine and strong light available that will ripen the plants enough to encourage flower buds to form. I would suggest growing the plant on a top shelf near to the glass, but with plenty of air to prevent any scorching and watering from the base sparingly. *DO* not repot to cause root disturbance unless absolutely needed. You could try collecting some pollen from the first plant to flower and keeping it in an envelope to use when the other plant flowered, but there is no surety that it would work. Unless we have a good summer and plenty of sunshine late in the year your chance of obtaining seed looks rather remote.

Question 2. I was surprised to see the heading on page two of the February 1962 issue "List of Cacti Seeds Available" repeating the error which is all too common. Could we have an official note in the Journal clearly stating when the singular and plural forms respectively of "Cactus" should be used? Obviously many people do not know. Also a note on pronunciation (please, not "Cactee"! !)

Answer by Gordon D. Rowley. "The indiscriminate use of 'cactus' and 'cacti' puzzles me as every school child is taught (or was, in my day) that 'i' is the classical plural of most Latin words ending in 'us'. There is nothing more to it than that. We should never speak of 'Roses seeds but 'Rose seeds'; hence 'Cacti seeds' is wrong. Similarly, 'a greenhouse full of cactus' means 'a greenhouse full of one plant of cactus'—which isn't usually what is meant at all! When in doubt, substitute a more familiar word like 'orchid' or 'orchids' and see which sense is correct. Regarding pronunciations, I am never dogmatic—so much depends on nationality, the way you were taught at school, and whether a word is still treated as a scientific name or has become so assimilated into the vernacular as to take on an anglicised pronunciation and plural ('cactuses'). Look up your favourite dictionary and accept that!"

MAMMILLARIAS I HAVE GROWN—*Continued*

M. guirocobensis is another plant I have grown from seed since the war. I did not know it previously. I raised my first plant a few years ago from seed and it flowered after two years. The plant is somewhat similar to a *M. nunezii*, but has some of the strong spines brown in colour. My plants are still simple and do not appear to be going to make any off-sets.

M. grisea appears in my seed reference book for the year 1946, but I am unable to find a plant of it today in my collection. I remember having a plant of it, but whether it died or just floated away I do not know. It is very difficult to find a particular *Mam.* when one has nearly 500 *Mams.* in pots and hundrdes more in boxes. I often look for a particular plant and cannot find it, then the next day see that it is just in front of me.

M. gummifera was raised from Winter's seed in 1949, and has made a very nice specimen. It is not a common plant but one well worth growing.

M. glauca is another plant which I grew from seed in the years since the war and did not have it before. This was classed among the many *M. magnimammas* by Craig, but to me it is quite different to any of these. There are about 115 species or varieties lumped together under *M. magnimamma*, but I cannot bring myself to believe that these are all synonyms of that plant. I have a large number of plants which have been included in this species, but find more differences between them than there are among many of the described species. Perhaps if they were re-classified today it would be found that many of the old names are valid. Still I do not feel qualified to judge this naming as I still cannot see where some species vary from a variety. In some cases just a slight difference in the colour of some of the spines seems to justify a specific name, but it is well known that in a bunch of seedling *Mams.*, from one seed pod can be found so many variations in colour of spines, and also as to length, that one can get bewildered with a few. How much easier must it be for the collector to go wrong when the same species growing on different sides of a mountain can be totally different in appearance.

TESTUDINARIA ELEPHANTIPES

By B. MAKIN

As roaring jets of flame are played onto the lip of the crucible a thin, molten stream is gradually moved along the line of moulds and, seemingly only seconds later, the solid bars are removed amid a great clatter of hammers and laid out to cool.

I am watching the pouring of silver bars and, to see them coming out, all according to predetermined shape, I cannot help marvelling at the predetermination which moulds some of our succulents. Not seconds but millions of years are involved in this process but what weird and wonderful forms have resulted. It is very difficult not to wonder why but even more difficult to arrive at a really satisfactory answer so we usually make do with the convenient term "mimicry". Thus we applaud the great ingenuity of the plants and presumably the even greater ingenuity of the plant hunters who find them although most of them would agree that it is generally more good luck than anything else.

Sometimes the name of a plant will indicate a case of "mimicry", e.g. Lith-ops or "Stone-eyes". If we consider *Testudinaria elephantipes* however we are faced with a "Tortoise-like plant" (Testudo-tortoise) that also looks like an "Elephant's foot". Now I have seen hundreds of tortoises but never one that even vaguely resembled an elephant's foot but not to worry; the plants very often grow to the size of an elephant's foot, large and small plants being covered by the fact that there are also large and small elephants.

Pardon me a minute; here comes another batch of silver. I'm glad this isn't my regular job; I'm alternately sweltering in the heat of the furnaces and the pouring metal and then shivering in the icy blast as the doors are opened to cool the bars. I'd much rather be back hunting for succulents. I never saw any *Testudinarias* in the wild because I was never in the right areas of South Africa but I understand they grow in rocky locations where the hillsides carry a rough, scrubby growth which lends support to their stems, and rough grass in season which provides a measure of protection from the blazing sun.

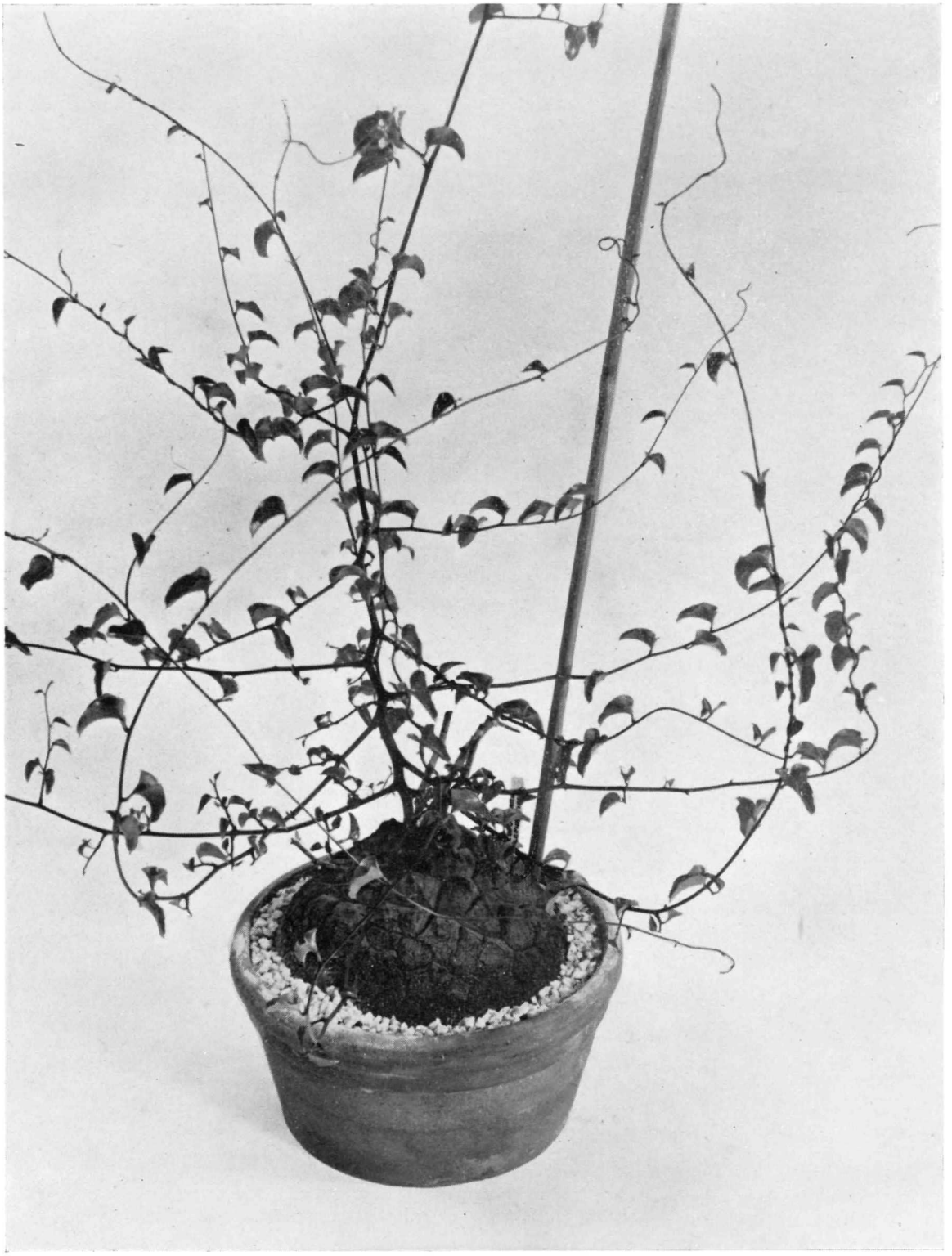
The large caudex is very shallowly seated in the ground so that, when a plant is taken into cultivation, it does not require a very deep pot. In the photograph my plant can be seen growing in an 8-inch pan and the shape of the caudex, with its raised "diamond" patterning, leaves no doubt as to its similarity to a tortoise. It is a nicely shaped plant and I was both pleased and fortunate to obtain it from South Africa a year or two back along with two smaller companions. Just to add to the zoological complications I call them my "three bears"—"father bear", "mother bear" and "baby bear". Only "father bear" has flowered as yet and, by sheer coincidence, it proved itself to be a male plant. It will be interesting to see what sex the other two turn out to be when they flower. As with *Euphorbia obesa* one must have both a male and female plant if one is to obtain home set seed.

It is interesting to grow this species from seed and a small caudex is formed even during the first year but it is a very slow process for it to grow into a specimen plant. It is better to try to get an imported plant and then be patient whilst it "hemispherises" itself to bridge the six month difference in seasons between South Africa and Gt. Britain. *T. elephantipes* is an autumn-winter grower but, when my plants arrived in early autumn, they had naturally just finished their growth phase in South Africa and so remained dormant and I kept them dry.

Thinking they might start to grow again in spring, after a dormancy of about six months, I began to water them partly because I had just read in one of Edgar Lamb's books that it is a mistake to keep this plant dry for long even when resting (!) It made not the slightest difference however; they remained dormant right up to August by which time I was almost in despair. Then a single, brownish shoot appeared at the centre of each plant amid the twiggy bases of previous years' stems and, from then on, the top growth was rapid, the single stem putting out branches as it extended and strengthened.

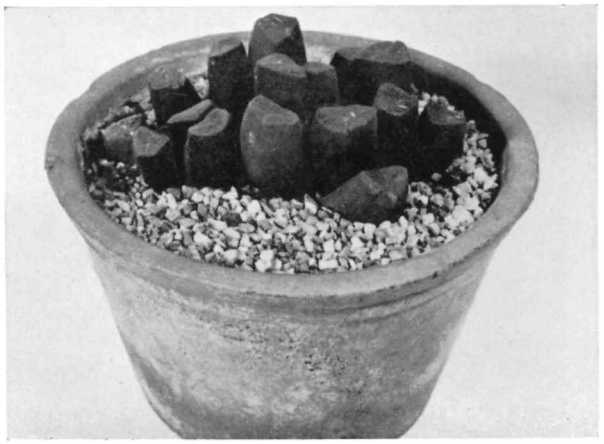
There was quite a sturdy framework by the time the leaves began to develop but, from a similar August start in 1961, I was able to exhibit "father bear" at our September Show in full leaf and flower. Two or three gardening papers remarked on it and "Amateur Gardening" also published the photograph.

It is certainly an interesting plant to grow and reasonably easy in a well drained soil mixture. It is mid-January now and the leaves shown in the photograph are fading so I have reduced watering. The stem will remain woody and brown and can be merely trimmed up and left so that the soft, twining ends of next season's top growth will find a ready-made framework from which to gain support. I got this suggestion from Mr. Boarder at the Show

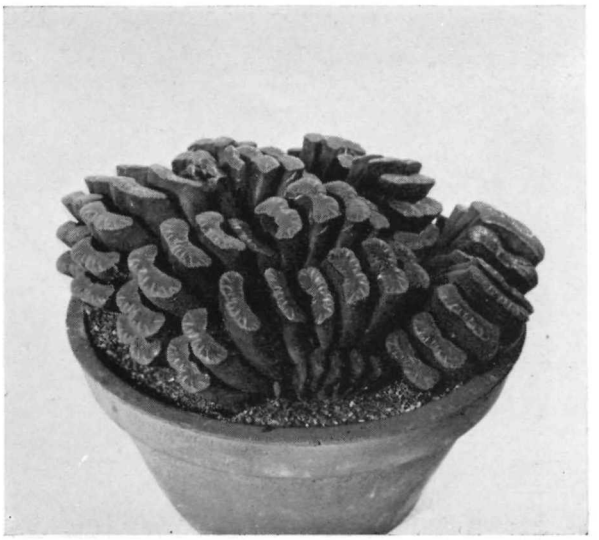


Testudinaria elephantipes B. Makin

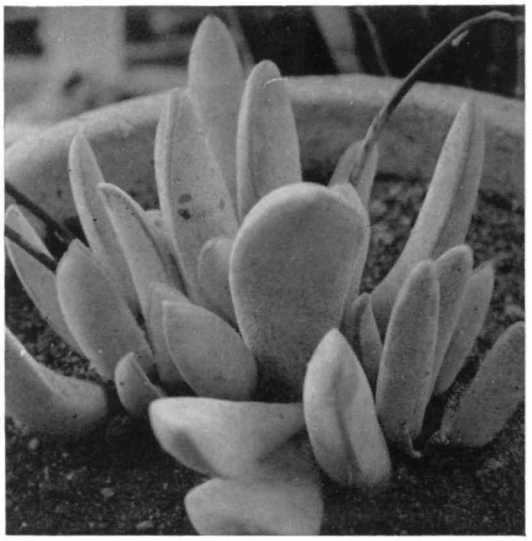
Parodia catamarcensis Miss M. J. Martin



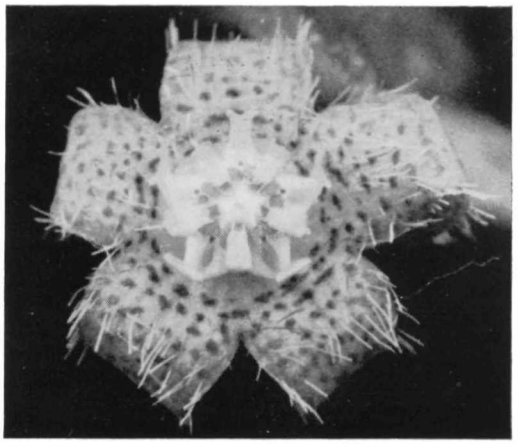
Haworthia maughanii A. Crookes



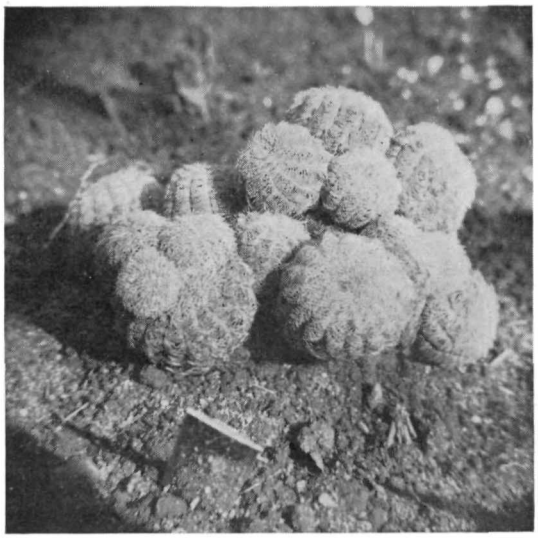
Haworthia truncata A. Crookes



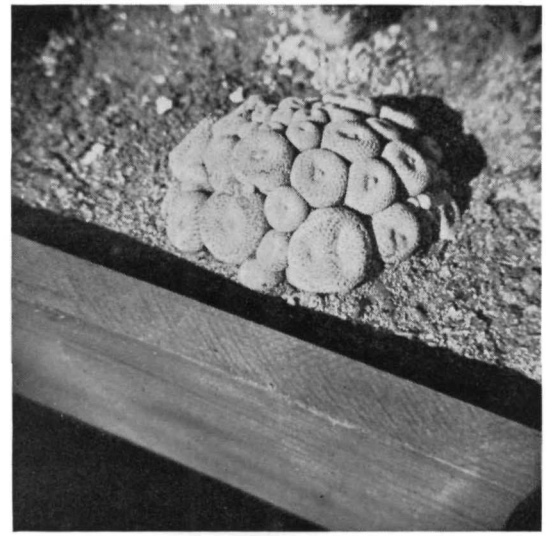
Adromischus gracillimus J. Himmerman



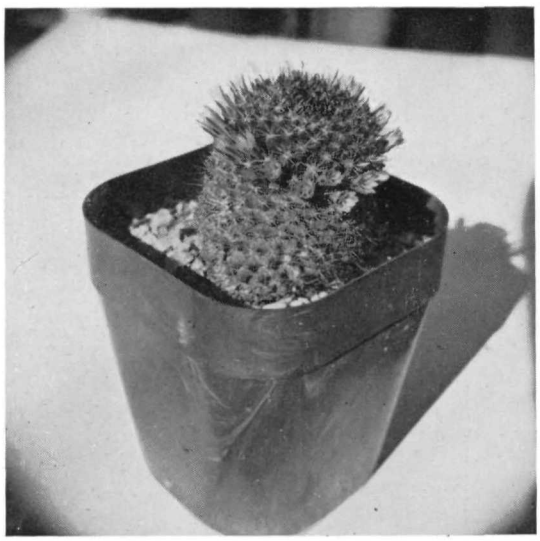
Flower of *Caralluma marlothii* J. Himmerman



Echinocereus reichenbachii



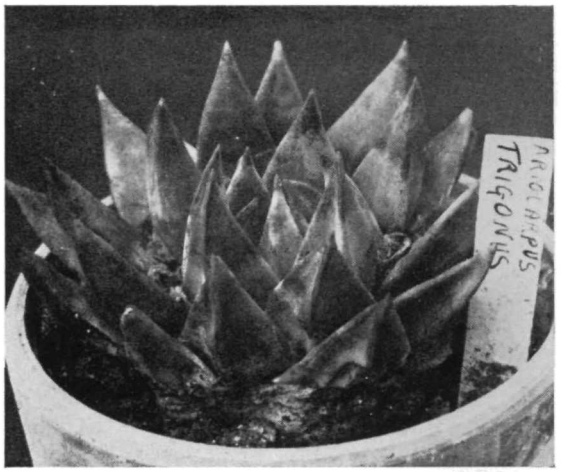
Epithelantha micromeris



Mammillaria dioica

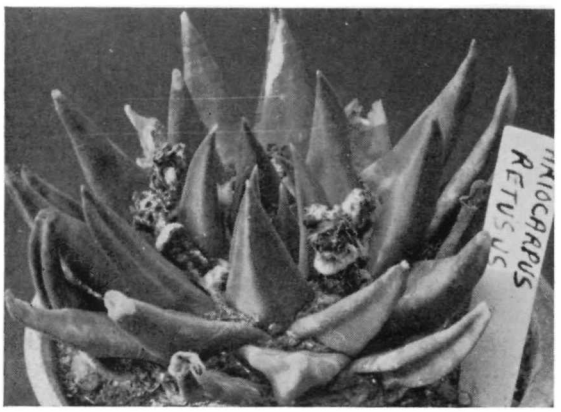
Trichocereus pachanoi

(Four photographs by R. Russell)

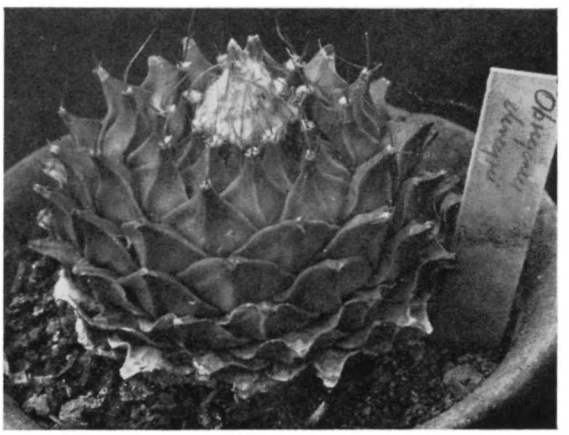


Ariocarpus trigonus

Ariocarpus furfuraceus



Ariocarpus retusus

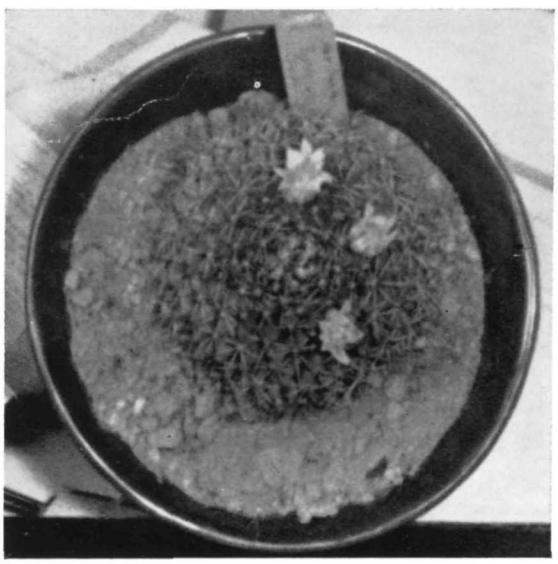


Obregonia denegrii

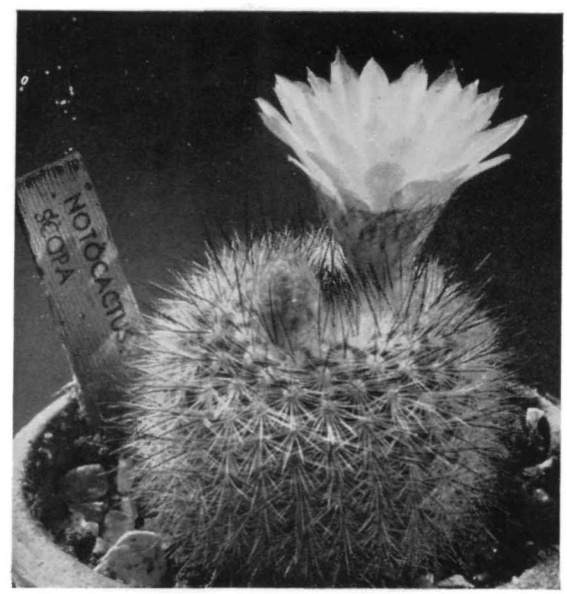
(Four photographs by R. H. I. Read)

Gymnocalycium gibbosum R. H. Thurlow

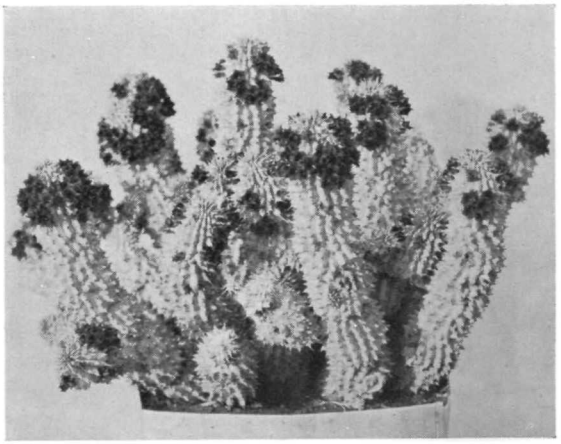
Pachycereus gaumerii Howard Gates



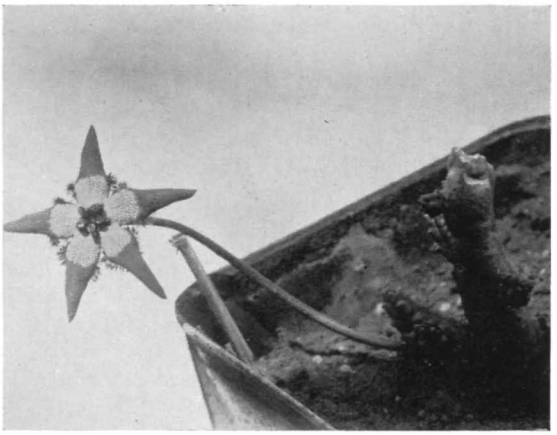
Mammillaria eppeliana E. Eppele



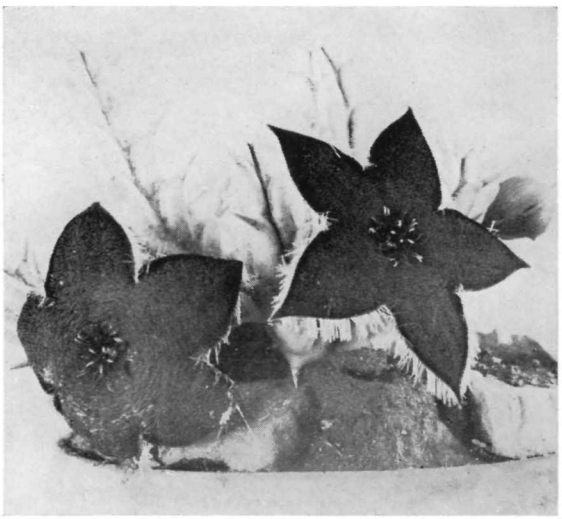
Notocactus scopa G. A. Burton



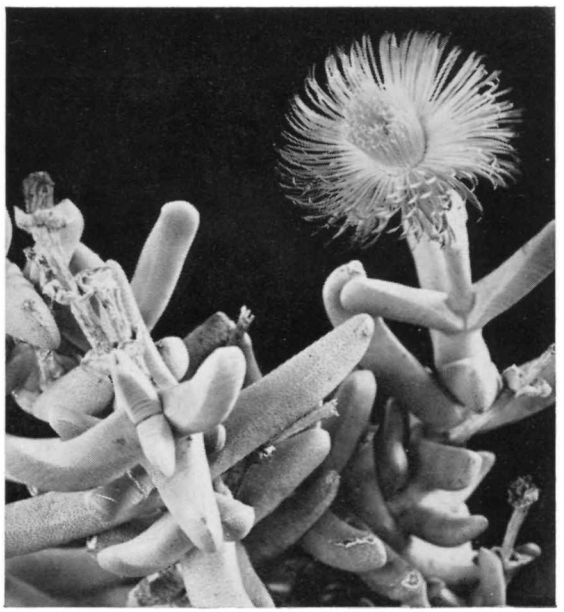
Trichocaulon offizinale



Stapelia longipes



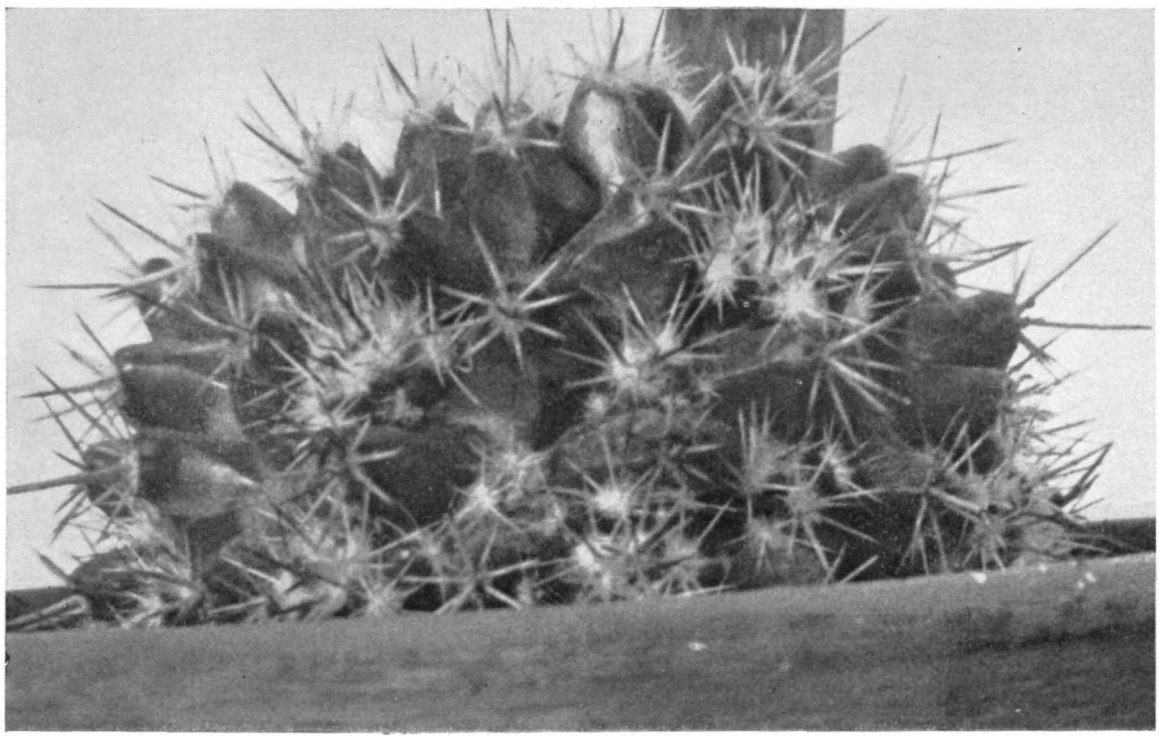
Stapelia gemmiflora



Hereroa fimbriata

(Four photographs by Dr. L. Bolus)

Mammillaria pennispinosa Miss M. J. Martin



Mammillaria ? chiapas (like *M. collinsii*) D. Airton

and it seems well worth trying out instead of simply pruning back to the base and leaving the need to provide artificial support next time round.

The beautifully coloured flames from the melting furnaces have reminded me that I must just say something else about the *Testudinaria* flowers. They (the male ones at least) are pale, mauvish white with yellow stamens and, although individually tiny, they are produced in small clusters along the upper branches and emit a faintly pleasant perfume.

A red-hot crucible has just come from the furnace—the last pour for the morning. Then it's lunch for me and I certainly feel ready for it. Perhaps I'll order turtle (rather than tortoise)-soup followed by elephant steaks and fried yams. The yam (Dioscorea) is a close relative of our *Testudinaria* and they were once in the same genus (Dioscorea). Other approaches to usefulness include, I seem to remember, an abortive attempt to commercialise the extraction of the drug Cortisone from the caudex but now the *Testudinarias* remain prized for themselves alone and eagerly sought after only by us, the collectors of succulent plants.

Dr. A. L. Geyer writes that they have been on another trip and found a new *Lithops*. Going out the weather was perfect, the *Lithops* were "fat", and therefore easily seen, but they found nothing new. On the return journey, he remarked to Mrs. Geyer, after travelling for some hours, that he would examine a patch of quartz pebbles which they could see to find out if there was anything fresh and they came upon an obviously new species—*L. elisae*. It is related to *L. marmorata*, but reminds one even more of *L. herrei*. It has white flowers.

We are sure that every reader will be glad to learn that *TWO* of Gordon Rowley's well known films are among the Ten Best Amateur Films of 1961: "Pipeline to Paradise", a sort of reverie on the pleasures of watering a garden and "Cactus Polonaise", a ballet fantasy with cacti dancing to the music of Tschaikovsky. Apparently it is the first time since the competition started that one amateur has walked off with two of the Oscars in one year! Our heartiest congratulations to Gordon!

The advertisements in this issue include one for Mr. E. S. Gourlay's "Reference to Cactus and other Succulent plant literature". I have received a copy and it is a list of books on our subject in Mr. Gourlay's library. It is a formidable document of 52 foolscap pages giving details and values of his books. Many people have little idea how many books contain important information on our subject and for those who have a considerable number of books on the subject, the values shown on Mr. Gourlay's list will be of great assistance. I have checked the values and find that they agree with my own with very few exceptions, some up and some down.

The very important North Western Counties Horticultural Society's Show will be held at the Belle Vue Zoological Gardens, Manchester, on the 6th and 7th November next and they will welcome any non-competitive exhibits of cacti and other succulents. If you are interested please write to the honorary secretary, Miss H. Waller, 117 School Lane, Didsbury, Manchester 20.

FROM NEW YORK TO SAN DIEGO

(Article II)

By R. RUSSELL

In the last issue of the Journal, I emphasized the dryness of the San Diego area. Actually, the year 1961 represented the lowest precipitation year (3·4 inches) in the history of the San Diego weather bureau (going back to 1850). No sooner had I written my article for the Journal than we entered into a more normal winter season. In December, the rains came. December, January, and February are normally the rainy months in the desert areas, and our rain has the unfortunate habit of coming all at once. Los Angeles received over 8 inches of rain this year in a period of a little over a month. Traditionally, we, in the San Diego area, receive about half of the precipitation the Angelenos receive. But for three weeks in a row we received rain, then a pause of a week, and three more weeks of rain.

As I gazed out of my front door, I said to my wife (she claims I repeated this on fifty different occasions); "Well there goes my Cactus collection. Find me another hobby. They'll never make it through this soaking in a million years". To make matters worse, the night temperatures were dropping in to the mid-40's (F.). My wife, being wiser and calmer than I, simply said; "They'll make it. What do you think the Cacti up in the nearby hills do—give up the ghost every time it rains in San Diego?" "I don't know what they do in the hills", I grumbled, "but I have four hundred different kinds of Cacti from every locality from the Chilean deserts to the state of Utah. These rains better end!"

I was in for a surprise, however. A number of local growers and nurserymen told me that rain seems to have little or no effect on Cacti that might otherwise be expected to rot with too much artificial watering. This did not seem possible, but the test was at hand. One night, for instance, amid sheets of rain I looked out to see my *Chamaecereus* actually submerged under water. The test was indeed imminent.

To my great amazement, when the sun finally broke through my plants looked almost better for their ordeal. An *Astrophytum asterias* which had appeared badly shrunken was now bulging like a fat little mushroom. Buds had miraculously appeared on every other *Mammillaria* in my collection, and many of them wore crowns of blossoms on the first sunny day. Some plants had absorbed so much water that they actually showed signs of splitting (indeed, in a few cases plants did split from over-absorption of water, but in no cases did they rot).

This experience is in sharp contrast to what one reads in most of the cultural books. In rereading a number of British Journals and books, I note the constant warning regarding winter dampness. These instructions simply do not apply to Cacti that are planted outdoors in their native habitat. For instance, such supposedly susceptible plants as *Cochemia poselgeri* and *setispina*, *Mammillaria plumosa*, *bullardiana*, *geminispina*, *swinglei*, *insularis*, *Echinocactus horizonthalonius*, and hundreds of others have come through the most persistent soakings with no harmful effect.

Out of perhaps four hundred plants, only four of my Cacti rotted due to the winter rain. And remarkably, in each case of rot the plant had suffered from some abnormality (slight etiolation, bad scar, damaged roots or improperly cured cutting). Thus, I conjectured, nature seems to kill the weaker or less perfect specimens, and in so doing, improve the species. Also to my surprise, I found that plants which are supposed to be extremely prone to rotting or very tender came through the winter rains with flying colors. All of which leads me to the following conclusions: (1) Imperfect or poorly grown Cacti will die with the advent of the first adverse conditions in nature. (2) The great majority of Cacti will show astounding toughness in their (outdoor) natural habitat, regardless of what the textbooks say and regardless of what the cultural handbooks imply.

During winter, many of the native plants swell up due to the rains. Then when the almost rainless summers arrive they are able to grow practically on stored-up moisture. By fall (our hot months are September-November) many of the plants are thin and wrinkled. It is also extraordinary to see how Cacti will revive after a one or two day steady soaking. After last year's drought, many native Cacti looked brown and exhausted. A week after the first rain, I walked into the hills and was amazed to see these same plants looking fat and green. Their recuperative powers are truly remarkable.

I ordered a large assortment of plants from Mexico. The box was lost in the mail, and I received it

five months (!) later in March of this year. All the plants were potted and placed outside in half sun. Of twenty-five plants only one (*Mammillaria johnstonii*) was lost. A six-inch *Echinocereus delaeti* is now showing a pink bud after being out of its boxed prison for only three weeks.

I might mention that my Cacti are planted in three ways: (1) directly in the ground (soil here is heavy—almost clay-like), (2) in individual glazed pots—with holes at the bottom of pots, of course, (3) in large redwood boxes, each about three feet long and a foot wide. In all cases, gravel is spread over the surface of all soil surrounding plants, and this has proved to be a very wise procedure (otherwise the rain splashes mud all over the plants).

All my potted Cacti are planted in a mixture of one-half native soil, one-quarter oak-leaf mould and one-quarter sand. Those planted directly in the ground are subject to the rather clay-like San Diego soil (and this I usually "cut" with sand). No lime or gypsum is ever added to the mixture, and it seems to suit all plants from *Mammillaria plumosa* to *Echinopsis multiplex*.

I find that it is quite difficult to build a large collection here in the states, as most of the nurseries (with the exception of Johnson and Gates) offer a very limited variety. Some of the local collectors, such as my friend Bob Taylor of El Cajon, have been a great help to me, and have freely offered cuttings of extra plants. Bob Taylor has made many trips to Baja California (Mexico), and he has one of the finest private collections of Cacti I have ever seen. His two acres of good, well-drained land is planted with countless thousands of Cacti, and he is visited by admiring students from all over the world. In fact, he presented me with a new Cactus which he found in Baja, which has not yet been officially named. (This new plant is now on its way to the Lambs' "Exotic Collection" together with a few other plants which I have been trying to obtain for them).

Mr. Cowper and Mr. Eppele of New Mexico have also been exceedingly helpful, and they have sent me many beautiful and rare plants. A week before Christmas I collected 10 fat *Ferocactus viridescens* and packed them off to New Mexico (in exchange). Mr. Eppele wrote me (I think it was February) that they have been having a severe freeze in New Mexico, and he was spending all his time trying to save his plants. The Cacti he sent me are now doing nicely (and two chalky-spined *Utahia sileri* are about the pride of my collection.)

Brian Lamb wrote me that he was trying to obtain a *Lophocereus schotti-monstrosus* form. These are becoming quite rare now, but I remembered seeing a plant of it on one of the local nurseries. This I immediately purchased and it is now also on its way to England together with a large cut of the rare *Cochemia setispina*.

As I write this I am wondering how long it will be before the dry season starts this year (probably late April or May). For as soon as it starts, I will be off with wife and kids for a try at collecting a few rarities. Only an hour and half south of here is Ensenada, Mexico, home of many unique and unusual Cacti. An hour or so west of here is the arid desert of Borrego Springs, a veritable garden of California Cacti. But more about this at a later date.

Sundry observations: *Mammillarias* are fabulous bloomers here. Hardly a plant does not bloom. *Mam. werdermanniana* (Johnson Cactus Gardens) has been my longest bloomer, starting in November and still blooming. Not a day goes by (rain or shine) that does not see two or three flowers open on my three inch plant. I note that Craig lists this plant as a variety of *Mam. hahniana*, but my plant has smaller flowers and flowers all come from the top, whereas my *hahnianas* bear flowers at top and also out towards the sides. I also note that full sun boosts *Mam. hahniana*'s blooming capacity tremendously.

I received a Wilcoxia *poselgeri* from Texas. The plant looked like a bunch of dried bulbs out of which were growing dead sticks. I was almost tempted to throw it away, but instead I planted it by the side of the house. Last week I was amazed to see new growth coming out of the "dead sticks". Does not seem possible, but that is a characteristic of the plant!

Why are *Fraileas* so neglected? I have about five different species, and I love them all. *F. gracillima* is the prettiest. New growth produces bright crimson spines, and the tiny brached plant looks like a miniature *Cereus*.

I have concluded that *Gymnocalyciums*, *Notocacti*, *Echinopsis* and *Parodias* are literally rot-proof here. They have received more water than any other plants, and I have yet to see any ill-effect. It is very difficult to get a representative collection of *Parodias* in the States. About three species are offered by the nurseries.

I note that Buxbaum claims that *Myrtillocacti* are almost impossible to flower in cultivation. My three-foot

M. geometrizans is now covered with buds. This is one of the few genera that will throw out more than one bud from an areole.

I have come to love the heavily-spined *Neoporterias*. I received a collection of greenhouse grown plants.I put them outside, and the new growth is very heavily spined, far more so than the original greenhouse growth. Spines are ebony black when wet, and I consider this a very superior group of plants. Most *Neoporterias* seem to grow very quickly, too (which is at variance with what I read).

I remember reading an article in your Journal in which one of the *Mam.* experts claimed that there were a number of *Mams.* around which have not been classified. I agree. For instance, my friend Robert Taylor brings back many plants from Baja and lower Mexico, and I am sure that there are a number which have not been seen. He gave me a *Mam.* "*heeriana*", a very pretty brown-hooked spined plant, and I have not seen this plant "written up". I have a few other new plants which he gave me, and I am almost sure that they are unnamed. Perhaps there is such a wealth of material here that no one can sit down and go over it with proper care (a typical shortcoming in this country).

(To be continued)

I would like to express our appreciation for the articles by Mr. R. Russell. We badly need such help from an understanding contributor from the home of our plants. His articles contain a great deal that is extremely useful to European enthusiasts. At the same time, it must be remembered that we cannot, here, get the same climatic conditions as are enjoyed by cactologists in California and other places in the United States and Mexico, consequently, Mr. Russell's experiences and comments have to be tempered with the different climatic conditions in view, but what he does write contains much that is useful to us and gives a good deal of information on the probable cultivation of our plants. His information does give us information that contradicts much of the literature of the past, but which we are gradually coming to understand ourselves. Much of the ideas we have, even today, on cultivation are legacies from the comments of authors over a century ago when the number of species were very restricted and whose cultivation was not properly understood. I am not trying to minimise the value of cultural comments by Mr. Russell, but they do help to revise so many of our wrong ideas, even if they cannot be fully applied here. One has to remember that he is an American who is writing of his experiences in America and we, here, are trying to cultivate our plants under so very different conditions. I have a granddaughter in Sacramento, far to the north of California and she complains(!) of the month long, day after day, sunshine of the hottest kind and she often expresses the wish for some English rainy weather and even is envious of snow and frost!

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

1962		*Subject*	*Lecturer*	*Table Show*
June	6	Pests and Diseases	Mr. A. S. Jones	One Mammillaria in flower
July	3	SHOW Succulents in the Home	Miss A. M. Pitcher	One window sill Succulent
August	14	Ladies Panel		One Lobivia

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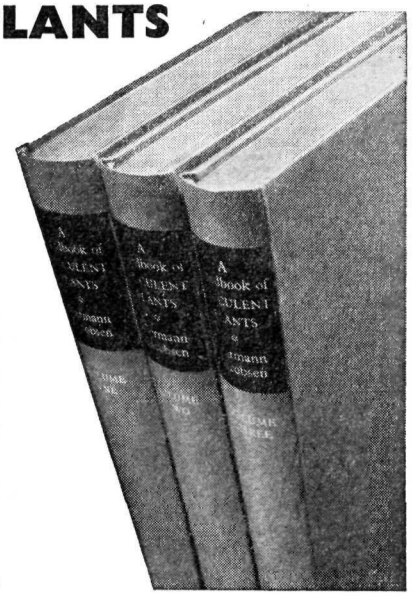

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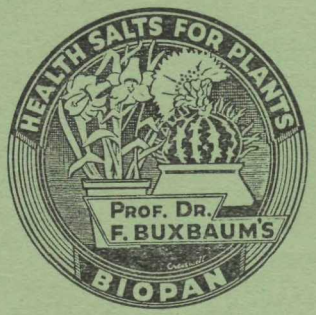

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THE CACTUS AND SUCCULENT JOURNAL OF GREAT BRITAIN

Established 1931

Vol. 24 AUGUST, 1962 No. 3

Contents

Published Quarterly by the Cactus and Succulent Society of Great Britain at 6 Colindale Avenue, St. Albans, Herts.

Price 2/6 Post Free 2/10

Strange the Printer Ltd. London and Eastbourne L8480

THE

CACTUS

AND SUCCULENT

JOURNAL

OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 24 *AUGUST, 1962* *No. 3*

FROM THE PRESIDENT

Since the last issue of the Journal I have heard of the resignation of Mrs. Vera Higgins from the office of President of the N.C.S.S. It is with regret that we have to record this. We cannot forget the sterling work Mrs. Higgins has contributed to our hobby and studies, especially while she was secretary and editor up to the beginning of the war of our own Society. Since the war she has contributed much to the success of the N.C.S.S. and her resignation was received with regret by the members of that society. We must also remember, with appreciation, the great deal of written material that Mrs. Higgins has produced which has helped us all with our studies in a considerable manner. She was the first editor of our own Journal. She has written several books for publication commencing in 1935 with "Cactus Growing for Beginners" in conjunction with Rev. H. T. Marrable. Mrs. Higgins has also dealt with several translations of popular books, including the well know Borg's "Cacti".

I am continually receiving reports of extremely prolific flowering of our plants during the current season. This is rather extraordinary in view of the bad year that was experienced in 1961 and also the dry and very cold spring and early summer up to date of writing this year. True that our plants are grown in greenhouses, etc. and get special watering attention as well as much care in other directions, but why should two such unsuitable seasons result in such fine results? It is a matter that better minds than my own could elucidate.

I am afraid that my removal to St. Albans has set my collection very backward, but now my plants seem to be recording something like the results of other collectors. My prize hooked *Mammillarias* are giving a fine display at the time of writing (June-July). They are usually in full bloom the latter part of April and the beginning of May, but they are now showing their best. They were very much neglected over the winter because of the exigencies of our removal, but their present state indicates that cacti will carry on whatever we do to them!

Of recent years the cult of coloured slides has hit our members full blast and there are many collectors who religiously colour photograph their plants in bloom and fruit. It would be a very good thing if all these colour slides could be amalgamated and so provide a fine collection which could be referred to for identification and other purposes whenever required. It is quite easy to have copies made and it would be a good thing if the photographers would permit the reproduction of their slides for general purposes. Perhaps the new Succulent Institute could make this another of their tasks.

Another issue of the Mammillaria Journal has been received. It is surprising the success which has attended the efforts of those enthusiastic members who have been responsible for its progress. As a *Mammillaria* student I find their Journal of the utmost importance and I am sure that all our members interested in the genus would find their Journal and their meetings really helpful.

E. SHURLY

THE ANNUAL DINNER will be held at the Shaftesbury Hotel, Monmouth Street, London,W.C.1, on the 24th November, 6.30 for 7 p.m. Tickets 25/- per head. Please apply, with remittance, to Mr. E. W. Young, 35 Castle Drive, Ilford, Essex. A good programme has been arranged. If you have been at one of our annual dinners you will know it is a function well worth attending.

CACTUS CULTURAL NOTES

By A. BOARDER

As I write these notes the summer shows are in full swing. At the shows I have judged I have noticed a distinct improvement in the quality and cleanliness of the plants. There seem to be fewer imported plants on the show bench and most of the plants appear to have been grown in this country. The splendid undamaged growth from top to bottom of the plants is a joy to see. When at Ilford show recently I saw some very fine plants and of course I expect to do so where Mr. J. Taylor exhibits many of his well grown specimens. This show is always well run especially as it is a branch effort. Many of the members worked very hard to make the show a success and I noticed that the ladies were well to the fore with tea and cakes. Where a team of ladies work so hard it is certain that everything will go with a swing.

I judged the show of the newly formed Cactus Society at Bristol and saw many fine specimens there. This Society has included house plants in their interests and many of these were on show. I think that this idea will bring in a few more members who are keen on these plants. It is also possible that many people came to see these plants as well as the cacti. I see that this society still provides classes for plants in pots no larger than 3½ inches. I feel that this encourages members to keep plants in pots which are too small for them. A lovely *Mammillaria saetigera* won the first prize in this large fine class and I discovered later that this plant had been grown from seed by my daughter, Mrs. Walker. She also won several prizes including a shield for the best seedlings. At the old society's show earlier in the summer she had won five firsts, six seconds and a rose bowl for seedlings. I was particularly pleased about this show as I was unable to judge it due to a previous engagement. In consequence it could not be said that I had favoured her, but, of course, I do not know the owners of any plants I judge. Not that it would make any difference to me as I am too used to judging to be influenced by anything but the appearance, etc., of the plants on show. I could just as easily judge my own plants among others if necessary.

I wonder how long a cactus plant can live without any healthy roots or making any perceptible growth. I expect that many members have one or two plants such as this especially if their collection is a large one. I believe that a globular type cactus could exist for seven to ten years without actually growing or yet dying. I have in mind a *Mammillaria herrerae* which I was given over seven years ago by a dealer friend in the Midlands. This plant was an imported one and had no healthy roots. Over the years this plant has made no actual growth but put out two small off-sets, about half way up. If anything the main plant shrunk slightly but never appeared to make healthy roots, but yet did not die. I suddenly got tired of seeing this miserable-looking plant and decided to do something about it. I cut off the two off-sets, each no more than half-an-inch across. They appeared to have some life but not much. I dried their bases for a couple of days and placed them on my usual mixture of equal parts peat and sharp sand. Nothing happened for a week and then I remembered my old treatment; rarely used as I scarcely ever take any cuttings. I stood the pots with the off-sets in a saucer of water. Within five days strong roots had been sent down into the medium. I am now hoping that I can get these small plants to grow on healthily. I am also trying to root the old plant by the same means.

There appears to be little doubt that the water below encourages the plant to make fresh roots. When planting in the garden into wet soil it is quite difficult to get the roots of a plant to go down into the hole as the roots swing to the wet sides of the hole whenever they get near it. This proves that water has an attraction for roots. When using the above method for striking cuttings it is imperative that once good roots have formed the plant should be removed from the water beneath. If the striking medium had been placed on top of ordinary potting mixture there will be no need to do any moving of the plant. If the medium alone had been used then the plant must be carefully potted into the proper potting mixture.

I am sometimes asked what soil could be used for *Epiphyllums*, *Schlumbergera* and *Zygocactus*. I consider that the J.I. potting compost No. 1 would be quite suitable for the majority of these plants. However some of the *Epiphyllums* are very rampant growers and these could quite easily be planted in J.I. potting compost No. 2. They would benefit from the extra fertilisers especially when producing a good crop of flowers. This brings me to another query I am often asked. Is it necessary to give fertilisers to cacti as a general rule? A lot will depend on the type of cactus. As far as *Mammillarias* are concerned I do not consider that they need any extra fertiliser providing they are repotted at least once every two years. There should be sufficient food in the compost to last them for some time. Some of the *Mams.* are strong growers and when these are of a good size, and not repotted each year, a little fertiliser can be given. This can be the J.I. liquid fertiliser, given as directions and when the plant is making new growth or budding for flower. In other cases where the J.I. potting composts have not been used

there are several types of liquid fertilisers on the market which would be beneficial to the strong growing plants. For the smaller, slower growing plants such as *Epithelanthas*, I do not consider that they need any fertilisers. One must always be careful not to over-feed any cactus plant as it will then become untypical and instead of appearing tight and compact it will become blown and open so that the inner body is seen instead of being covered by strong growing spines. A blown or too sappy plant would not win at any good show.

I hear on all sides that members have had an exceptional year for flowers and casting my mind back I have heard this one before, practically each year. The reason is that many members are growing their plants on well and then, of course, one must expect that they are likely to have more flowers each year. Many young plants will have become old enough to flower and so it is not unusual to have more flowers each succeeding year. It may not be due to the weather, but that maturity has been reached by certain plants. I have again had evidence that some plants have been badly scorched under glass. This seems to happen when we experience a sudden hot day in the early part of the year. The plants have become accustomed to fairly dull weather and then when the sun shines strongly on a certain day they are scorched. If plants are in the open they do not suffer from scorch and so it can be assumed with some certainty that the glass attracts and magnifies the heat of the sun. All plants do not suffer from scorch, sometimes only one or two will be affected, but the glaring sun in the early afternoon can do a lot of damage. It is no use trying to say that cacti do not scorch in this country as I have plenty of first hand evidence that they do as well as having been informed by many people that they also have experienced scorching. I now provide some shade during the warmer months of the year and do not find that it interferes with the production of flowers in any way.

When I was away on holiday during early June this year I left the windows of my greenhouse and frame open all the time, day and night. Nothing appears to have come to any harm. Some of the seedlings may not have grown quite as well as I expect normally, but, at least, I can see no losses. I have found that the *Lobivias* have flowered very well this year. Some of the plants are no larger than the top of one's finger and yet have produced flowers. The colours are very fine but it is a pity that they are short lived. *Lobivia jajoiana* is exceptionally fine being a red with a black centre. The *Lobivias* make very fine specimens for colour photography and I have several fine slides from mine this year. This part of the hobby is very intriguing, but it is rather difficult to know when to stop as each year a particular plant may produce more flowers and then one is tempted to take another shot of it.

Keep a sharp look out for any pot which does not dry out when the majority of the others have done so. This may indicate that the drainage of that pot has become clogged and if it is not attended to without fail it may be that the soil remaining so wet will cause the roots to rot and then the plant may die. Repot such a plant at once and make sure that it has good roots before doing so. Should the roots have died re-root as described above. Any weeds should be removed from pots and an occasional light forking over the surface of the soil will help a lot to keep the plants healthy. After some months of watering the surface can become quite hard and then when water is given, much of it may run down the side of the pot without actually damping the soil.

This year's seedlings should be pricked out as soon as they are ready. This is usually when the cotyledon or food bag has been absorbed and the plantlet has made a good root system. See that the soil into which they are pricked out is just crumbly moist and then the seedlings will not need watering for a few days. During this period they should be making new fibrous roots and after that they will be able to benefit from a good watering.

Keep a check on ripe seed pods. These can be removed as soon as they shrivel. Some plants produce their seed pods soon after flowering providing they have been pollinated. Others will not do so until the following year. Many such plants are those which flower rather later in the year. The seed pods should be placed in small envelopes and labelled. It is well to keep the pods as they are and not remove the seeds until later in the year. I find this a good winter's task when others are not as pressing. There are a few exceptions which are better dealt with at the time of picking and these are the *M. rhodantha* varieties. If the pods are carefully squeezed out when picked the seeds may be left to dry on blotting paper. If they are left in the pods they become very difficult to deal with as the seeds become embedded in a jam-like substance from which it is most difficult to remove them.

There is to be the Tenth International Botanical Congress at Edinburgh, August 1964. A First Circular has been issued which gives the programme of the meetings. It is impossible to give all the details in the space possible here, but if anyone is interested write to The Secretary (Executive Committee), X International Botanical Congress, 5 Hope Park Square, Edinburgh 8.

SEDUM ROSEA IN BRITAIN

By J. KIRBY

Eleven species of the Genus Sedum are listed in the Flora of the British Isles (Clapham, Tutin and Warburg, 1952) as growing wild in Britain. Several of these are introduced species. (Probably garden escapes). Perhaps the finest of our native Stonecrops is Sedum rosea, the Rose Root.

In Britain, Sedum rosea is confined to Northern and Upland areas. It also occurs in Arctic Europe, Asia and North America.

It is a perennial herb, with a large, fleshy rootstock, the smell of which is reminiscent of roses, and hence, the plant's popular name. The stems are erect, in a cluster, usually about nine inches tall. The leaves are short and broad, stiff toothed and overlapping, of a glaucous grey-green colour. The flowers are borne in a compact terminal cluster, and occur in May or June. The male and female flowers occur on different plants. They are yellow in colour, with purple anthers. The fruit, which ripens in July and August, is orange in colour and may be mistaken for flowers.

Sedum rosea is a plant of the damp, shady mountain ledges and lower rock faces. In Scotland it occurs almost at sea level on west coast sea cliffs. Of the many plants which grow in association with Sedum rosea in Britain, the following plants are, perhaps, the most commonly met:—

Lesser Meadow Rue, Yellow Mountain Saxifrage, Mossy Saxifrage, Mountain Sorrel, Thrift and Great Hairy Woodrush.

Although well distributed in moderate abundance in Britain, Sedum rosea is not frequently seen as it tends to frequent the more out-of-the-way places. The following list indicates where it may be seen without much difficulty: The lower crags on The Storr, Isle of Skye, at 1,500 feet; the sea cliffs of Loch Brittle, Isle of Skye, at 10-20 feet; above Red Tarn, Helvellyn, Westmorland, at 2,500-3,000 feet; Cove Quarry, Coniston Old Man, Lancashire, at 1,700 feet; Cwm Glaslyn, Snowdon, Caernarvonshire, at 2,000 feet; Twll Du, Cwm Idwall, Caernarvonshire, at 1,400 feet.

In cultivation Sedum rosea grows well in all parts of the country. Although not at home under glass, it will thrive out of doors in the garden, rockery, or in large pots. It will tolerate partial shade and prefers a temperate, humid situation. A fairly rocky, but moist section of a rock garden should meet its needs ideally. It is capable of growing in a wide variety of soils, although extremely clay or sandy soils should be avoided. A rich, well-rotted leaf mould with grit added is my choice for this plant. A good John Innes potting compost is satisfactory for those who are unable to mix their own composts.

Like most Sedum species, it can be propagated by stem and leaf cuttings without difficulty in the usual rooting media. Rooting cuttings is a far more sure way of acquiring this plant. Root-stocks growing in rock are difficult to remove. In winter the foliage dies and the rootstock is buried. Plants disturbed when growing do not recover easily. Rooted cuttings only take a couple of years to form satisfactory groups.

I started the hare of offsets between the tubercles and on the tips of the tubercles among *Mammillarias*. I received so many contradictory reports that I felt the matter should be suspended and left until we can obtain further and fuller and authentic information (one of the tasks the new Succulent Plant Institute could tackle). I have now heard from Mr. W. Greenaway of Charlton, London, that he has had the opportunity of examining *M. wildiana* at a stage when the new offsets can be clearly distinguished and he avers that he has established, without questio n, that on the same plant offsets were appearing both in the axils and on the tips of the tubercles.

Members are aware that the Society has colour slides which can be loaned to branches and responsible persons. In the past the editor has handled the despatch and return of these slides. In future they will be dealt with by Mr. D. Stringer, 90 Fence Piece Road, Barkingside, Essex, to whom application should be made.

In addition to the notification of the new address for applications for the coloured slides, it would be as well to record to whom applications should be made for the various Society supplies. All applications for current and old Journals, booklets, blocks, photos and editorial matter should be sent to the editor (E. Shurly, 6 Colindale Avenue, St. Albans), but old Journals will be despatched by Mr. J. J. Seymour, booklets by Mr. G. R. Ibbotson, blocks by Miss A. M. Pilcher. The editor handles the administrative matters connected with these things. All editorial matter and photographs are necessarily handled entirely by the Editor.

SUCCULENT PLANT INSTITUTE AND COLLECTION

By D. E. WATLING

The formation of a National Collection of Cacti and Succulents, as first stage of an Institute for Research and Study connected with these plants, has been the subject of correspondence in the Journal of the N.C.S.S. since March, 1961.

The reasons for this proposed project centre largely around the absence of any really good, comprehensive and up-to-date collection open to the public in this country. The various botanic gardens seem unable, for various reasons, to provide satisfactory collections and the plants they have on view compare very unfavourably with the many fine public collections on the Continent.

Another pressing reason for the importance of this far reaching project is that several species of plants are in danger of extermination because of mining and agriculture, also indiscriminate and ruthless collecting for sale. There is also anxiety that valuable collections are frequently dispersed or even exported.

A meeting of persons deeply interested in this project was held at West Byfleet, Surrey, on the 17th June, 1962 and an organisation, to be known as The Succulent Plant Institute was formed. A working party is investigating ways and means of implementing the decision of the meeting to press on with plans for the Collection.

Obviously a great deal of money is required to build and maintain buildings and pay staff, but it is felt that, when cactus and succulent enthusiasts realise that it is they who will benefit from this Collection and Institute, the money will be forthcoming. In the interim period—before premises can be obtained and the Collection opened, several people are collecting plants of genera in which they are specially interested, to be amalgamated to form the nucleus of the Collection.

Such plants as the collector may donate and propagate from his own collection will be supplemented by other plants from collectors at home and we hope overseas.

It is essential that all possible support be given to this most essential project and anyone interested should contact either Mr. S. L. Cooke, 63 The Drive, Morden, Surrey, or Mr. D. E. Watling, 4 Portnall Cottages, London Road Sunningdale, Berks, outlining the help they are prepared to give.

A start has been made—progress depends upon every grower of succulent plants including you.

(Without doubt the project is a vital one for our plants and their growing and cultivation. They are undertaking an enormous task and we can but wish them the greatest of success.—Ed.).

MAMMILLARIAS I HAVE GROWN—*Continued from page 56*

M. haitensis is a 1959 seedling which is not listed in Craig. So far my plants appear quite distinct, but they are not large enough to flower as yet.

M. hildemanniana is a new plant for me as I only raised it from seed in 1960. I can find little about it so far and I am hoping to be able to give a description of it later on.

M. halbingeri is also a new acquisition, being raised in 1960. I think it is a nice looking simple type, but so far it is not large enough to be certain.

M. huahuapensis is another new one for me, raised in 1960, from Winter's seed. I have found no description of it so far, but it may be a new discovery. (Decribed Mexican Anales 1954: 25: 536. Ed.)

M. haynii is a plant I had pre-war, but one I cannot find any trace of today. What happened to my plant I do not know but I remember it as a simple type plant which was very pale green in colour always. I would like to get another plant of this species as I know that it was quite outstanding in the collection.

M. hirsuta is a strong-growing type rather similar to a lightly clothed *M. bocasana*. It has strong hooked spines, but has many white hairs among them. It tends to become caespitose like *M. bocasana*. My plant was a 1947 seedling.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

I have been wondering if the prolonged winter rest owing to the cold spell is the reason we have had so many more flowers on our plants this year. So many people have remarked on this especially in the case of the cacti. Could it possibly be that we try to start our plants into growth too early? This might cause more vegetative growth than flowers. It is just a theory that perhaps warrants some looking into. Most of us delayed all general watering for several weeks this year owing to the inclement weather.

I lost only one *Stapeliad* last winter, *Huernia verekeri*, which was a rather sickly plant anyway. They were all planted in 'eclipse no soil' compost with a third sharp sand and grown in full sun. Any secret is in the watering. They should not be allowed to dry right out. If you have the time to watch them carefully and to water always from the base so that the soil is always nice and moist without being saturated you should have no trouble even with the more difficult ones but beware of letting the temperature drop in the winter. Always open to learn and always ready to improve on my cultivation, I decided to try and better the compost for these plants this year. So far I am very pleased with the results. I have used one part sedge peat one part sharp sand and one part John Innes number 2 mixture, with a little extra base fertiliser. This has produced some fine strong growth, beautifully marked, and many flower buds. Never give these plants liquid fertiliser, or you will get a large lush plant and even perhaps plenty of flowers, but how long are you going to keep it when the cold weather comes? These plants grow very well from seed and each year I try to add to my collection with a few of the more uncommon ones. I introduce them to the light as soon as they make their true plant bodies and do not leave longer than you can help in the propagator. Many will flower within the first year. If you should spot any signs of black rot on these plants it is better to cut off the whole limb and burn it. Healthy plants are seldom troubled with it. The *Huernias* are my favourites and a few worth looking out for are: *H. hystrix*, *H. kirkii*, *H. oculata*, *H. primulina*, *H. vogtsii* and *H. zebrina*, all with most attractive flowers.

I have added extra sedge peat to most of my compost this year and the plants seem to like it as it helps to hold the moisture in the hot weather. A little in the bottom of the pots when repotting is also a good thing.

A pretty little plant that flowered for the first time this year is *Kalanchoe mangini*, a native of Madagascar. It has numerous woody branches, some of which are sterile while others produce bright red tubular flowers from the ends. Looks pretty up on a shelf or in a hanging container. A good companion plant is *Kalanchoe pumila* with fine farinaceous white leaves and numerous pinkish violet flowers.

From the middle of June until the end of the summer I am leaving all the greenhouse windows open as far as possible, unless we get any real downpours, this includes the panes of glass that are removable and which have wire netting in the spaces, as our plants need all the fresh air they can get in the summer and that is the next best thing to standing them all outdoors. Do not be afraid if the weather gets very hot and the temperature very high, throw a bucket of water down on the floor in the morning, and again if needed in the afternoon. This will stop the atmosphere becoming too dry and thus encouraging red spider which thrives in hot dry conditions. For those who are not quite sure what red spider is, if your plants in some cases take on a rusty look, this is often the cause. Give them a good hard spray outside with clean water, or if you prefer completely cover the plant with flowers of sulphur and leave for about a week and then either spray or brush it off. Unfortunately a plant damaged by red spider is marked for ever, until it makes some new growth.

I was very taken with a plant I saw while judging at the Bristol show. It was a very large plant of *Euphorbia milii*, var. *splendens* which we are often made to believe was the original crown of thorns. This had been trained in the shape of a large crown surmounting a plain wooden cross. Looking at it I was deeply moved. I have wondered since if the grower intended to create this impression, or were the pieces of wood merely stuck into the pot solely with the idea of supporting the plant.

Many people have said to me that they are not very successful with the growing of *Neohenricia sibbettii*. I have discovered this year that it can take quite a lot of water, especially if growing in full sun and, unlike its near relatives the *Titanopsis*, will not rot off if over watered. It also likes a little lime in the soil. It has delicate little white flowers with a strong scent, opening in the evening.

Conophytums can be repotted or broken up during the months of July and August, but only if you feel it necessary. They grow far better if left undisturbed as long as possible. Their beauty is in their clumps and not

in individual heads. Water as soon as growth commences and the old skin splits. *Lithops* should be looking at their best during August and September. Give them plenty of sun to bring out the full beauty of the colourings. Concentrate more on the colouring than size and remember it is not always the biggest that are the best. Try to arrange your *Lithops* on the staging so that one colour offsets another. Place a red one beside one with yellow markings for instance. Seedpods can be removed carefully when ripe, with s amall pair of nail scissors. Do not pull off or you may damage the base of the plant. Dead skins can be removed with a pair of tweezers.

Summer is the best time to propagate the *Echeverias* and *Pachyphytums*, especially those kinds that get very leggy with age. Do not be afraid to slice off the head and re-root it. It will make a much nicer plant. With a large collection one finds it strictly impossible to stick to the rules, such as re-pot in the spring, etc. I feel it is best to do these jobs as and when a plant looks as if it is in need of attention, regardless of the time of the year. The same applies to grafting. We know that mid-summer is the ideal time, but if it is the means of saving a precious plant that would otherwise die, then take a chance at any time. I wonder how many of you made an outdoor succulent garden this year, and what the results were. I shall be interested to hear. I am sure those people who have previously grown their plants indoors are the ones who will have had the most pleasure seeing the true colours of their plants develop. It is advisable to get them under cover again by the end of October. Summer is a good time to stand the plants outside, while the interior of the greenhouse has a good clean up or a repaint. A lot of work perhaps, but worth it in the end.

FURTHER OBSERVATIONS

By C. JACKSON

It was very gratifying to read my article in the October, 1961 issue of the Journal, even though it fell short of the standards I had originally set for myself.

However, in the meantime I have made further observations on heating greenhouses for cacti, and feel that it is in the general interest that these should be reported.

For the 1960/61 winter I purchased an additional oil heater, a very good model, and I obtained an excellent distribution of heat around the greenhouse. Only on two occasions did the temperature fall below 40 deg. F. and only very occasionally did the temperature fall below 43 deg. F.

My losses were very few, but as spring came and the first plants to start growing showed their new spines, I felt very disappointed with my collection. I realised that the beautiful gold, yellow, white and red spines of the previous summer were all brown and that the plants now had a very drab appearance. The oil heaters had saved them from the frost, but all spines and wool were badly discoloured and it would be impossible to use the plants for shows. Then and there I decided that oil heating was "out" and that electrical heating was a "must" and that something must be done before winter 1961/62.

In the summer, with the welcome help of two of my friends, Mr. Roy Mottram, a member of the Society and his father, my greenhouse became equipped with thermostatically controlled hot water heating, the water being carried in one-inch copper pipes. Even during the very cold spell over Christmas and New Year, the lowest recorded temperature was 43 deg. F. This was when we had over 20 degrees of frost outside.

In addition I would mention that this winter there has been practically no condensation in the greenhouse. Last winter I had to wipe down the polythene lining almost every day, sometimes collecting two pints of water, the task taking up to half an hour.

To conclude, I would say that

1 To retain the beauty of cacti throughout the winter,

2 to have freedom from condensation,

3 to have as little work as possible during the winter.

electrical heaters, or electrically heated water systems are a necessity for cacti lovers. The cost is certainly a little higher than with other forms of heating, but this will be well repaid as years go by.

MAMMILLARIAS I HAVE GROWN *(continued)*

By A. BOARDER

I now come to those *Mammillarias* beginning with the letter "H". Among these are some of my favourite plants.

M. hahniana, surely one of the most handsome of the *Mams.*, with its long white hair-like spines. It can be referred to as the "Old Man", *Mam.* and when it is ringed with its ruby-like flowers it is indeed a fine addition to any collection. I raised a plant in 1931, from seed bought from de Laet and my present plant is from seed sown in 1946. So far it is a single well-shaped head but I expect that it will send out off-sets later on.

M. hahniana var. brauneana, is I believe a different species and is listed by Craig as such. It bears a strong resemblance to a short haired *M. hahniana* and was raised from seed in 1947.

M. hahniana var. werdermanniana shows more short spines than the first named, but is a very handsome plant. It has similar flowers to the usual species and my plant was a seedling of 1948.

M. hahniana var. giseliana is another variety, but I am of the opinion that some of these varieties are just crosses of *M. hahniana* with other *Mams.* If plants are raised from seed from a *M. hahniana* it is possible to obtain many types of plants. Some have the usual heavy white haired covering with scarcely a spine showing whilst others have many short ones very prominent. It is probable that all these varieties are from crosses with other *Mams.*

M. hahniana var. tarajensis is another of these types. a fine looking plant but varying only in the length of white hairs and prominence of the short brownish spines.

M. hahniana var. haseltonii is another I have raised from seed during the past 20 years and it is just a type with differing amounts of the long hair-like spines; however all these are well worth growing but I think that it would be possible to have many varieties if one gave a varietal name to each plant which had shorter spines or less white woolly hairs.

M. hamilton-hoytae I raised from seed sent me by Mr. Shurly in 1935. It is a plant which is not often seen these days.

M. hidalgensis I obtained from Cooper in 1927 and I have raised my present specimen from seed saved from that plant before the last war. It is a fine type which keeps single for many years and does not tend to make off-sets until quite old as a general rule.

M. haageana was obtained from seed from de Laet in 1930, and bears a strong resemblance to one of the *M. elegans.* It also looks something like a *M. schmollii.* It is usually a simple plant and a very attractive one but rather slow growing.

M. hoffmanniana was raised in 1937 and so far has remained simple.

M. hexacantha is in my book of seedlings, but does not seem to be present in my collection today. I do not know what has happened to it. Craig lists it in his little known species and I would like to find another plant today, but have not seen seed listed of it anywhere.

M. heyderi is a good plant as the flowers are quite large and the long spines are very handsome. Another 1946 seedling which has remained single so far.

M. hutchinsoniana I raised in 1948, but it seems rather slow growing so far. It is a plant which I can include in the difficult hooked type.

M. heesiana I first raised from seed from de Laet in 1932. It is said to be synonymous with *M. petterssonii*, but I am not sure about this. I have had one or two different plants from seed of this species and am still not at all sure which is the correct one.

M. heeriana is one of my favourite flowering *Mams.* It is a rather tall growing type with strong hooked spines. The flowers appear in rings near the top and are a fine dark red. My plant was raised in 1952.

M. hemisphaerica I obtained from seed purchased from Haage in 1932 and consider it to be a fine flowering plant. It has remained simple and has a rather flattened growth, flowers well and produces colourful seed pods.

M. herrerae is one of the slowest growing plants I have had. I have never been able to obtain any seeds of this plant and my present one was given to me by Mr. Churchman. It resembles a miniature golf ball being so closely covered with white spines. These lie so flat on the plant that it makes the plant look very odd, but most attractive.

Continued on page 53

THE GENUS NOTOCACTUS

By A. BOARDER

The genus *Notocactus* is a very good one for collectors whose space is limited as there are not as many species in it as in some of the genera. For the grower who has perhaps only a sunny window or a small frame they should make an especial appeal. Most of the plants in this genus do not grow very tall, in fact the only really tall species is *N. leninghaussii*. The flowers are mostly quite large for the size of the plant and most of the species are free-flowering. The odd one again appears to be *N. leninghaussii* which is a rather temperamental plant as far as flower production is concerned. In the first place it will usually be some years before this plant can be expected to flower from seed, while many of the other species will do so from two years of age. I have seen large groups of this species together under the same conditions and yet only a few have flowered. My own plant raised from seed has flowered once and, although it was the only one of its kind in the greenhouse in bloom, it produced a fine seed pod filled with fertile seeds.

Most collectors will be familiar with *N. ottonis* as this is a great favourite. It is very free-flowering, producing its shiny yellow flowers in profusion every year. I have seen it in full flower in a cottage window. There are many varieties of this species, such as *N. ottonis uruguayensis; patagonus, tenuispinus, brasiliensis* and *linkii*. I cannot see very much difference in these varieties except that *linkii* is rather distinct in that the body is less grooved, a lighter green, less spiny and the flowers are smaller. The peculiar feature of all the *N. ottonis* varieties is that the plants have the power to produce underground plantlets. These spring from the roots near the base of the plants on long stalk-like roots. This is the only cactus I have ever grown which has this power and all the varieties will act in the same manner. Although several of the *Notocactus* are rather similar in shape, etc., none of these ever produces the underground off-sets as do the *N. ottonis*.

Several of the species are rather similar in appearance, for instance *N. concinnus*, a fine depressed shaped, green type with softish spines and a large yellow flower is like *N. apricus*. Another of the same growth is *N. tabularis*, but this has dark brown spines, but a similar flower. Also grouped with these are *N. floricomus* and *N. muricatus*. The only ones I have flowered with anything but the bright shiny yellow are *N. rutilans* and *N. mueller-melchneri*. I cannot find much difference between these two and consider that the correct name may be *N. rutilans*. This plant is quite different from the others in the genus as it produces a beautiful pale beetroot-coloured flower. Among the many yellow flowers of plants in the genus this is a grand exception. It does not appear to grow very large or quickly, but I had a plant in flower when only two years old from seed.

Most of those I have named with the exception of *N. leninghaussii* can be grouped together, but there are a few which stand apart with quite a different spine formation. These are *N. graessneri, N. haselbergii* and *N. scopa*. There is very little resemblance between these plants and the *N. concinnus* group, the spines are mostly shorter, stiffer and often from a growing centre which is very woolly. These plants are also much slower to grow to sizeable plants from seed and *N. haselbergii* and *N. graessneri* can be really tricky to get through their first winter, being very prone to damp off.

A type which I have found very easy to grow is the *N. mammulosa* group, which includes *N. submammulosa* and *N. pampeanus*. These have plump green bodies with stiff spines, not softish and rather winding as in the *N. ottonis* group. Their flowers are rather similar, however, brilliant yellow with a spun glass effect when seen in strong sunlight. Another rather new one to me is *N. velenowskyi*, which as a small plant bears a strong resemblance to *Parodi mutabilis*, but without the hooked spines of that plant.

N. haselbergii is a handsome white-spined plant which has tomato coloured flowers. They appear near the growing centre and can last for as long as three weeks. I cannot recollect any cactus with such long-lasting flowers. I have however never found this plant an easy one to grow from seed. Germination is usually good but the seedlings are slow growing and need careful treatment.

I am sure that anyone concentrating on getting together a collection of *Notocactus* will not be disappointed.

LISTS RECEIVED

Abbey Brook Cactus Nursery (Fearn Bros.), 24 Meadowhead Avenue, Sheffield 8. A 32-paged printed list of cactus and other succulent plants and seeds, with growing instructions. Illustrated.

Wheldon & Wesley Ltd., Lytton Lodge, Codicote, Hitchin, Herts.: Printed list No. 98; 1962, comprising list of natural history books amounting to 1959 all told. Nearly 900 pages of botanical books, including a page of exclusively cacti and other succulent books.

A CACTOPHILE IN THE CANARY ISLANDS

By R. G. ARGENT

In the early part of the year we paid a holiday visit to the Canary Islands and naturally looked around to see what succulents grow there—either wild or cultivated.

The first—to be seen everywhere—was "Prickly Pear". We should not like to put a specific name to this *Opuntia* as there is considerable variation in pad colour, flower colour, spination and fruits even in plants which might be growing in one clump so they are probably mostly hybrids.

A hundred years ago *Opuntia* was extensively cultivated there for mealybug "farming". Incredible as it may seem, the terror of our greenhouses was then the chief source of livelihood for the islanders who harvested the bug for cochineal—the principal source then for red dyes. The coming of aniline dyes killed the cochineal trade, however, and we were agreeably surprised to find practically all the plants we examined were clean and healthy. In fact we did not see a mealybug until we made a journey to the South of Teneriffe where we found some extensive clumps of infected plants. There we were told that cochineal is still harvested and exported for the limited use of making lipstick. So, gentlemen members of the Society, beware of your ladies' kisses. They will probably stain you with the blood of mealybug!

We were able to gather plenty of matured fruit of *Opuntia* growing wild and found it agreeable eating.

At first it was exciting to see so many *Opuntias* in bloom, but it was so commonplace as to pass unnoticed after a few days.

But we were looking for other succulents too, and naturally thought of *Aeoniums*—a genus of which most species are indigenous to the islands. Although we saw lovely specimens of *A. decorum*, cushions of colourful *A. caespitosum* and enormous rosettes of *A. nobile* cultivated in gardens, during our short stay we found only three growing wild. *A. urbican* was growing on rocky wastes near the sea, *A. haworthii* along a rocky roadside and *A. tabulaeforme* on mountainsides in the south-east of Teneriffe.

We had hitherto regarded *Aeoniums* as rather unexciting plants but *A. tabulaeforme* in its natural habitat was both beautiful and startling. Its flat, stemless, vivid green rosettes stood out in magnificent bold design against the background of near vertical and almost black rockface on which it was growing.

Next the *Euphorbias*! There was the expected abundance of *E. canariensis* growing almost everywhere—along waysides, mountainsides, gorges, cliff tops and even in gardens. We liked best the enormous clumps, 20 feet or more across and up to 16 feet from top to bottom which seem to hang perilously over the edges of precipitous cliffs as if about to tumble clean over them—an unforgettable sight.

What appears to be a variant of this native is used decoratively in public and other gardens. Its stem is yellow green and darker ribs and spines give it an attractive bi-colour effect.

Euphorbia bravonana was common on waste land and looked uninteresting. We were told however, that in its summer flowering season it becomes really attractive as its upper leaves then become intense violet-purple.

Euphorbia balsaminifera abounds on the arid land in the south of Teneriffe and on the lower slopes on the eastern side.

Magnificent branched specimens of *E. coerulescens* and large "bushes" of *E. splendens* were cultivated in gardens. The latter blooms profusely for about ten months of the year in Teneriffe.

Large specimens of *Agave americana* grow wild along practically every roadside and the decorative variety *marginata aurea* is well and extensively grown in public gardens.

In the south we saw *Agave sisilana* under cultivation for its fibres which are made into ropes, but our most abiding memory of *Agaves* was a number in a garden at El Medano which had thrown up their enormous flower spikes to about 20 feet in height.

Aloes abound in gardens in the islands particularly *A. arborescens* which forms large and lovely "bushes".

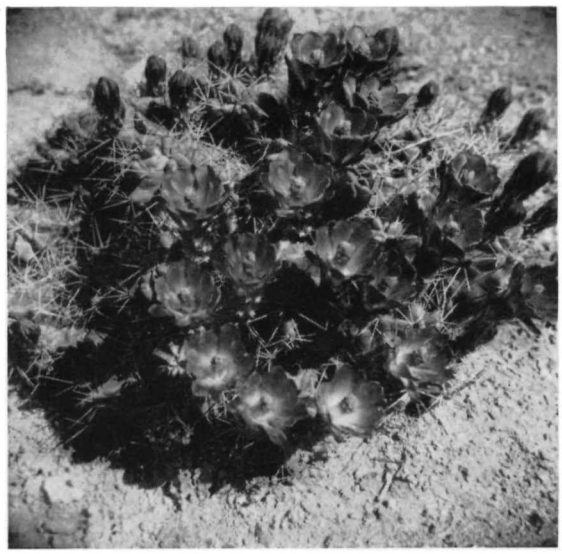
We found two native *Mesembryanthemums—M. crystallimum* and *M. noctiflorum*. The former grew in masses by the sea to the west of Puerto Cruz and, although its off-white flowers were not very interesting its leaves in the Canary climate take on a deep reddish hue against which its "ice crystals" sparkle most attractively. These plants were once cultivated and exported in large quantities to Britain where soda was extracted from them.

Homalocephala texensis H. Fujita

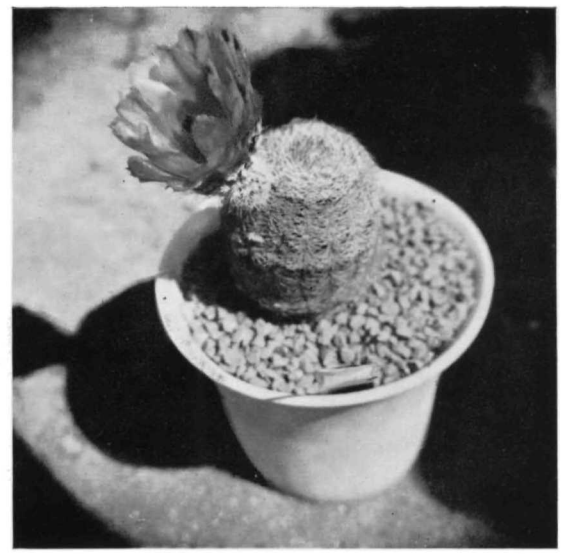
Sclerocactus whipplei D. L. Eppele

Sedum rosea J. Kirby

Sedum rosea J. Kirby



Echinocereus triglochiatus

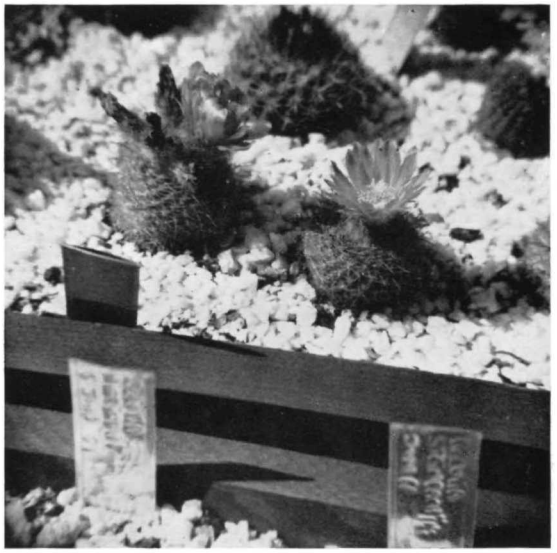


Echinocereus rigidissimus

Mammillaria dioica

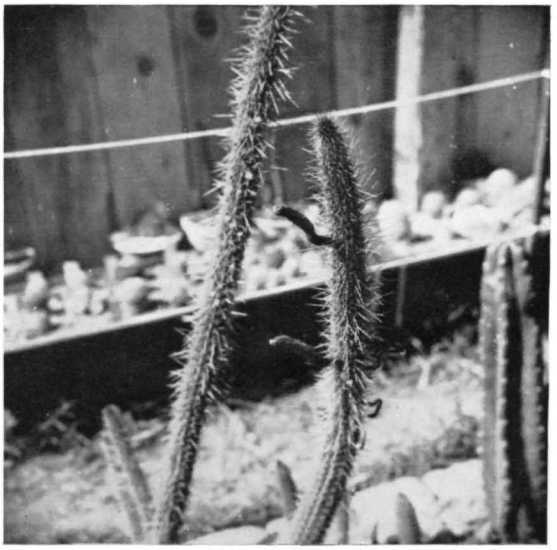
Notocactus mammulosus

Four photographs by Richard Russell



Parodia aureispina

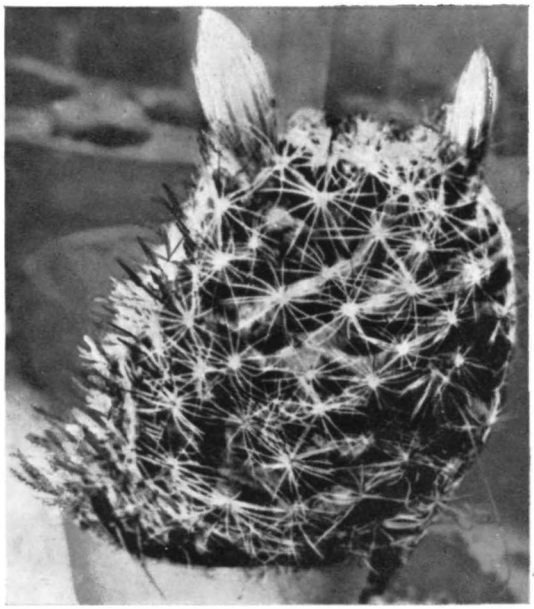
Bergerocactus emoryi



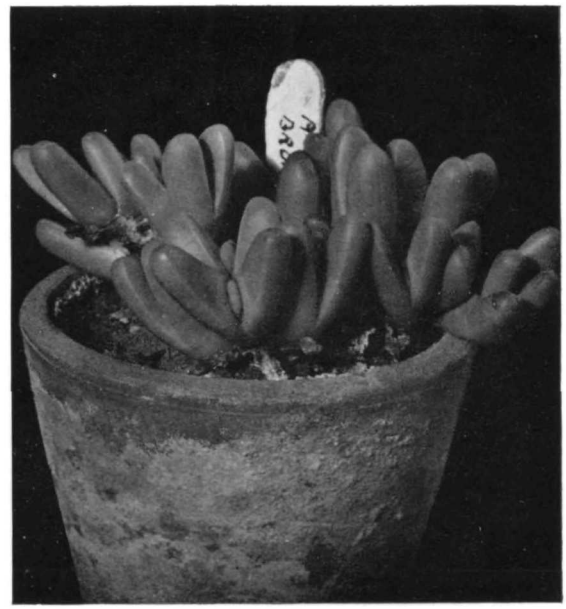
Cleistocactus baumannii

Lobivia astrantema

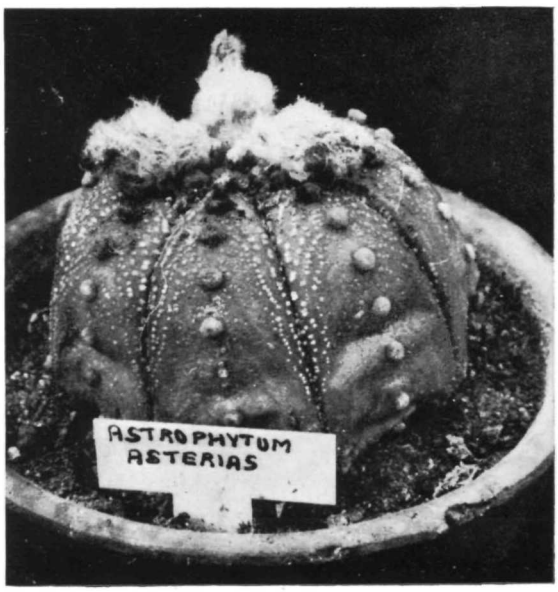
Four photographs by Richard Russell



Mammillaria wrightii D. L. Eppele



Argyroderma braunsii B. Eady



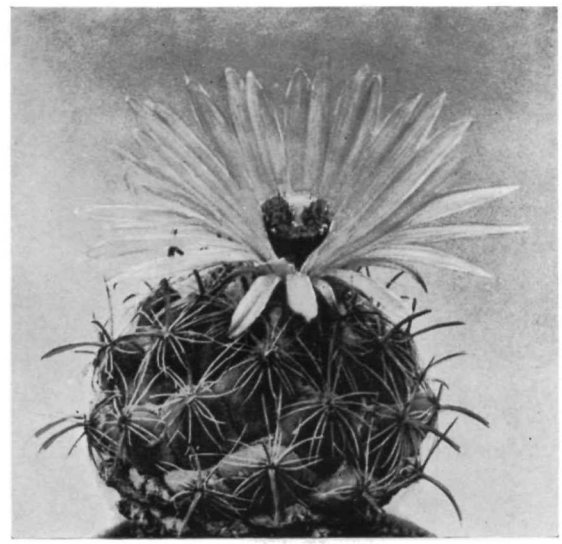
Astrophytum asterias R. H. I. Read

Lophophora ziegleri R. H. I. Read

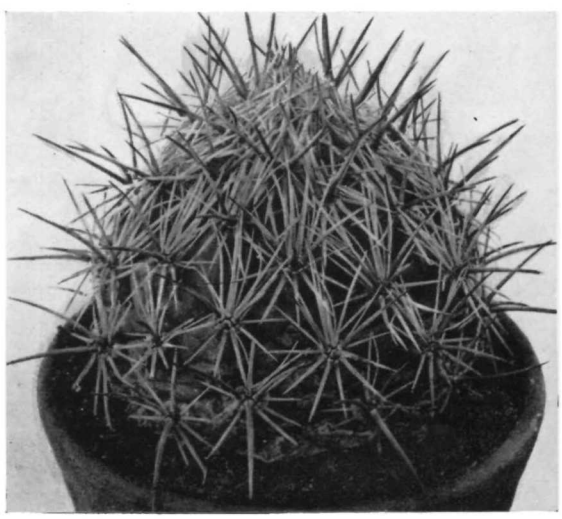
Aporocactus mallisonii B. Eady

Adromisches cooperii G. R. Salmon

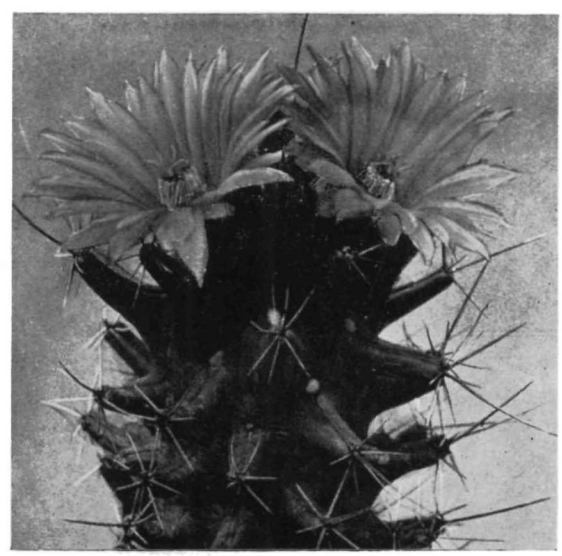
Coryphantha elephantidens



Coryphantha cornifera

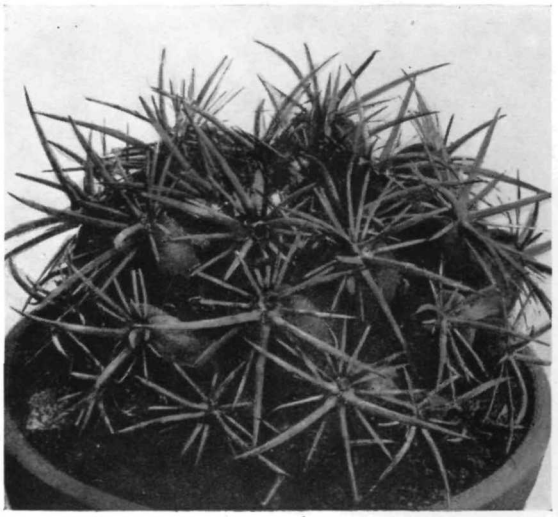


Coryphantha difficilis

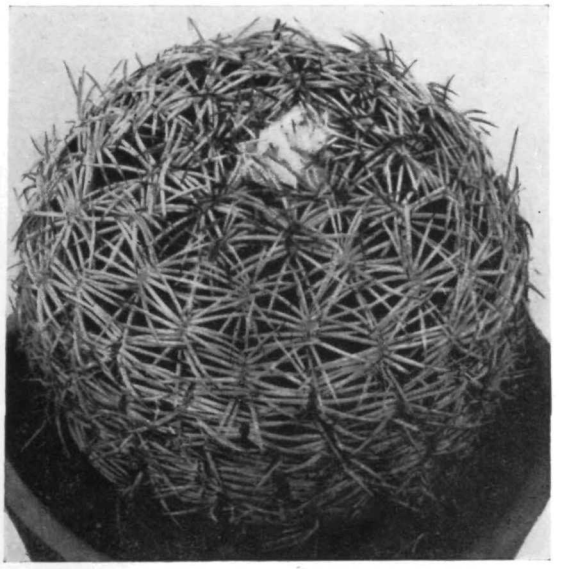


Coryphantha clava

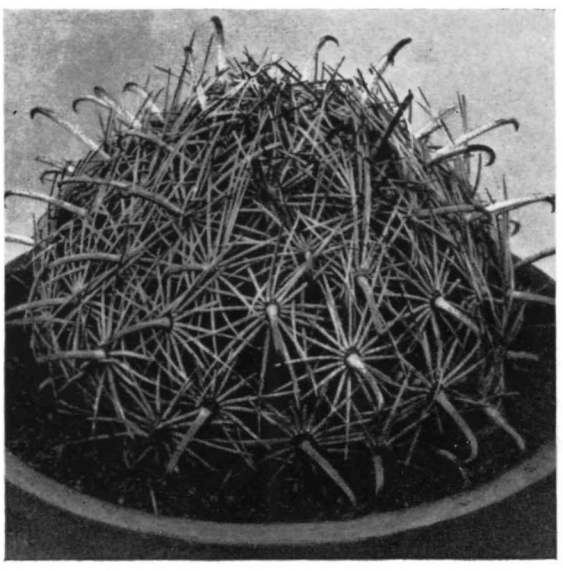
Four old coloured postcards by O. Stoye



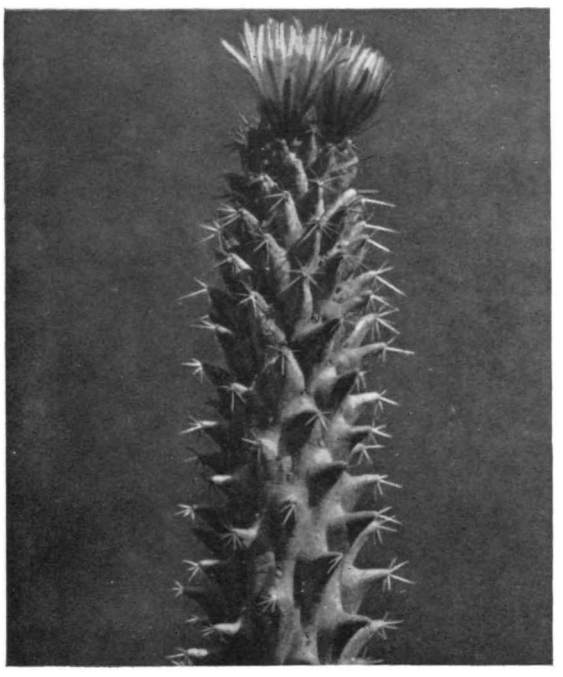
Coryphantha pycnacantha



Coryphantha retusa



Coryphantha palmeri



Coryphantha macrothele

Four old coloured postcards by O. Stoye

Lithops opalina Miss M. J. Martin

Lithops venteri Miss M. J. Martin

Considerable use is made of Cactus and succulent plants in the public gardens in the islands. Stately columns of *Cerei* up to 15 feet tall, pad *Opuntias*, very attractive branched plants of *Opuntia subulata* 4–5 feet tall, *Euphorbias*, *Echeverias*, shrubby *Mesembryanthemums* and *Sedums* are commonly employed and there were a few others, but on the whole we were disappointed at the small range of plants used.

In public squares in Santa Cruz and Las Palmas there were some wonderful *Epiphyllums* growing epiphytically on huge trees.

In private gardens and in some houses there was a fairly extensive use of Cacti, *Agaves*, *Aloes* and *Euphorbias* and sometimes one found them in the most unexpected places. Half-opened doors in Puerto Cruz, for instance, sometimes revealed a huge *Cereus peruvianus* growing just inside in semi daylight, as doors in the Canaries are rarely glazed.

A garden of a large house, newly built above Puerto Cruz, gave promise of something more ambitious as one border contained species of *Ariocarpus*, *Mammillarias*, *Echinocacti* and *Ferocacti* in addition to the usual *Cerei*, *Opuntias* and *Euphorbias*. Any members visiting the area can locate this house by asking for "Casa Dacil near the English Church".

We visited the world-famous botanical gardens in Orotava and here the cactus lover will be delighted with some wonderful specimen plants but disappointed at the limited range, lack of labels and huddled arrangement of the cacti. There were some tall *Cerei* in flower, some very large specimens of hairy *Cerei*, a beautiful clump of *Cleistocactus Straussii* and a rare old barrel of *Echinocactus grusonii* about two feet in diameter and full of bloom.

Possibly the best individual plant was a magnificent *Hylocereus trigonus* at one end of the garden away from the cactus collection. It is scrambling over a wall and has a spread of about 20 feet by eight feet. But it is obvious that the cacti in the gardens are receiving no special or knowledgeable attention.

The reputed best collection of cacti in Teneriffe is that of Senora Dona M. Escovar, San Telmo, 18, Puerto de la Cruz. We made the acquaintance of the senora who speaks some English and we give her full address in case other members should be visiting the island. She said she would be pleased for them to call and see her collection which contains some superb specimen plants. Her knowledge appears limited and she can only name the few plants bearing labels. It would be a fine gesture if one of our knowledgeable members visited her with a bundle of labels and named the plants for her. We think one of the difficulties of cactus growers in the islands is the absence of literature on the subject in the Spanish language.

Undoubtedly in a longer stay than ours many more plants could have been found—particularly the native ones. We think, however, that we found enough to indicate that there is plenty to interest the Cactophile who chooses to holiday in these islands which are only about eight hours flying time from London.

Have you had any dealings with the International Succulent Institute of California? This is a non-profit organisation run by members who are not paid for their services. The object is to bring enthusiasts in touch with supplies of the rarer plants and they have issued several lists of such material. Anybody who has had contact with suppliers in America will know how necessary it is for us to have a market which is really being run for the benefit of the collector and not as a commercial proposition. Dealers and growers everywhere tend to leave the market supplying individual collectors for the wholesale markets and this causes the reduction of supplies to those species that have most commercial attraction rather than giving us the plants we want. Anybody who is interested should write to the British representative of the Institute, Mr. N. E. Wilbraham, 178 Black Road, Macclesfield.

Our local paper records a very interesting court case. Two young students stole a cactus plant which is stated to be worth £40 from a cactus nursery. They loaded it, with other plants, into a van, but were detected and the police gave chase. They threw the cactus plant off the van into the path of the police car, but it did not avail them and they were caught. They stated they stole the plants to be put on the lawn of their college! They were fined £2 each and each ordered to pay £20 compensation to the nursery owner as the plant they threw off was damaged too much for sale. The two young men stole in all nine cacti plants and a packet of cacti soil, stated to be worth £62.

FROM NEW YORK TO SAN DIEGO

(Article III)

By RICHARD RUSSELL

The last article contained observations regarding the condition of Cacti during our San Diego (winter) rainy season. The rainy season in the U. S. southwest can be considered to continue from about December to March. When I say "rainy season" I am referring to the season where any appreciable amount of precipitation appears at all. Thus in San Diego our average yearly rain amounts to only 10 inches, hardly a true "rainy season" by most standards. Yet the fact is that our rains are concentrated within a period of only four months. This makes it a rainy season for Californians and Southwest gardeners in general.

One of the interesting phenomena of lower (semi-desert) California is that which I have termed the "grass bugs". These are the people (mostly displaced Easterners and Mid-Westerners) who insist on making their surrounding "look like home". During the winter season they go about smiling and content since it is during winter that their grassy lawns are apt to be shining and green. When the dry season (which is actually eight months of the year) starts, the grass-bugs can be seen every evening watering their lawns, bemoaning the hot relentless sun and trying valiantly to preserve the rather parched remains of their once-beautiful grass. As a Cactus grower of course they receive my deepest "scorn." "They might as well spend their time growing oranges in New York" I tell my wife, "why can't they treat this place the way it should be treated—as the edge of the desert!"

I was amused at the editor's story (in the last issue of the Journal) regarding his daughter's complaints about Sacramento. The complaint of "too much sun" is rather common here, but as far as I am concerned, I came here for the sun and I can never get too much of it. "Only an Easterner can appreciate this weather," I announce to friends. "You have to be brought up in the cold and the snows to really love a sub-tropical climate."

Another point of interest—weather conditions can be extraordinarily variable within given geographical areas in the Southwest. This is due to the numerous mountain ranges, the Pacific Ocean, valleys, and many other natural barriers. Thus, at or near the San Diego coast it is liable to be somewhat foggy and damp in the early morning. Five miles inland (to the east) it may be pleasantly cool and partly cloudy. Ten miles east of the ocean (where I reside) it will be warm and cloudless, while in the town of El Cajon (only five miles east of here) the temperature will be ten degrees higher than in my area. El Cajon is at the foot of the Laguna Mountains. Thirty miles further inland one touches the edge of the great California desert. On a day when it may be 78 degrees at my home, the desert temperatures will be around 100 to 110.

All of which makes for a great mass of natural barriers, and fantastically different climatic regions—and all within rather short distances. The effect on the flora is obvious—many Cacti are found within very narrow geographical ranges, many other species may be subject to so many variations and varieties as to make the classification a continuing source of argument among experienced taxonimists.

A new arrival can learn a great deal from the natives. As a boy, I used to buy Cacti from Mrs. Helen McCabe at the (then famous) McCabe Cactus Gardens. I visited Mrs. McCabe (she is now in her 90's and still grows Cacti!) and she gave me a solid piece of advice. "If you want to grow Cacti, pick an area where the poinsettas grow. If your neighbours are growing poinsettas, you will be in a frost-free area, for the poinsettas will not survive a frost". I took her advice and it proved to be sound. My area has never known a frost (which is, of course, very nice for the man who grows everything—in the way of Cacti).

I find that Cacti are not particularly bothered by bugs and pests when grown outdoor the year around. However, when Californians get trouble, it comes in large packages. In March we were attacked by a veritable army of cutworms. These vicious little beasts love to chew off new growth and they can cover a young tender Cacti with a great many unsightly holes—in a single night.

Towards the end of April the rains stopped, and eight weeks went by without a single day of rain. This had the effect of driving the cutworms into our gardens at an unprecedented rate (their natural fodder of native weeds were brown and dry). So, out came the insecticides. I hit those cutworms with everything in the books, and at night I even picked cutworms off my plants with a tweezer! In three weeks the cutworms were gone, and except for a few dozen holes, my plants were none the worse for their ordeal.

Since I have about five hundred assorted Cacti, it is most interesting to note the great variations in the growing season here in San Diego. One fact is worth mentioning, a fact that probably does not come to the attention of greenhouse growers who are able to control their climatic conditions. Plants here will grow for a month,

go dormant, then grow again for a few months, then go down dormant again. Should a warm spell come in January, for instance, new growth will appear (particularly on the tropical types of Cacti). Then if the night temperatures drop into the high forties or if the days become cool, growth will stop. Most native plants, however, will wait for the spring before putting on growth. My *Cleistocacti* grew all during the winter, went dormant during March and April, and then started growing in June again. *Neoporterias* did much the same as did many other South American Cacti. A few *Lobivias*, evidently believing the moderate California winter was a South American summer, grew right through the entire winter. Thus *Lobivia paucartambensis* and *larabei* practically tripled in size during the winter and spring. The former is now dormant.

Other plants such as *Epithelantha*, many *Thelocacti*, some *Selenicerei* are just beginning to grow (in June). *Epithelantha micromeris* is now a mass of pink flowers, and the little joints are fat and distended, growing for all they are worth.

Many of the rarer Cacti have surprised me with the heavy blooming proclivities. *Pelecyphora*, *Obregonia* and *Solisia* are putting forth flower after flower (they will take as much hot sun as I can give them). It is strange to see these "stone-like" rugged plants produce their dainty, fragile purple-pink flowers. Visitors to my garden can hardly believe their eyes.

The *Echinopsis* are my favourite bloomers. and some plants will produce five to ten lovely long-stemmed flowers in a single evening. Flowers open about midnight and last for one or two additional days. Johnson Cactus Gardens offer a great many true *Echinopsis* species plus a number of *Lobivia-Echinopsis* hybrids. All have magnificent flowers in a rainbow of colours and variations. These plants are extremely easy to grow, they love full sun or part sun (the more sun—the better they flower). Most *Echinopsis* offset easily. Plants are attractive when not in bloom, and they are particularly resistant to rotting, cold, heat and pests. In my opinion, they are an outstanding outdoor Cactus, but I never had any success with them indoors.

Much the same may be said of *Rebutias*, except, of course, their flowers are much less spectacular. The *Trichocerei* fall into this same category, and these are the giants of the group. *Trichocereus schickendantzii* produces huge, white flowers which last about two days. *T. spachianus* is seen in gardens all over San Diego, where it grows to heights of three to four or even five feet.

The *Echinocerei* are fine, attractive plants, subject to amazing variety. Almost all produce beautiful flowers, some of which are quite large. My favourite is *E. perbellus* which produced purple flowers with gold centres (flowers are three-and-one-half inches across)!

Notocacti are seen in many of the San Diego nurseries, particularly *N. apricus*, *ottonus* and *scopa*. All three bloom prolifically, starting around May. All are extremely hardy and pest resistant. *N. linkii* has the most amazing cup-shaped flowers, and it possesses awl-shaped spines unlike others in the group. *N. haselbergii* is a fine bloomer, and its flowers have lasted longer for me than those of any other Cactus. The small, scarlet-red flowers last about two weeks in a sun which renders most flowers short-lived. I note that many white-spined cacti seem to be subject to spine colour variation in our sun. Thus *N. haselbergii* and *Rebutia senilis* produce yellowish spines in full sun, instead of the usual pure white.

Opuntias are considered weeds here, but I like many of the exotic species. *Opuntia scheerii* is my favourite, with its golden, hairy spines and bright green body. *Opuntia acicularis* is perhaps my second favourite. I believe I read in your journal that the latter is a slow grower and will only put out one pad per year. I rooted a single pad last fall and I have five new pads growing from this specimen at the moment. The speed of the new growth on *Opuntias* can only be likened to an explosion. Our native *Opuntia litoralis* will put on large pads in a single month. You can practically see the pads grow. Growth corresponds to the late part of the rainy season. By mid-June the new pads are full grown, and the plants will rest through much of the summer—unless another spate of rain occurs.

The San Diego sun is a problem with new plant arrivals. I learned my lesson with a shipment received from Johnson's Gardens. About ten plants were put in the ground and covered with muslin. Two days later the plants were literally burned up. The plant sides facing south were completely "caved-in". New plants are now placed in the shade, then gradually moved towards the sun so that it takes perhaps a month to bring the plants out into the full California sun. Once conditioned, however, I find that most Cacti can take full sun. There is no question but that full sun puts on very sturdy growth and raises blooming capacity tremendously. For instance, *Mam. hahniana* blooms very sparsely in semi-shade (although growth is luxurious). But in sun it flowers from November through June.

(To be continued)

SHOW RESULTS, 1962, 3rd and 4th JULY

Class 1. *Three Echinocactanae*
1st J. E. Taylor 2nd P. V. Collings 3rd R. H. I. Read
Highly Commended Mrs. M. F. Caswell Commended Mrs. M. Halford
Class 2. *Three Coryphanthanae*
1st J. E. Taylor 2nd Mrs. J. Scarff 3rd R. H. I. Read
Highly Commended Mrs. M. Halford Commended J. J. Seymour
Class 3. *Three Coryphanthanae* (for Members who have not previously won a First in any Class).
1st J. R. Moore 2nd W. Greenaway 3rd Mrs. M. F. Caswell
Class 4. *Three Cereeanae*
1st R. H. I. Read 2nd J. E. Taylor 3rd J. J. Seymour Highly commended Mrs. J. Scarff
Class 5. *Three Echinocereeanae* (excluding *Rebutia* and *Lobivia*)
1st P. V. Collings 2nd J. E. Taylor 3rd Mrs. J. Scarff Commended W. Greenaway.
Class 5*a*. *Three Rebutias* and/or *Lobivias*
1st J. E. Taylor 2nd J. R. Moore 3rd Mrs. M. Halford
Highly commended Mrs. T. Watt Commended R. H. I. Read
Class 6. *Three Cacti* (any genera)
1st P. V. Collings 2nd Mrs. J. Scarff 3rd Mrs. T. Watt
Highly commended R. H. I. Read Commended J. E. Taylor
Class 7. *Three Cacti* (for Members who have not previously won a First in any Class)
1st J. R. Moore 2nd M. Cotter 3rd W. Greenaway
Highly commended R. F. R. Clark Commended Mrs. M. F. Caswell
Class 8. *One Specimen Cactus*
1st Mrs. J. Scarff 2nd R. H. I. Read 3rd Mrs. M. F. Caswell Highly commended J. E. Taylor
Class 9. *One Specimen Succulent* (*other than Cactus*)
1st Mrs. J. Scarff 2nd No award 3rd H. N. Judd
Class 10. *Cacti raised from seed* by Exhibitor. Sown on or after 1st January, 1959
1st J. J. Seymour
Class 11. *Miniature Garden of Cacti or Succulent Plants* (not mixed)
1st N. R. Clyne 2nd J. J. Seymour
Class 12. *Three Dwarf Opuntias*
1st Mrs. J. Scarff 2nd J. E. Taylor 3rd Mrs. T. Watt
Highly commended G. Leighton Boyce
Class 13. *Three Agaves, Aloes, Gasterias* and/or *Haworthias*
1st Mrs. J. Scarff 2nd J. J. Seymour 3rd Mrs. T. Watt Commended Mrs. M. Halford
Class 14. *Three Euphorbias*
1st W. J. Newman 2nd J. J. Seymour 3rd S. C. King
Very highly commended Mrs. T. Watt. Highly commended Mrs. J. Scarff. Commended Mrs. M. Halford
Class 15. *Three Succulents other than Cacti*
1st Mrs. J. Scarff 2nd R. H. I. Read 3rd Mrs. T. Watt Highly commended Miss M. J. Martin
Class 16. *Three Succulents other than Cacti* (for Members who have not won a First in any Class)
1st J. R. Moore 2nd R. F. Clark
Class 17. *Six South African Succulents* in pots not larger than 3½ ins. inside diameter
1st S. C. King 2nd Mrs. J. Scarff 3rd R. H. I. Read
Highly commended D. J. Humphryes Commended Mrs. T. Watt
Class 18. *Group of Cacti* and/or *Succulents* to cover table space not larger than 3 ft. x 3 ft.
1st D. J. Humphryes 2nd B. W. Hawkins
Class 19. *Three Cacti and/or other Succulents* (for Juniors under 18 years)
1st N. R. Clyne 2nd W. Greenaway
Class 20. *Branch Exhibit. Group of Cacti and/or Succulents*
1st Essex Branch 2nd N. Surrey Branch 3rd W. Kent Branch Highly commended N. London Branch
S. J. Pullen Cup for Miniature Garden—N. R. Clyne.
Amateur Gardening Silver Bronze Medal—J. E. Taylor for Three Mammillarias Class 3.
Amateur Gardening Award of Merit—D. J. Humphryes for Group of Cacti and Succulents Class 18.
Amateur Gardening Diploma—J. J. Seymour for Cacti raised from seed. Class 10.

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

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SOCIETY NEWS

1962		*Subject*	*Lecturer*	*Table Show*
Sept.	11	SHOW. Succulents (Old Hall Restaurant).	Mrs. Stillwell	One stemless Mesembryanthemum
Oct.	9	Heating	Discussion	One Plant in fruit
Nov.	27	Collectors and Collections (Colour slides)	Mrs. Sharman	One Conophytum

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From the Editor, 6 Colindale Avenue, St. Albans, Herts.

CACTI OUT OF DOORS

By K. H. WALDEN

Reading Mr. R. Russell's article in the May, 1962 Journal regarding plants outdoors prompts me to write of my experience with cacti outdoors.

As I had arranged for a new greenhouse last year, many of my cacti were placed out in the open garden from the middle of June to the beginning of September as I had to prepare a new concrete base and await delayed delivery and then erect the new greenhouse.

We had a fair share of rain last summer, but nothing like the previous year's glorious summer. When the plants were eventually put back in the new greenhouse they looked wonderful with bright new growth. I kept the windows open as much and as often as possible so that the sudden change to cover did not affect them seriously.

This spring has not been too wonderful for weather, but, though we have had cold spells, there has been a fair share of bright sun, on occasions. Whether it is the new greenhouse with brighter and larger sheets of glass or a combination of all the factors I do not know, but the *Mammillarias* have flowered better than ever this year. I have *M. fuscata* and *M. rosea* (a plant which has always been yellow instead of green and has been since a seedling) both 26 years old and have flowered for the first time. *Dolichothele longimamma* and *D. sphaerica*, both shy flowerers with me are in bud. *Echinocactus flexispinus* has two flowers. I am hoping I shall flower *M. bicolor nivea* (*geminispina*), 28 years old. I may get a surprise as I am receiving so many lately that nothing will surprise me now.

My one mistake was putting small cacti in the cold frame and shutting down before going away for a week. They were mainly small *Mammillarias*, *Rebutias* and *Lobivias*. On about 2nd July we had the hottest day of the year. I was not there to open the frame and many of the plants were badly scorched. The *Rebutias* have not done at all well. I would not hesitate to put plants out in the open for the summer if it were not for the hard labour of carrying them around.

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206 *Mammillaria parkinsonii*
207 *Thelocactus bicolor*
208 *Echinocereus pectinatus*
209 *Lophophora williamsii*
210 *Echinocactus grusonii*
211 *Notocactus graessneri*
212 *Euphorbia beaumieriana*
213 *Lithops pseudotruncatella*
214 *Lithops olivacea*
215 *Kalanchoe tomentosa*

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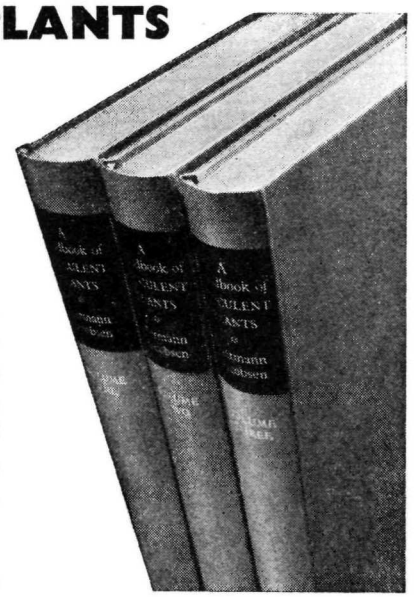
Hermann Jacobsen



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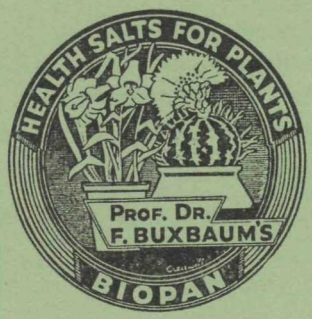

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THE CACTUS AND SUCCULENT JOURNAL OF GREAT BRITAIN

Established 1931

Vol. 24 NOVEMBER, 1962 No. 4

Contents

Published Quarterly by the Cactus and Succulent Society of Great Britain at 6 Colindale Avenue, St. Albans, Herts.

Price 2/6 Post Free 2/10

Strange the Printer Ltd. London and Eastbourne L8617

THE

CACTUS

AND SUCCULENT

JOURNAL

OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 24 *NOVEMBER, 1962* *No. 4*

FROM THE PRESIDENT

With this issue of the Journal we come to the end of the 23rd year of the existence of the Journal. For the first seven years Mrs. V. Higgins was the editor and I for the last sixteen. An editor's job is never an easy one and the rank and file membership can have little idea of the efforts made to fill up the pages with material that is of use to the membership, but I feel we, that is the membership as well as the editors, can sit back and feel that the task has been well accomplished. But it could not have been if we had not the loyal support of so many people and we give special thanks to the unfailing contributions of Mr. Boarder and Mrs. Stillwell. It is noteworthy that these two good people are also the mainstay of our Shows, with the invaluable help of Mr. Walden. It is not my duty, but that of the Annual Meeting to say thanks to the many people who work so well for the Society, but as President I do feel that I should give expression to what we owe them and while the names will come up at the Annual General Meeting, I do thank them for my part of it. I do feel, however, that it is only right that I should thank those who help directly with the Journal, such as, Mr. Heathcote, Mr. Seymour (who sends out old Journal orders) and Miss Pilcher who deals with the blocks. I cannot pass by without expressing my appreciation to Mr. Ibbotson for the grand work he does in despatching the booklets.

I noted that in the last edition of Mr. Krainz' "Die Kakteen" that he publishes what he considers an answer to my remarks about the transference of a *Porfiria* to *Mammillaria*. I understood the tenor of what he wrote, but to get accuracy I got our good friend Mr. E. Engler to translate his contribution. I do not think it is an answer but I am quite prepared to let things lie as they are apart from the comment that, according to Mr. Krainz, there are two *Mammillaria schwarzii* each distinct from each other which is absurd!

I see that Richard Hudnut has now produced "Cream of Cactus", a moisturising Beauty Lotion. His advertising literature starts off with mentioning the desert cactus, but he illustrates a climbing *Cereus*! He also states that the moisture in the cactus resists evaporation. It is obvious he has found a different kind of cactus to those we know and we would greatly appreciate information on the subject. I am not saying he is inaccurate, but our experience is hardly in accord and if what he states is true then we believe the information would be of the greatest use to us. If his "Cream of Cactus" enjoys a very large sale it would be the denudation of large areas of this type of *Cereus* and increase the devastation that is already only too noticeable in the natural habitats of our plants. Here is his final paragraph—"Cream of Cactus will keep the suppleness of youth far longer in your skin . . . give you a complexion dew soft and radiant with touch-appeal. You'll love it, from early morning make-up to late night final kiss!" Now we know why our lady members look so good!

E. SHURLY

CACTUS CULTURAL NOTES

By A. BOARDER

I am pleased to say that I am once more back in circulation. I have had two weeks in hospital and so was unable to judge our September show. However, Mrs. Stillwell deputised for me and I feel sure that she did a fine job. Whilst still in hospital I received a letter from her giving me all the results, which I thought very kind of her. I was in hospital for observation and tests and the result is that I have to have a fortnightly injection of a vitamin, and I am assured that this will enable my blood to function normally. I had been overdoing things for a long while, travelling around lecturing and judging. One is often inclined to forget that the passing years catch up on one's activities and it soon becomes only too obvious that when approaching seventy it is impossible to work as hard as when one was forty. Whilst away my plants were attended by my grandson, who is nearly fifteen and only lives a cycle ride away. My wife opened and shut the windows for me also.

I am very glad that I had trained my grandson to do many tasks for me in the greenhouse and frame. Many of my plants are still in flower and the seed pods on the early flowering types are quite a picture. I consider that a good crop of red fruits on a white spined *Mammillaria* can be as attractive as flowers and they last much longer in colour as well. My plant of *Testudinaria elephantipes* which I raised from seed has made good growth but seems to have sent out many side shoots all over the place instead of running up the stick provided. Each year the corm gets larger and more vine is produced. I leave the dried stems on the plant and so it is possible to trace the amount of increased growth each year. Although this plant has been watered occasionally all the time since spring it did not show any signs of growth until early autumn, the corresponding time to spring in Africa.

I mentioned in last quarter's Journal that I was trying to get a *Mammillaria herrerae* to make some fresh growth. I have managed to get the two off-sets to root and start to grow, but the old plant was too far gone and did not survive treatment. How the off-sets retained life after the parent plant had died is rather a mystery, but I am glad I took the course I did as no doubt there would have come a time when the off-sets would have died through lack of nourishment.

I have a *Mammillaria densispina* which I raised from seed some years ago. It is now about as large as a tennis ball. This is a very handsome *Mam.*, with hundreds of close golden spines. I have always found this *Mam.*, rather more difficult to grow than most of the genus for what reason I am unable to say. My plant appeared to have stopped growing and when I removed it from its pot there did not appear to be enough healthy root and the base of the plant had become very thin indeed and brown and woody. In an effort to get the plant growing again I cut right through the plant just below half way up and dried off the top part. I then placed it in a pot with usual soil in the lower half and an equal mixture of peat and sharp sand on top. The pot was placed in a tray with a little water in it. After a few weeks I noticed that this part had started to send out roots and it is now well established and growing. I cannot see much sign of growth on the lower part which I repotted and I fear that this will not make any growth. If it does not do so I shall know that I have been able to save the top half for a good specimen and have not lost it altogether as would have happened if the operation had not been carried out.

It is probable that many a plant might be saved if it is treated in time, but in a large collection it is often impossible to give each plant the attention it deserves. Unless one is able to handle all plants about once a month it is possible that one needing special attention can be missed and so lost. I have been rather surprised to note that a few ailing plants put in the tray with a little water have recovered and started to make fresh growth after I had despaired of them. This leads me to the conclusion that many of our cacti can take much more water in the summer than many people suppose. Also many seedling plants fail to make the necessary growth because they are constantly starved of water. There is no doubt that, as I have emphasised many times before, it is the watering which makes for success or failure. It is so easy to under water. If a number of seedlings are in a box and they are watered, the top of the soil looks very wet and no more is given. If the soil has got very dry before this watering it is very probable that much of the under soil is not even damped. This will cause the roots of the plants to dry up and die if insufficient water reaches them. The safest plan to follow is to let the soil dry out but water twice; the second watering to be given after the first has soaked in. Even with seed pans the same thing applies. When watering a seed pan it is easy to under-water as some of the water may remain on the surface of the soil giving the impression that enough has been given. However it is probable that the amount of water given is insufficient to damp all the soil thoroughly. I have been reminded of this fact when I have been pricking out seedlings from a pan. Although the top of the soil appears damp there is bone dry soil from about half way down. This inclines me to the belief that if the seed pans could be placed in a tray of water to soak up plenty of moisture

the seedlings would grow better. Although I realise that this would be a good plan I have been unable to do this as I usually sow about 120 pans with seed which would take me nearly all day to water. Not that I am in favour of too much watering in this manner for adult plants nor do I suggest that the seed pans are left too long in the tray. Too much stagnant water under the pans would soon cause trouble. The ideal method for watering the pans would be to give enough water so that it is all soaked up and no water drains from the pan when it is lifted up.

My objection to the immersion of pots in a quantity of water is that when the pot is lifted up much water runs out of the drainage hole. With this water must go much of the soluble nourishment from the soil to eventually remove all the goodness from it. Some pots dry out more quickly than others. This may be that the plant is growing more quickly than others or that the texture of the soil has been altered. This can happen if a plant has not been repotted for a couple of years or more. The soil becomes consolidated and is more difficult to dampen or that the roots of the plant have filled the pot and so made an almost impregnable mass into which water cannot find a course. If pots can be stood in water so that all the water in the tray is absorbed and none runs out when the pot is lifted I would have no objection to this method of watering. When one has a large collection to deal with it is practically impossible to water by this means.

I have just been looking over the plants in my greenhouse and find that I have nearly a thousand pots. The plants are not all different as I keep a number of duplicates among my *Mammillarias.* This is mainly to ensure that I can get more seed from them, but also to have a reserve plant of the rarer species in case of a loss. I gather from my correspondence that many members think that I only grow *Mams.* This is not the case as although I do specialise in this genus I also have many other genera in my collection. I have well over 300 *Mams.*, 38 *Coryphanthas*, 26 *Lobivias*, 24 *Notocactus*, 6 *Malacocarpus*, 17 *Echinofossulocactus*, 32 *Rebutias*, 24 *Gymnocalyciums*, 5 *Epithelanthas*, 18 *Echinocereus*, 10 *Astrophytums*, 11 *Parodias*, 6 *Dolichotheles*, besides several species of *Thelocactus*, *Lophophora*, *Wilcoxia*, *Frailea*, *Mamillopsis*, *Ferocactus*, *Echinocactus*, *Espostoa*, *Oreocereus*, etc. I have only a few other succulents but have 66 *Lithops*, among which are some fine large heads, and a few *Euphorbia obesa*, *Conophytums*, *Ophthalmophyllums*, *Fenestraria*, etc. All these plants have been raised from seed by me. These are all in the greenhouse, but my outside frame holds many hundreds of seedlings. If I work fast I can generally water in about an hour, but if most of the plants have to be watered by immersion I would be all day at the task.

By the time these notes reach you it will be at the beginning of the winter, but it will not mean the end of work in the greenhouse. Once the main watering has ceased, somewhere about the middle of October, all the pots should be looked over. The top half inch or so of the soil should be removed and a little fresh replaced. Check up carefully that there are no pests such as mealy bug on the lower parts of the plants. There may be a few almost underneath the base of a plant which could not be seen when the plant was in its usual position in the collection. See that the drainage hole in the pots has not been blocked up and rewrite any label which has become indistinct. If the pots are dealt with in rotation from one end of the greenhouse to the other no plants will be missed. The heating system should be overhauled to make sure that all will function properly. Thermostats for controlling electric heating can be cleaned as can all plugs and connections. Oil heaters can have new wicks, as old ones do not function as well after a year or two. Hot water type boilers should be looked over and the water changed. Rain water is better than tap water for this purpose. See that fire bars are in good order as otherwise much fuel can be lost.

As for the temperature to maintain, this depends on the types of plants housed. For adult cacti I find that a mean temperature of 40 degrees F. is quite sufficient. It is then probable that no water at all need be given during the winter, say from towards the end of October to March. If the past year's seedlings are in the house see that they are at the warmest part. A temperature of 50 degrees F. would suit these better, but it seems very wasteful to keep the whole house at 50, when 40 would suit the majority of plants. If your house contains some of the other succulents, especially *Euphorbias* and *Stapelias*, a little more warmth is necessary. Not more than 50 degrees will do, but, providing the whole house atmosphere is dry, five degrees lower will suffice. Where some seedlings of the past year's sowing are concerned, rather than waste much heating on keeping the whole house warm it is possible to make a small frame inside the greenhouse which can be heated more easily even with a small heater or even a lamp (electric).

Now for directions for those members who have no greenhouse for their plants but keep them near windows in the house. A lot will depend on which room they are kept in. It is when it is a living room with some heating that most of the plants will need more attention than those in a comparatively cool greenhouse. The temperature may be in the lower sixties for most of the day. This is a growing temperature and unless some water is given the plants will suffer. The atmosphere is likely to be very dry in most cases. A watering once a month will not

be too often, but if the room is very warm then even once a fortnight may be all right for such plants as *Opuntia microdasys*. This and many other *Opuntias* may lose pads if kept too dry during the winter. If any plants are kept in a cool place in the house then no water need be given. It is surprising how some plants can exist in the house. I have in my lounge which faces north, an ornamental pot with a small *O. microdasys* in it and an earthenware fancy bowl with no drainage and two *Mams.*, *M. durispina* and *M. bocasana*, a *Lobivia hauscha* and a *Cleistocactus straussii*. These have been on the window sill for many years. They have not been repotted and only watered very occasionally. In fact they have been neglected badly. The strange thing is that they have survived and look quite healthy. They do get a very little sun in mornings and evenings in summer. The *Mams.* look well and the *M. bocasana* have made a nice clump. The *C. straussii* has not grown very tall but has sent out several shoots from the base. I just cannot remember how many years these containers have been without any treatment except an odd watering, the bowl has been made up for at least fifteen yeas and maybe more. I notice that the top of the *C. straussii* has been knocked off but a fresh shoot has almost covered the scar.

Of course, I do not suggest that this treatment will get the best from your plants as no flowers are produced, but I quote the facts to emphasise how tough some of the plants can be. The plants which may have been housed in outdoor frames all the summer should now be kept dry. If they are now in an unheated room no water need be given. This method of growing is quite a good one for those who have no greenhouse. Many years ago I grew many cacti quite successfully in a fairly large frame in the garden and once the weather turned cold all the plants were placed in a spare room which was never heated. The air was quite dry, but the plants did not suffer at all from the cold and were not watered whilst inside. The advantage of a frame is that in good weather the lights can be removed completely and the plants can have the benefit of direct sunshine but yet can have night cover, or be protected from heavy rain when necessary.

Plants in a living room are almost sure to get dusty during the winter. The removal of this can be accomplished by blowing it off out of doors or in a bad case the plant can be sprayed with clean rain water. It will be necessary to choose the right day for this so that the plants can soon dry off. Many days in December have a fairly mild temperature and some sun. Such a day is the one for the clean up with a spray. When plants are kept on window sills it is imperative that the pots stand in small saucers to prevent water from running all over the place. These saucers must not be empty, but should contain some gravel or small stones so that the drainage hole is quite free and not blocked up by contact with the clean saucer. The gravel can be changed now and again to prevent algae or other nuisances forming in it.

There should be no need for me to repeat the advice to give as much air in the greenhouse as the weather will allow, but there may be some new members to whom the advice will be of use. Do not coddle your adult plants through the winter and you may be rewarded by many flowers next year.

We hope that you have not forgotten the Society's Annual Dinner on Friday, the 24th November, 1962, at the Shaftesbury Hotel, Monmouth Street, London, W.C.1, 6.30 p.m. for 7 p.m. We have been fortunate in hiring the Walt Disney film "The Vanishing Prairie" for your entertainment and those who have seen Walt Disney's pictures of this kind will know what a treat is in store for those attending the dinner.
If you have not yet booked your ticket, please send remittance immediately to Mr. E. W. Young, 35 Castle Drive, Ilford, Essex. Tickets are 25/- per head. It is hoped that this Journal will be in your hands a few days before the event so you should have sufficient time in which to book.

It is usual to announce in the final number of the Journal in a year the programme for the coming year, but this time, unfortunately, we are not able to give the full programme as some of the dates have not yet been completed at the time of writing this. The following dates have been arranged:- January 29th, Mr. R. Ginns, "Habitats of Succulents", no Table Show; February 19th, Annual General Meeting, no Table Show; July 23rd, Mr. C. E. Gilbert, Parodias, Table Show, Parodias; August 13th, Mr. B. Fearn, subject not settled; October 8th, Mr. J. F. Harding, Conophytums, Table Show, Conophytums; November 19th, Members' slides. We hope to arrange further dates with Mr. J. D. Donald, and Mr. McDonald. See also special announcement on page 79.

MAMMILLARIAS I HAVE GROWN *(continued)*

By A. BOARDER

The *Mammillarias* in my collection have been dealt with in previous journals up to the letter "H". I will now continue with the next few letters. There are not many beginning with the letters "I" and "J" and so I may run into the "K"s.

M. inaiae, raised from seed in 1950, and a very attractive plant it is with many short white spines.

M. infernillensis, a rather new species for me. Long dark spines make this plant a handsome one in the collection.

M. insularis, one I had pre-war and which I have raised again from seed since the war. It is one of the more open types with few strong spines.

M. iwersensiana, a very handsome plant raised from seed soon after the war. I do not know much about its origin but it resembles a *M. parkinsonii*, but the spines are light brown instead of black tipped.

M. jaliscana, from seed obtained from Mr. Shurly in 1932. A plant I have found rather difficult to raise from seed. One of the hooked species which appear hard to rear from seed.

M. jalpanensis, another rather new one which I raised from seed in 1954. It does not seem to be very well known.

M. johnstonii, from seed in 1950. A fine plant with a few varieties some of which are often found under specific names. A good looking plant.

M. johnolli I obtained from Southgate in 1937. I do not know if this name is correct and I would like to emphasize that I get my seed from many sources at home and abroad. I can only quote the name as supplied to me. I realise that some of these are not authentic and may be the result of mis-spelling on the part of the supplier or may be a new species. Again they may have a pseudonym and belong to a different species.

M. karwinskiana, first obtained from seed from Hollis in 1929, but since then I have raised many from seed. A fine plant rather resembling one of the *magnimammas*, with fine strong spines and a little wool in between the tubercles.

M. kelleriana, obtained from Southgate in 1937, but I have raised many since the war. A simple type with many rather long spines standing well up from the plant.

M. kewensis, a well known plant I had many years before the war and have raised my present plant from seed from the original plant in my possession. A plant which never fails to flower and produce seed pods.

M. klissingiana, one of my favourite plants. It is almost completely covered with white spines and looks like a golf-ball when small. I raised my first plants from Endean's seed in 1929.

M. knebeliana, another rather new *Mam.* for me. I only raised my first plant from seed in 1961, and so I cannot say much about it yet.

M. knuthii, another from seed, but one which Craig puts as a synonym of *M. elegans*. I don't know if this is correct, but the plant is a very nice one and mine appears to have whiter spines than *M. elegans*.

M. kunthii, I got the seeds of this plant from Haage, in 1932 but it may be a mis-spelling of the previous plant.

M. kunzeana, one of the fine grouping *Mams.*, with much white hair and red hooked spines. A free-flowering species which should be in all collections. I had my first from Endean in 1929.

M. krameri is no doubt a variety of *M. magnimamma*. I had a plant from a florist in 1930 and remember it as having very strong but short horn-like spines. These twisted somewhat and gave the plant an attractive appearance. I believe Craig places this among the *M. magnimammas* but it is one of my favourite plants and in my opinion deserves a specific name.

We do not know if you are interested in Shows abroad, but there is to be an International Horticultural Exhibition at Hamburg, 26th April to 13th October, 1963. As this is a World Exhibition of plants and equipment, running for some months it is of special interest and it would be well worth a visit if you happen to be on the Continent during these months.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

Autumn has come upon us so quickly this year that we are left wondering what has happened to the summer. It has been a difficult year on the whole with so much cold in the spring and lack of sunshine and really hot weather during the summer. Many of our plants are about a month late coming into flower. It is always a problem towards the autumn regarding watering, and more so if we are getting dull weather and a fair amount of rain. I feel there can be no hard and fast rules as regards to when water should be withheld, as we are entirely governed by the weather in this country. You will find if we get a good autumn with plenty of sunshine our plants will continue to grow for several weeks longer in many cases and will therefore require more water, but, should we get a long wet spell, you will find it much safer to withhold all water. There will be enough dampness in the atmosphere for the plants to absorb. Water from the base at all times if you possibly can and you will be far less likely to lose the more delicate succulents. This method also encourages much better root formation.

I have been very pleased with the *Stapeliads* this year, they have put on some beautiful strong growth although I have had a bit of trouble with mildew on the tops of the seedlings. I have treated them with flowers of sulphur and, in some cases, when they were large enough I have actually beheaded them. This encourages fresh growth from the base and so ensures a good clean plant. Too much dampness can cause black rot, which is far more serious and should be cut out at once, even if most of the plant have to be destroyed. I have a plant of *Stapelia concinna* which I have had to sacrifice in this way in the endeavour to get a really healthy specimen. I have a few nice seedlings of *Hoodias*, now about two inches high and sown on May 5 this year, which I shall probably have to nurse carefully through the winter. I feel that the ideal time to sow seed of this genus is in May, they germinate quickly and in a few weeks can be removed from the propagator, introduced gradually to full light and at about two months can be potted up and placed up on the shelf with the adults where they go straight ahead and never look back.

I am also cherishing some *Jatropha* seedlings which look fine strong plants at the moment, but will not stand low temperatures in the winter. As I do not have any soil cables in my greenhouse, I usually stand those plants that need a little extra warmth in the winter in the propagator with the top off, this acts much about the same way. *Jatrophas* shed their leaves in the autumn, together with the *Adeniums* and *Monadeniums* and should be kept dry from then onwards.

Ophthalmophyllums have flowered well this year. I accidentally dropped a pot on a nice two-headed *O. edithae* and one of the bodies was badly smashed, but in spite of this both flowered well, much to my surprise. It is not necessary to repot these plants every year, they are very slow growing and can stay in the same pot for several years without disturbance.

I obtained a few shallow plastic tea trays this year from a surplus store. They were ex-B.O.A.C. goods, I have filled them with sharp sand and stood the pots of *Lithops* on them so that the sand can be watered from time to time instead of the actual plants, this is a safer method when it is getting near the end of the season. The *Lithops* are beautifully coloured this year, but again rather late in flowering. The *Conophytums* have made a nice splash of colour and among the mauves I strongly recommend *C. erniana*, *C. pearsonii*, *C. wettsteinii* and *C. minutum*. These are all quite prolific and soon increase to sizeable plants. Never attempt to feed them or overwater.

I broke up all my *Faucarias* this year as the large clumps had become very woody. All the heads have re-rooted and are making nice new looking plants and many are in flower. These type of *Mesems.* benefit from being broken up from time to time as when they get to the woody stage they make very little new growth.

I have been looking at my young plant of *Haworthia bolusii* which was from seed taken from my adult plant. It is now nearly two inches across, but nothing like as hairy as the parent plant, this leads me to believe it is a hybrid, being crossed with *H. setata* which was in flower at the same time and standing next to it. It is an interesting little plant, nevertheless. I am very fond of the *retusae* types of *Haworthias* which are very beautiful during their growing season. They usually lose their roots and make a new set during the course of the year and during this period they are apt to shrivel badly. They should be repotted once a year and the old dead roots removed to make way for the strong growing new ones which you will see growing around the bottom row of leaves. This is a natural process with *Haworthias* and not due to bad cultivation.

There are many interesting little plants that are quite compact in growth among the *Kalanchoes*. Many have beautifully coloured foliage which will be an asset to any collection. One worth looking out for is *K. rhombopilosa*, the leaves are marked in a similar way to the *Adromischus*. It is a small branched shrub and could at first glance

easily be mistaken for an *Adromischus*. Falling leaves will soon take root and develop young plants. I searched for years before I managed to obtain a very small plant consisting of about two leaves. It is very slow growing and is still barely four inches high. Another rather unusual *Kalanchoe* that I had not seen before is *K. pubescens*. I had a small one given to me recently and was very charmed with its appearance. I believe there are several varieties of this, but the one I have has delicate velvety leaves covered with shining pink hairs. I am always interested in the small unusual succulents and there are several of these among the *Kalanchoes*. Another perhaps rather better known is *K. mangini*. It comes under the *Bryophyllum* group, and has numerous woody stems and plain green leaves. From the ends of the branches hang long tubular red flowers. It also bears adventitious buds which, as with other *Bryophyllums*, drop off and soon take root. It looks best overhanging from a shelf. Another *Kalanchoe* particularly attractive, especially when young, is *K. thyrsiflora*. The leaves are bluntly rounded and pruinose and often with a reddish margin. Most of these plants are quite easy to grow but some do not like a low temperature in the winter and may drop a lot of their bottom leaves, leaving a rather leggy looking plant that may have to be beheaded in the spring to get a decent shaped plant again.

I have a great fondness for the *Ceropegias* and have had a fine show of flowers on *C. sandersonii*. It can be grown best I feel by placing fine canes at intervals round the edge of the pot and training the long trails round and round, tying them in where required. They can take a fair amount of water during the summer, but should be kept on the dry side during the winter.

Do not leave the greenhouse shut tight all through the winter, our plants, like us, do appreciate some good fresh air when the weather is right.

It is surprising how frequently I get letters from members mentioning *Mammillaria wildiana* as having offsets from the tips of the tubercles. Frequently I have had letters stating that this species also offsets from the axils. Now I hear from Mr. G. G. Dennis, of Southminster, Essex and he gives me the history of his plant from the time when his plant was rotting at the base. The offsets were removed and potted up. He has been able to grow them on successfully and it is one of these offsets that gave him, when adult, evidence that his plant, at least, did offset from the tip of the tubercle. I am really grateful for the help I have been given with this matter, but would now ask that the matter be closed as I have not the time at the moment and for some time to come to prosecute enquiries into this aspect of our subject, but if anybody else wishes to delve I should be very glad to learn of their experiences, but not for publication, at any rate for the time being.

SPECIAL ANNOUNCEMENT

THE SUMMER SHOW
will be held on JUNE 25th, 1963

It is to be hoped that all members will make a special effort to make this a complete success, not merely as a general boost, but the Council has extended an invitation, which has been accepted, by Mr. A. F. H. Buining to give us an address on the subject in cacti of which he is the expert. This is a great opportunity for us as Mr. Buining is one of the leaders in the cactus world. He is an extremely prominent member of the I.O.S. He is President of the Dutch Society. He is also a Burgomaster. You can well appreciate why we want to give him as good an impression as we can. He will have plenty of good advice and help to give us growers of cacti and we are sure that all members will make the meeting after the Show on June 25th 1963 a first class success by attending and so show Mr. Buining how much we appreciate his visit for which he is specially travelling from Holland.

CONOPHYTUM PARDICOLOR Tisch. spec. nov.

By Dr. A. TISCHER

Planta caespitosa corpusculis dense aggregatis internodiis ad 1 mm. longis reliquis subcoriaciis vel papyraceis laete brunneis; corpuscula obovate vel obconica superne leviter compressa sublobata 8–10 mm. longa 6–10 mm. lata 5–7 mm. crassa lobis rotundatis incarinatus 1·5–2·5 altis fissuar impressa ad 4 mm. longa; levia glabra; brunnea lobis punctis magnis atroviridibus ad fissuram zona fenestrata formantibus, fenestra maculis subconfluientibus pardicoloratis notata; ovarium inclosum; calycis tubus ad 3·5 mm. longus non compressus ad 1·5 mm. diam. alboviridis segmentis 4 subcarnosis 1·5 mm. longis brunneis ad marginem membranaceis; corollae tubus ad 12 mm. longus non compressa superne ampliatus ad 2·2 mm. diam. albus segmentis 16-20 lanceolatis vel spatulatis ad 12 mm. longis ad 1·8 mm. latis supra rotundatis vel emarginatis albis; staminodiis paucis brevissimis ad 1 mm. longis superne emarginatus aureis; stamina pauca media in tubi adnata filamentis albis antheris 0·5 mm. longis luteis; stigmata 4 ad 2 mm. longa stylo 0; ovarium 2 mm. diam. supra conice elevatum; discus inconspicuus atroviridis; flores diurni.

Hab.: Farm Smorgenscadu, Bushmanland.

Coll. H. C. *Kennedy* 1960.

Typus in Herb. Botanische Staatsammlung Munchen Mes. Nr. 232; (Collect. NBG H. Hall 545/60).

Forming rather dense cushions, internodes 1 mm. long; leaf remnants thin leathery to almost paper like, light brownish to colour of wood; body obovate to obconical, at the side almost heart shaped, somewhat depressed, 8–10 mm. long, 6–10 mm. wide, 5–7 mm. thick, above sub-bilobed; lobes orbicular, not keel shaped, 1·5–2·5 mm. high; fissure depressed, not going through, up to 4 mm. long; surface smooth, bare; basic colour light brown to almost coffee brown, lobes at the top with large, dark green dots, converging inwards to form a "window", window zone marked with largish, partly somewhat converging, yellow brown (panther coloured) spots (hence the name "panther coloured"); Flowor, ovary enclosed, calyx tube 2·5 mm. long, not depressed, above the ovary somewhat reduced, 1·6 mm. diameter, greenish white, with 4 segments, hardly succulent, 1·5 mm. long, centre brownish, edged skin like, corolla tube up to 12 mm. long, not depressed, towards the top somewhat enlarged, at the top 2·2 mm. in diameter, white, with 18–20 segments, lanceolate to almost spatulate, up to 12 mm. long, up to 1 mm. wide, at the top orbicular or isolatedly somewhat notched, white; at the point of issue of the corolla tube some very short, golden yellow staminodes, notched above; stamina not numerous, in several rows, filaments white, anthers placed somewhat below the middle of the corolla tube, 0·5 mm. long, yellow; 4 stigmas, 2 mm. long, slightly pointed, style 0; ovary 2 mm. in diameter, top centre somewhat pointed conical; disc narrow, low, dark green; flower diurnal.

C. pardicolor is a further species within the section *Pellucida* Schwant. It is particularly distinguished by the slightly convex, somewhat sub-bilobed upper surface, the "window zone" intersected by brownish pigmented spots, and the large white flower. This species distinguishes itself from *C. pellucidum* Schwant. by the smooth, not warty upper surface; from *C. fenestratum* Schwant. by the more yellow brownish colouring, by the window zone intersected by pigment spots and by the larger, white flower (in the case of *C. fenestratum* rose colour) *C. cupreatum* Tisch. has a smaller, not bilobed upper surface, flat on top or slightly convex, and the bodies on this species are more copper coloured and smaller. Within the collective genus *Conophytum*, *C. pardicolor* may well belong to the most beautiful species. Due to its "mimicry" colouring it will be difficult to find in nature, when not in flower.

Now is the time of the year when, in about six weeks, the treasurer will be looking forward to receiving your subscription for 1963. He will have already received quite a number, but it is important that members renew their subscription promptly. You will be helpful to Mr. Young if you send your subscription along now, but do try and not be later than the New Year. It would be of no use to remind you in the next number of the Journal as if you have not renewed by the New Year you will not be getting the next number of the Journal, so do not be late and so lose any of the 1963 Journals. Mr. Young's address is 35 Castle Drive, Ilford, Essex.

CONOPHYTUM DOLOMITICUM Tisch spec. nov.

By Dr. A. TISCHER

Planta caespitosa corpusculis non dense aggregatis in senectis subcaulescentibus, ad 65 mm. altis internodiis ad 1·5 mm. longis reliquis coriaceis laete brunneis; corpuscula obovata superne compressa inferne cylindrata bilobata 30–45 mm. longa 20–25 mm lata 10–12 mm crassa lobis ampliatis saepe inaequalibus ad 20 mm. longis basim 10–12 mm. latis superne rotundatis vel subtruncatis medio versis subplanatis marginibus acutis partim inversis papillatis vel pubescentibus caeruleo-viridibus enotatis, calycis tubus ad 4·5 mm. longus non depressus segmentis 5 carnosis ad 2·5 mm. longis; corollae tubus ad 10 mm. longus non compressus superne ampliatus ad 2·5 mm. diam., segmentis 30–35 spatulatis 2–3 seriatis ad 10 mm. longis ad 1·5 mm. latis luteis vel aureis; stamina multa filamentis inferne albis superne luteis partim exsertis, stigmata 5 filamentosa ad 5 mm. longa aurea stylo ad 6 mm. longo; ovarium ad 2·5 mm. diam. supra leviter conice elevatum; discus inconspicuus atro-viridis; flores diurni.

Hab: Klein Namaqualand, Richtersveld, Dolomite Peak. Coll. H. Hall 1955, NBG 955/55.

Typus in Botanische Staatsammlung Munchen Mes. Nr. 233.

Forming somewhat loose cushions, up to 70 mm. high, observed to grow up to 60 mm. in diameter, leaf remnants firm, leathery, colour of wood, internodes up to 2·5 mm. long, bodies—seen laterally—oblong obovate, above much compressed and bilobed, below cylindrical, 30–45 mm. long, greatest width roughly to the middle of the lobes, there up to 25 mm. wide, and up to 12 mm. thick; lobes up to 20 mm. long, at the base up to 12 mm. wide, mostly formed dissimilarly, and not of the same length, above and keel line orbicular; the shorter lobe pointed at the top and not extended obliquely outwards, above and keel line orbicular, inner side reduced sharp edged, flat, often bent inwards, upper surface rough to papillose hairy; basic colour bluish grey green, without conspicuous dotting; fissure zone not conspicuous; Flower: ovary often visible in fissure; calyx tube up to 4·5 mm. long, not depressed, scarcely widened towards above, greenish white, white 5 segments, succulent, up to 2·5 mm. long, light green; corolla tube up to 10 mm. long, not depressed, somewhat widened towards above, up to 2.5 mm. in diameter, white below, yellow above, with 30–35 segments, in 2–3 rows, spatulate, up to 10 mm. long, up to 1·5 mm. wide, notched above or pointedly orbicular, yellow to golden yellow, the inner ones isolatedly shorter, stamens numerous, united with the corolla tube from the base, filaments white below, yellow above, anthers from the commencement of the corolla tube to somewhat protruding; 5 stigmas, fina filamentous, up to 5 mm. long, golden yellow, style 6 mm. long, disc low, narrow, dark green; flowers diurnal.

C. dolomiticum belongs to the large bilobed forms of *Conophytum*. It was found in 1955 by H. Hall on the Dolomite Peak in the northern Richtersveld. The new species belongs to the closer relationship of *C. albescens* N. E. Br., but distinguishes itself from that species by the larger bodies, the most dissimilarly large and unequally formed lobes and especially by the wonderful bluish white colouring. Owing to this colour and the fine hairy covering it is particularly striking and I consider this species to be the most beautiful of the bilobed species which have become known so far. The keel line is not coloured red. The discovery on one of the highest elevations of the Richtersveld proves that presumably exactly on the higher elevations of this landscape yet further, unknown species are awaiting their first discovery.

The Botanical Society of South Africa is holding its Golden Jubilee in 1963 at Kirstenbosch. If any reader is visiting South Africa during 1963 they will find plenty of interest in the wonderful gardens at Kirstenbosch where they will find our old friend Mr. Harry Hall and Mrs. Winifred Hall who is secretary of the Botanical Society of South Africa.

The Commonwealth Games will be held in Perth, Western Australia late in November 1962. The Cactus and Succulent Society of West Australia extends a hearty welcome to any of our members who are attending the Games and they will have an opportunity of meeting their very keen members.

SPECIAL. ? NEW MAMMILLARIA

By RICHARD RUSSELL

In preceding articles I mentioned that San Diego collections often possess plants which this writer believes to be new or non-classified species. This is specially true of the *Mammillaria* group.

In early August, Robert Taylor of El Cajon, California, called to tell me about an exciting event. A *Mammillaria* which he had collected about 75 miles north of Mazatlan, Mexico, was in bloom. He said that the flower was extraordinary. I promptly drove up to see the plant. Bob Taylor has one of the finest Cactus collections in the country. When he is excited, it pays to "give a look and listen". I arrived at Bob's place, and he promptly took me to a spot where I saw the plant in question. It was a hooked spined *Mam.*, but the flower was amazing. It was about one inch across (exceedingly large for a *Mam.* flower), of an unusual "star" shape, but most incredible of all—the flower was pure orange-gold. The outside of the flower was reddish coloured, and the flower opened almost flat in the hot sun (see photograph). Bob presented me with a duplicate plant, a picture of which I include (the plant bloomed a week later in my collection).

I called Doctors George Lindsay and Reid Moran here in San Diego, and I described the plant to them. Both of these experts believed that the plant could be a new species. Taylor and I are both attempting to propagate the *Mam.* and if we are successful, specimens will be sent to England. This is the first description to my knowledge of this remarkable *Mam.* to appear anywhere. I hope that the plant will be named Mammillaria Taylorii. The plant, I might add, is of purplish colour with long black-tipped hooked centrals and about ten to twelve white radials.

(I have reproduced the special article by Mr. Russell in full because of his inimitable style and because of the special interest of his subject. I had hoped to be able to publish the full result of his short article, but I have not heard from him yet. Immediately on receiving his article and his photos my memory went back to a plant I had fifteen years ago, in 1947, which I had received from Ferdinand Schmoll as *Mammillaria barkeri*, and I was of the opinion that Mr. Russell's plant was the same. I wrote and told him so and sent him a larger photograph of my plant so that he could make adequate comparisons. It is always difficult to get an exact idea from a photograph and only his examination would prove whether his plant was the same. In Mr. Backeberg's fifth volume of "Die Cactaceae", page 3464 is published *M. barkeri* and if Mr. Russell's plant is the same then it must remain under this name and not under a new name. Unfortunately, Mr. Russell only gives very sparse information as to the conformation of his plant, but it is interesting to note that the description in Backeberg gives the radials as 8–10, first white with red or black tips, later yellowish and the centrals 3–4, upper half black, lower half yellowish brown. The description in Mr. Backeberg's volume states that according to Craig's key it should be placed behind *M. wildii*, but any one who knows *M. barkeri* could not connect it with *M. wildii* by any manner of means. Mr. Backeberg's fifth volume was published in 1961.

While I have never seen the flower of *M. barkeri*, I quite agree with Mr. Russell that it is a very distinctive kind of plant and well worth having and I can only regret that I lost the plants I had. So that readers can judge for themselves, I am publishing two photographs from Mr. Russell as well as two photographs I took in 1947).

The 1962 season has been an extraordinary one in many ways, a bad summer and a fine autumn and notwithstanding there is a general report that flowers and fruits have been more prolific than ever. Readers know of the editor's removal to St. Albans. His greenhouse is almost under a large sycamore tree and he is now finding out that his plants have made very good growth during the season. Is it because his plants like the change of venue, or is the demand for more and more sunshine overdone and our plants, generally speaking, do like a little shade?

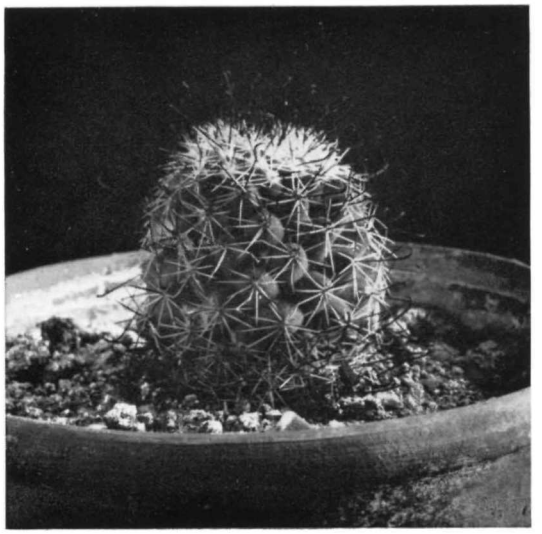
LISTS RECEIVED

Wheldon & Wesley Ltd., Lytton Lodge, Codicote, Hitchin, Herts. A 104 printed page catalogue of books, many of them of interest to cacti and other succulent enthusiasts, including the original issue of Britton & Rose with coloured plates, Jacobsen's Handbook of Succulent Plants, 3 volumes, Backeberg's six volumed "Die Cactaceae" and Bally's The Genus Monadenium.

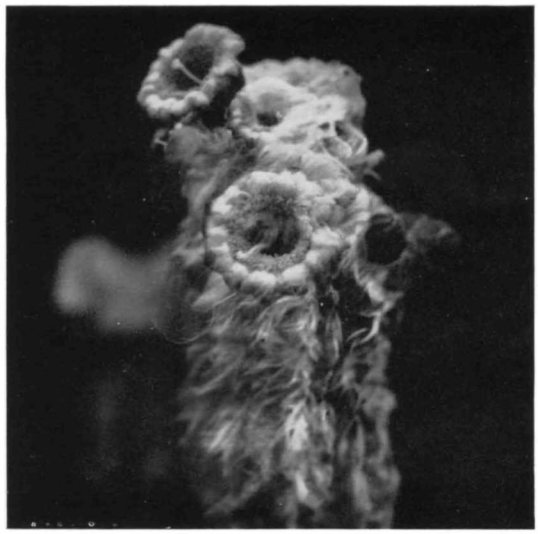
? New *Mammillaria* R. Russell

? New *Mammillaria* R. Russell

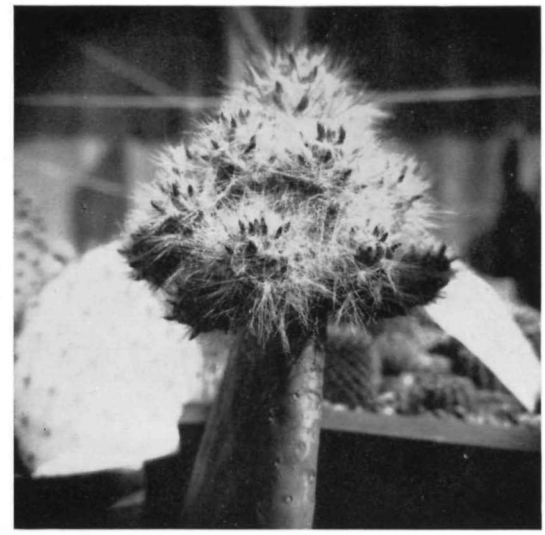
Mammillaria barkeri E. Shurly



Mammillaria barkeri E. Shurly

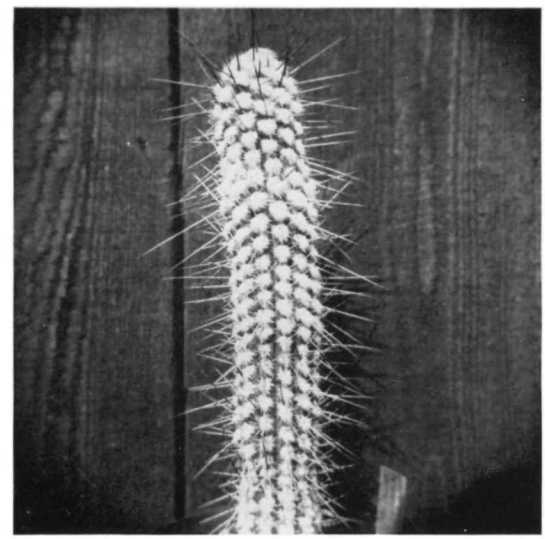


Cephalocereus palmeri



Opuntia floccosa

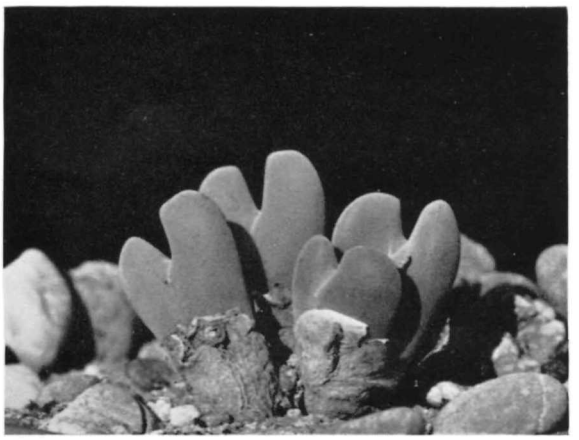
Astrophytum myriostigma var. *quadracostus*



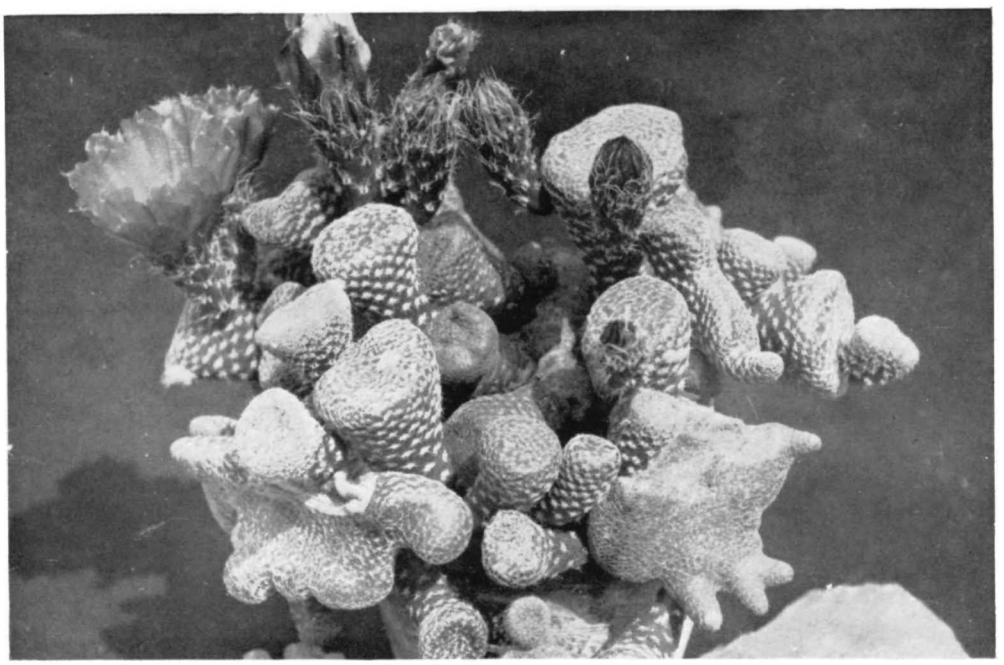
Eulychnia floresii

Four photographs by R. Russell

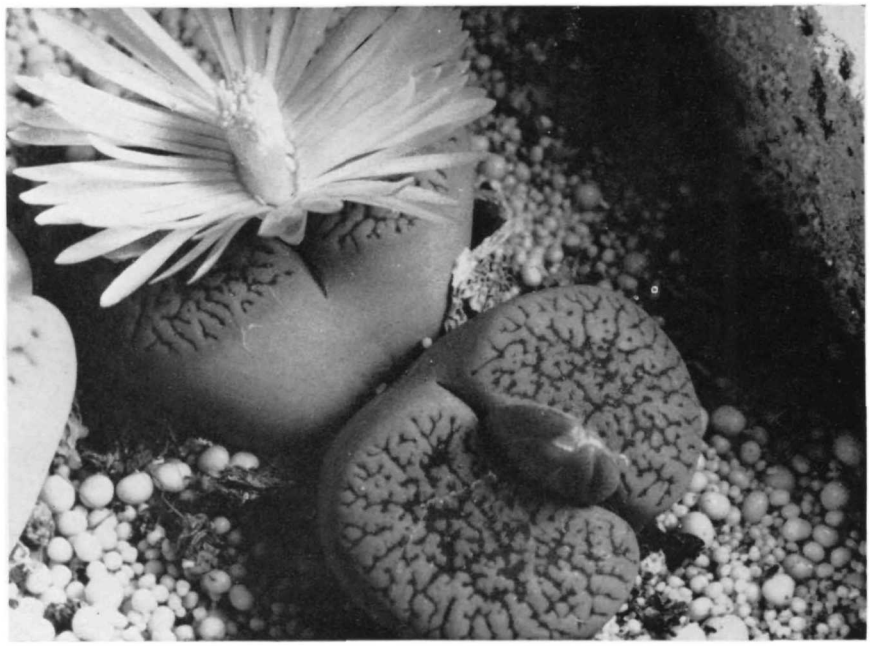
Conophytum pardicolor Dr. A. Tischer



Conophytum dolomiticum Dr. A. Tischer



Opuntia clavarioides A. J. Edwards

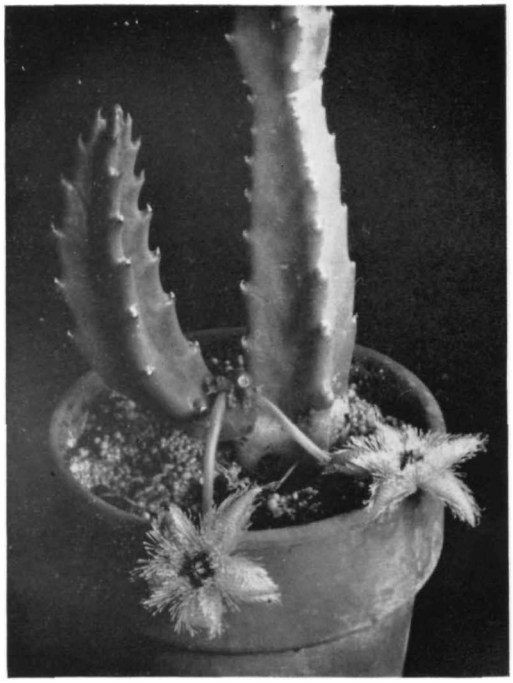


Lithops aucampiae Miss M. J. Martin

Lithops mickbergensis Miss M. J. Martin

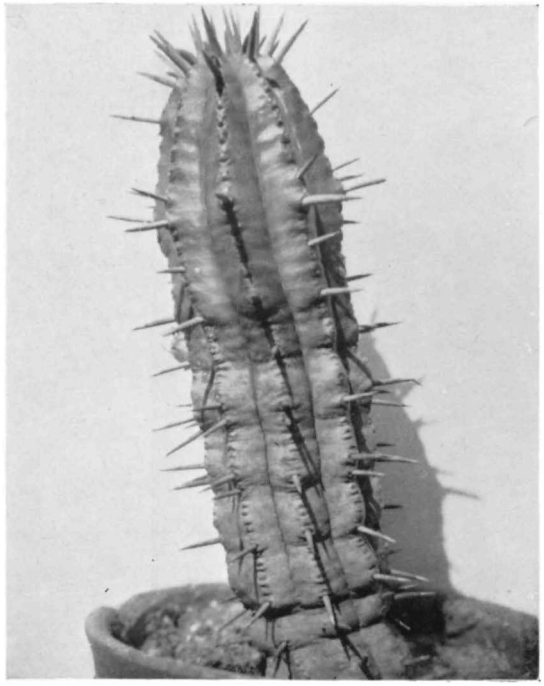
Ophthalmophyllum jacobsenianum Miss M. J. Martin

Lithops jacobsenianum Miss M. J. Martin

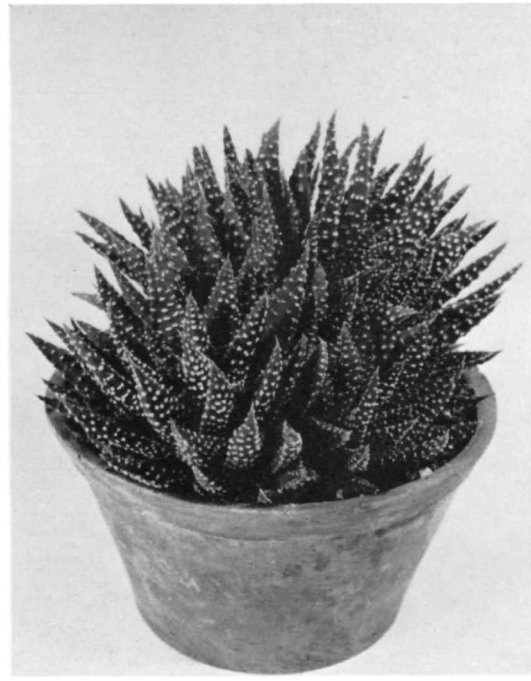


Stapelia granduliflora Miss M. J. Martin

Conophytum sitzlerianum Miss M. J. Martin



Euphorbia aggregata R. H. Thurlow



Haworthia margaritifera A. Crookes

Sedum spathulifolium capablanca

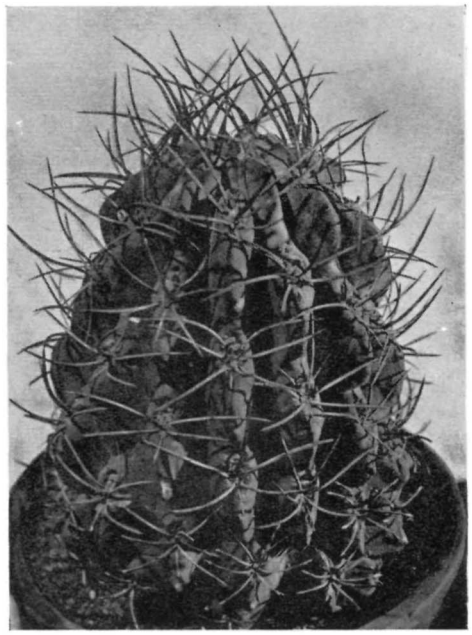
Cheiridopsis peculiaris

Caralluma caudata

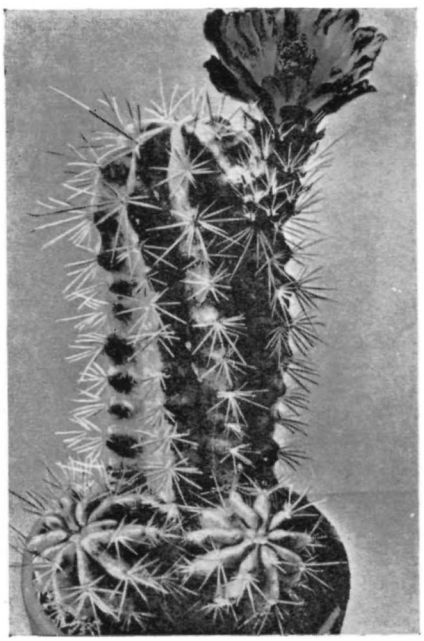
Trichocereus pachanoi.

Four photographs from J. Himmerman, New Zealand

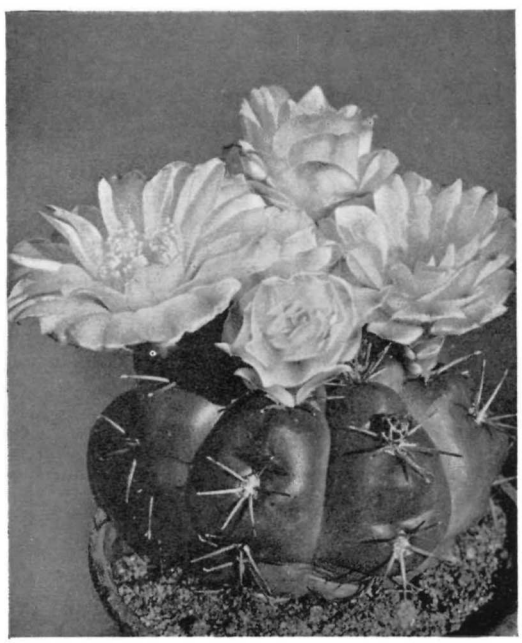
Echinocactus microspermus macrancistra



Echinocactus ebenacanthus



Echinocereus polyacanthus



Echinocactus multiflorus

Four old coloured photographs by O. Stoye

REPORTS OF MEETINGS

6th March, 1962. Mr. A. Boarder. Raising Plants from Seed.

Mr. Boarder took this opportunity of giving members the benefit of his great experience in raising plants from seed in time for members to take advantage of his advice this season.

Mr. Boarder first stressed the advantages of growing plants from seed as against acquiring imported plants or even by purchasing home grown plants. After a few introductory remarks he showed a number of slides from the first few of which he was able better to describe his greenhouse and propagating frame and his cable heating system. The pictures also well illustrated his emphasis on good ventilation and the concrete construction of his frame. Then followed a number of plant photographs, all of plants grown from seed and many from seed from his own plants. His well known ability to develop plants and bring them into flower so much quicker than most other growers was also well shown. He showed, too, stages in growth and at what size to prick out. Many pictures showed plants with seed pods, which should not be removed until they have shrivelled and the seeds ripe. The seeds should not be pale yellow in colour.

Turning to his method of seed raising Mr. Boarder first stressed that seed must be good seed. As a test he suggested putting the seed into a saucer and tilting. The good plump seeds will roll down leaving the flat seeds and husks. Take out the good seeds and destroy the refuse as this will only promote mildew.

The ideal would be to grow one type of seed in one pan, but in practice this is not practicable owing to lack of space. Mr. Boarder said that he preferred 4-inch half pans as giving reasonable surface area with depth adequate to the needs of seedlings. It also avoided the waste of the additional compost required in a full sized pan of the same diameter. Each pan was divided into four or more by strips of celluloid or plastic. Experience had shown that succulent seedlings appeared to like growing close together.

Whatever containers were used they should first be well scrubbed. Seeds may be sown whenever convenient, even as late as June, although Mr. Boarder liked to sow in January. The earlier they are sown the sooner they may be pricked out and the larger they will be by the end of the season. These remarks also applied to South African succulents as it avoided coddling during the winter.

John Innes seed compost was adequate for raising succulents and has sufficient fertiliser for the short time it is required.

A layer of pure granulated peat (after passing through quarter-inch sieve) should be placed at the bottom and above it about one inch of the compost mixture which has not passed through a perforated zinc sieve, then a layer of unsifted, topped up with the finings (that which passed through the sieve). Peat was preferred to leafmould as being cleaner. Mr. Boarder prepared his own compost to the J.I. formula.

Before actually sowing he suggested listing the seeds and numbering them; only the numbers being put on the labels which should be placed in position before the seeds were sown. Tip the seeds into a spoon and tap out into their compartment. The seeds should not be covered with soil. If they are they will certainly not germinate. A very thin layer (one granule deep) of tiny grit particles should be spread over the surface. This serves the additional purposes of holding the seeds down, preventing the formation of moss and algae and retaining some moisture.

The pan should then be immersed in hot water. Dry peat rejects cold water. As soon as the soil is wet the pan should be placed in the propagator. Mr. Boarder's propagating frame is heated by a fifty feet Warmglow heater, with its thermostat set at 70°–72° F. The cable is set half in the floor of the frame with the remainder looped round the sides. Peat is packed round the pans.

Each pan is then covered by its own piece of glass and black paper, both of which are removed on the first germination in that pan. Air is admitted to the frame as a whole during the day. Do not water a container unless it looks quite dry as overwatering is more hazardous than drying out. The next watering should be by syringe. Warm water should be used as there is no sense in using cold water whilst the electricity is on. Rain water was preferred and if tap water had to be used it should not be used fresh from the tap but allowed to stand, for a day if possible. A few grains of permanganate of potash in the water once a week helped to combat mildew and damping off.

From April or May onwards care must be taken to avoid scorch. Butter muslin was quite efficacious.

Pricking out should not be done before the foodbag has been entirely absorbed and, in the case of cacti, the young spines have appeared, and great care must be taken not to damage the tiny roots.

J.I. seed compost was quite adequate for the first pricking out but ¾ oz. of sulphate of potash and 1½ oz. of hoof and horn grist to the bushel should be added (generally equivalent in fertilisers to J.I. potting compost No. 1).

Plant the seedlings about one inch apart with an initial watering (with the addition of permanganate of potash) and no more should be given for a week. Do not try to force by watering. Water when necessary only but when doing so do it well. Keep out of strong sunlight. A minimum temperature of 50° F. was ideal from now on.

In reply to a question Mr. Boarder said that "no-soil" composts were not really suitable for raising succulents as some were too wet and not firm enough to support the plants, also as cacti were not pricked out so quickly as ordinary plants a soil compost was preferable.

Mr. Boarder's most valuable and timely information was greatly appreciated by his hearers and he concluded by wishing them success in their seed raising for 1962.

1st May, 1962. Mr. Clive Innes. Epiphytic Cacti.

Mr. Innes opened his talk along general lines saying that he found Epiphytic Cacti both a fascinating hobby and a study, with most rewarding results.

There was very little reference, he said, in authoritative works with the exception of Scott Haselton's "Epiphyllum Handbook" which he strongly recommended.

Epiphytic Cacti had an undoubted charm and attraction peculiar to themselves and demanded a particular study. They were, like Orchids and Bromeliads, truly jungle plants and had most exotic blooms. These blooms were up to 18 inches in diameter and ranged in colour from white and cream through the pinks to reds, mauves and oranges. Many were heavily perfumed and most flowered nocturnally, opening from 4 to 6 p.m. and thence throughout the night. By morning many, and these included those with the largest flowers, had finished.

On the other hand, *Rhipsalis*, for example, had flowers of small and insignificant size, but in most the form is fascinatingly whorled (*R. paradoxa*), fluted (*R. pentaptora*), strap like (*R. warmingiana*) or pencil shaped (*R. shaferi*). All *Rhipsalis* were recommended for hanging baskets as simulating their natural form and greatly aiding their growth. *R. rhombea*, an intermediate form, is a link with the *Epiphyllums* as is also *R. crispata*. The genus *Rhipsalis* is the exception to the habitat rule, being found in Africa and Madagascar as well as in the New World.

Mr. Innes was of the opinion that there were many more discoveries to be made of epiphytic cacti than of desert cacti as such large expanses of jungle country had yet to be penetrated.

He referred to *Epiphyllum chrysocardium*, a recent discovery with leaves up to eighteen inches across, also the first member of *Cryptocereus*, *C. anthonyanus*, with tooth-shaped stems which had been found growing on the roof of a peasant's hut. It has large flowers of vivid orange yellow.

Epiphyllum hybridisers had tried for years to produce a true yellow and to some degree have succeeded, but *Cryptocereus*, as one of the parent stock, may offer the answer to a more perfect result.

Werckleocereus imitans, also new, had stems shaped very much like fish bones and there is nothing else in this genus resembling it.

The *Disocactus* family had red flowers with narrow trumpets and Mr. Innes showed a good example of the family.

His *Acanthorhipsalis monacantha*, he said, had deep orange flowers—not white as quoted in Borg.

The *Selenicereus* family were an interesting group growing in the earth and twining up trees. They had wonderful, large, pure white flowers which were heavily perfumed. They grew well in pots.

Aporocacti, too, were epiphytic, or at least semi-epiphytic and did well in hanging baskets.

Nyctocerei and *Erioceri* were suggested as epiphytes and Mr. Innes considered this might well be correct.

The epiphytes give a colourful display at a time when desert cacti are not looking their best and a small collection (to start with) was very rewarding.

Of hybrids he had a plant on show of *Epiphyllum hybrid "Pagagnini"* four years from seed which was a mass of buds. The flowers persist for weeks. Another shown was unnamed and both attracted a great deal of interest. Both have *Nopalxochia* forebears.

He said there were some 3,800 hybrids of which he had about half.

Of the plants in general Mr. Innes said that they appreciate a slight rest in winter with a little water fortnightly. As to temperature in the winter they were happy if above freezing with a maximum temperature of 45°F. Twice a year he gave the plants a feed of a liquid seaweed-base fertiliser for foliage feeding.

As suitable composts he recommended either three parts of fully decomposed leafmould with one part of really gritty sand, or three parts of sedge peat, half part of old cow manure with one part of gritty sand.

Partial shade was desirable to simulate the light of their natural habitats and muslin was admirable for this purpose.

Watering should commence when the plants are coming into bud. Mr. Innes's potted plants were bedded in

slightly moistened peat which helped greatly to prevent the pots drying right out to the detriment of the roots.

He had low voltage soil heating cables below the pots.

In reply to a question on the use of polythene he said that this tended to create humidity and spraying was necessary. He did not have time to give his plants individual attention and used a hose. In hot weather they required plenty and often, including most nights. The desert plants should be segregated from the epiphytes as the two types do not combine in this regard.

Mr. Innes noted that the red flowers bloomed first, followed by orange, amber, pink, purple, rose-pink, white, cream and yellow, more or less in succession; all by early June.

Some of the plants are self pollinating, but not so much with the hybrids. Mr. Innes carries a camel hair brush in a test tube. He stressed the importance of covering a flower after pollinating.

He then showed the members present a number of slides, commencing with some hybrids, starting with Grace Marie which he described as the "finest of pinks" and Helena with a purple centred flower to White Queen, a truly lovely white, nine inches across and highly perfumed. Then to *Rhipsalis* in sphagnum lined baskets each with a pot saucer in the bottom. With the epiphytes he showed some *Bromeliads* and *Cymbidiums*.

This was an evening of great interest which introduced the true scope of epiphytic cacti to many members for the first time and those present were truly grateful for the opportunity of seeing so many of these plants before them, together with so many excellent slides, as well as of listening to a man who was truly an enthusiast speaking from experience in a light and understandable manner.

3rd July, 1962. Mr. Boarder's Comments on the Show.

In his opening remarks to the members present at the meeting on 3rd July, Mr. Boarder said that Mrs. Stillwell had been regrettably absent as the result of an unfortunate accident which although painful was fortunately not of a serious nature.

Best wishes for a speedy recovery were expressed by the Chairman on behalf of the members.

Mr. Boarder said the standard was better than ever with some magnificent plants, he had been delighted to see so many fine plants. In many of the classes there had been one outstanding exhibit with many of the remainder so nearly of a level as to make the selection of the second and third very difficult.

He said that he was glad to see four entries in the class for a Branch Group exhibit and he stressed the value of such group exhibits with their variety of genera and many different forms and colours in attracting and educating the general public. All four exhibits were excellent and of even merit. The quality of the arrangement decided the first prize winner.

It was a great pity, he said, that the individual group classes had not been better supported. Here again the First was excellent. Transport was always a great trouble with group exhibits but the effort was very rewarding.

The class for one Specimen Succulent was very disappointing and Mr. Boarder said that he did not feel justified in making an award for a second prize. Something special is expected as a "specimen" and too many plants shown in the class did not measure up to this requirement. A number of plants in the groups were much better qualified.

The *Mammillarias* were outstanding and beautifully grown.

The class for six South African plants was one of the toughest to judge. All the exhibits were good but a number of exhibitors failed to realise the importance of variety. The plants being of comparable quality six different genera would always gain the decision over an exhibit not so varied.

In groups of three plants more effort should be made to make a balanced exhibit, by showing plants of even size. Several exhibits were lacking in this respect. On the whole he was well satisfied with the Show.

The members expressed their approval of the work done by Mr. Boarder and also the Show Secretary, Mr. Walden.

3rd July, 1962. Discussion on Cultivation of *Lithops*. Mr. Walden and Mr. Heathcote.

In opening the meeting the Chairman apologised to members for having to alter the subject of the advertised talk due to the unavoidable inability of Miss Pilcher to attend on Tuesdays. Instead, it was proposed to have a discussion starting between himself and Mr. Walden on the cultivation of *Lithops*.

Before inviting Mr. Walden to join him on the platform Mr. Heathcote outlined the idea behind the drawing up of a list of *Lithops* names (and he emphasised that he was referring to "names" and not "plants") used while at the same time recording those which were invalid and those which were the subjects of varied opinions. At the same time he referred briefly to the possibility, in the future, of forming a *Lithops* Forum for the dissemination

and collection of information on the genus and he invited members to air their views and ask their questions, in this connection, by addressing them initially to him in writing.

In answer to the question "What are your methods of culture with adult *Lithops*?" Mr. Walden first referred to the compost which he favoured. He said that he liked to use a good, fairly heavy loam, one part to one part of a mixture of coarse sand and mortar rubble, or mortar rubble with a little charcoal. He liked the heavy loam because after sieving through a quarter inch sieve it yielded a fair percentage of small nodules which, holding a little more moisture than ordinary loam, gave the roots something to get hold of and also dried out more slowly when moisture was withheld at the end of the growing season. Additional sand or limestone chippings could be added for those plants requiring less water. A layer of chippings on the surface of the compost also improved the appearance and prevented the soil from washing on to the plants. It was easily removed if necessary. He mentioned that he did add some basic slag to his mixture when he thought of it (about half-a-pound to the bushel). Some folk preferred to add peat or leafmould but he preferred not to.

The big question always asked about *Lithops* was on watering. Mr. Walden said that the individual plant was the only guide and once the signs could be read the answer was forthcoming by inspection. *Lithops* must have their resting period and to deny them this would only kill them.

The resting period commenced soon after flowering had finished and Mr. Walden said that he continued watering sufficiently after this time to assist the seed capsule to form. If the plant had not flowered the time could be decided by the experience of observing those that had. This time had usually come by the end of September. Although, he added, this was not a hard and fast rule, for example, his plants of *L. optica* and *L. optica forma rubra* had both tried to flower last Christmas Day but it was too cold and dull, however, for the effort to be successful. Mr. Heathcote said that his plant of the latter had the major part of one lobe eaten by a blackbird and his plant had promptly flowered in protest late in October. He interjected at this point to describe the contraction of roots, stem, growing point and leaves to within the compass of a *Lithops* as we know them, with especial emphasis on the location of the growing point deep towards the apex of the inverted cone.

Continuing, Mr. Walden said that from this time on he withheld water until the old leaves of each individual plant had dried.

In amplifying this Mr. Boarder said that he commenced watering rather before the old leaves had become paper dry as by then they were of no food value to the plant and assistance in the form of water was required. Mr. Walden agreed with this point and added that his two plants of *L. optica* had had only a little water so far this year whereas other species had been ready in May. For the more difficult plants, *L. comptonii*, *L. helmutii*, *L. geyeri*, *L. vallis-mariae* and *L. meyeri*, for example, he added extra limestone chippings to the compost and gave less water.

Mr. Heathcote said that he was in complete agreement on the subject of watering but Mr. Collings said that he gave some water throughout the year.

Mr. Walden then referred to the objective in growing the plants, not, as he put it, to look like "gherkins" but to grow them to approximately the size which they grew to naturally. Many plants, like *L. deboeri*, *L. werneri* and *L. villetii* did not grow to any great size and an attempt to blow them up, although they might respond to a degree, was, in his opinion, an attempt to improve on nature whilst producing a weak flaccid plant. The colour was much better on small well grown plants and they lived longer. Overfeeding could only spoil them. The heat factor was not important with mature plants, all his had been subjected to frost either inside or outside the greenhouse but the soil had been quite dry at the time. Damp and cold together were the enemies of the genus as well as of many others. Their most important requirement was plenty of light and air and they would stand roasting in the sun providing plenty of fresh air was available.

Repotting every year was not necessary although it was, of course, advisable to de-pot and examine any plant which did not appear to be happy—root bug may be in evidence. Mr. Walden usually gave two or three applications of Malathion each year and was rarely troubled. When repotting he did not use too large a pot, very often the same size would do for another year.

Whilst Mr. Boarder and Mr. Heathcote were in general agreement with Mr. Walden's remarks Mr. Collings did not agree with the idea of holding back the growth of the smaller species. A lively discussion developed which was finally summed up by the Chairman as being an example of the three-way rule, the right way, the wrong way and your own way.

Mrs. Watt referred to her visit to Mr. Schwatzbach at Zurich and praised the appearance of the *Lithops* there.

Mrs. Sharman, in a few crisp sentences, gave a vivid description of her plants and her methods of looking after them, and both ladies were applauded for the clarity of their contributions.

The meeting concluded with the Chairman thanking all those who took part.

SHOW RESULTS, 11th and 12th SEPTEMBER, 1962

Class 1. *Three Echinocactanae*
1st J. E. Taylor 2nd Mrs. M. Halford 3rd Mrs. J. Scarff
Very Highly Commended P. V. Collings

Class 2. *Three Coryphanthanae*
1st J. E. Taylor 2nd Mrs. T. Watt 3rd R. H. I. Read
Very Highly Commended Mrs. M. Halford Commended Mrs. J. Scarff

Class 3. *Three Cereeanae*
1st Mrs. J. Scarff 2nd Mrs. M. Halford 3rd J. E. Taylor
Very Highly Commended R. H. I. Read

Class 4. *Three Echinocereeanae* (excluding *Rebutias* and *Lobivias*)
1st J. E. Taylor 2nd P. V. Collings 3rd Mrs. J. Scarff

Class 4a. *Three Rebutias* and/or *Lobivias*
1st J. E. Taylor 2nd Mrs. M. Halford 3rd R. H. I. Read

Class 5. *One Specimen Succulent* (excluding Cactus)
1st G. Richardson 2nd Mrs. T. Watt 3rd Mrs. J. Scarff
Very Highly Commended R. H. I. Read Commended Mrs. M. Halford

Class 6. *Three Faucarias* and/or *Stomatiums*
1st Mrs. M. F. Caswell 2nd —— 3rd Mrs. M. Halford

Class 7. *Three Euphorbias*
1st W. J. Newman 2nd Mrs. T. Watt 3rd C. Parker Commended S. C. King

Class 8. *Three Agaves, Aloes* and/or *Gasterias*
1st Mrs. J. Scarff 2nd Mrs. M. Halford

Class 9. *Three Haworthias*
1st Mrs. T. Watt 2nd R. H. I. Read 3rd Mrs. J. Scarff
Very Highly Commended S. C. King

Class 10. *Three Echeverias* and/or *Cotyledons*
1st Mrs. J. Scarff 2nd Mrs. M. Halford 3rd Miss A. M. Pilcher

Class 11. *Six Stemless Mesembryanthemums*
1st J. D. Harding 2nd Mrs. J. Scarff 3rd Mrs. C. M. Marshall
Very High Commended S. C. King Commended Mrs. T. Watt

Class 12. *Three Stemless Mesembryanthemums* (for members who have not previously won a First in any Class).
1st Miss E. M. Drage 2nd C. Parker

Class 13. *Three Succulents other than Cacti*
1st P. V. Collings 2nd Mrs. J. Scarff 3rd R. J. Kinselley
Very Highly Commended S. C. King

Class 14. *Three Succulents other than Cacti* (for Members who have not previously won a First in any Class)
1st R. J. Kinselley 2nd C. Parker

Class 15. *Three Stapeliads*
1st R. J. Kinselley 2nd R. H. I. Read 3rd Mrs. T. Watt
Very Highly Commended C. Parker

Class 16. *Succulents other than Cacti raised from seed* by the Exhibitor, sown on or after 1st January, 1959.
1st Mrs. T. Watt 2nd Miss A. M. Pilcher

Class 17. *Six South African Succulents* in pots not larger than 3½ins. inside diameter
1st Mrs. J. Scarff 2nd S. C. King 3rd Mrs. T. Watt

Class 18. *Group of Cacti and/or Succulents* to cover table space not larger than 3 ft. x 3 ft.
1st —— 2nd —— 3rd A. Byles

Class 19. *Three Cacti and/or other Succulents* (for Juniors under 18 years)
1st Miss J. M. Dean 2nd N. R. Clyne 3rd G. A. Page

Class 20. *Bowl of Succulents* (excluding Cacti) not larger than 12 in. x 12 in.
1st N. R. Clyne 2nd Mrs. T. Watt 3rd Miss A. M. Pilcher

Amateur Gardening Bronze Medal—Mrs. J. Scarff for Six South African Succulents.

Amateur Gardening Award of Merit—G. Richardson for One Specimen Sueculent.

Amateur Gardening Diploma—W. J. Newman for Three Euphorbias.

TROPHIES FOR BOTH SHOWS

Sir William Lawrence Cup for Cacti	J. E. Taylor
Evelyn Theobald Cup for Succulents	Mrs. J. Scarff
R. S. Farden Bowl for Group	D. J. Humphryes
P. V. Collings Cup for Euphorbias	W. J. Newman
Mrs. E. B. Pryke Howard Cup for Succulents ...	Mrs. J. Scarff and S. C. King
Mrs. J. A. Luty Wells Cup for Three Cacti	P. V. Collings
Mrs. A. Hedges Cup for Succulents raised from Seed	Mrs. T. Watt
S. J. Pullen Cup for Miniature Garden	N. R. Clyne
W. Denton Medal for Six Stemless Mesembryanthemums ..	J. D. Harding

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1962		*Subject*	*Lecturer*	*Table Show*
Nov.	27	Collectors and Collections (Colour slides)	Mrs. Sharman	One Conophytum

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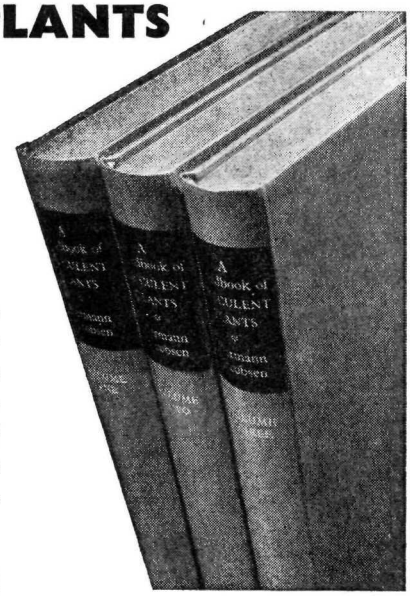

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