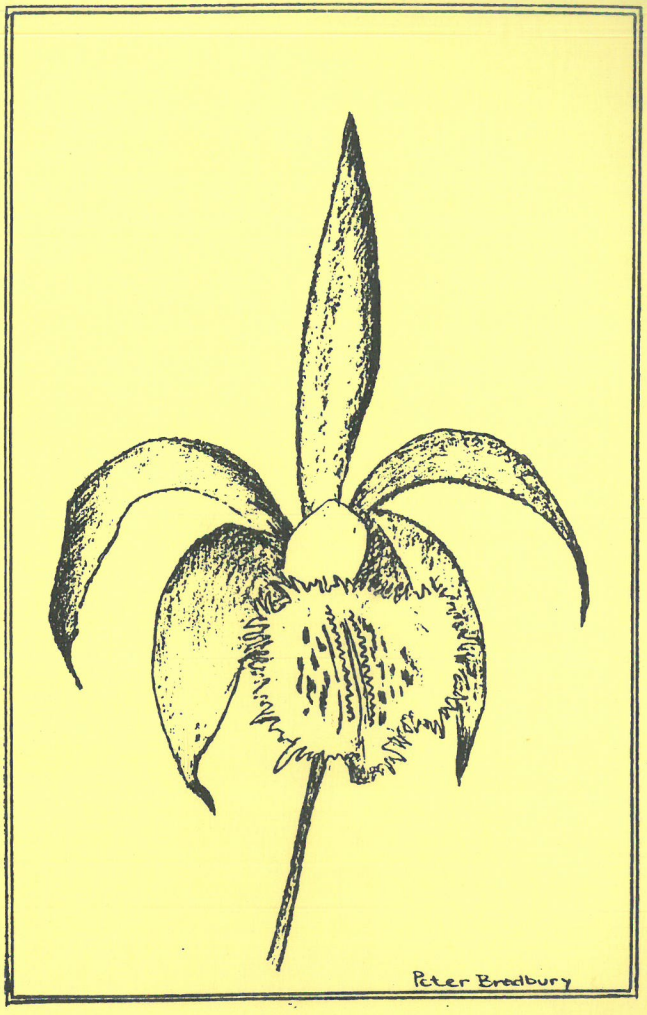
NATIONAL PLEIONE REPORT

INCORPORATING

HARDY ORCHIDS



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KEITH RATTRAY

It was with great sadness that I learned of the accidental death of Keith Rattray early in 1989. At twentyfour years of age, he was the youngest contributor to the very first 'National Pleione Report' using as a title for his article 'A Passion for Pleiones'. He certainly had a passion, not only for pleiones, but for many other plants as well.

On entering his garden and greenhouse I was astonished at the amount and variety of plants, some quite rare, that somebody as young as Keith had collected together. Besides a superb collection of Pleiones there were Lewisias, Cyclamen, Corydalis, Fritillaria, Crocus, Snowdrops, Auriculas, Primulas and many, many more. All looked very happy and were obviously growing well, attesting to his skill as a grower.

Keith's collection of pleiones had a number of very fine clones of P. forrestii, and stock of P. confusa from four different sources, as well as the more usual species and hybrids.

Two years ago he started breeding pleiones and from the parents he used I believe he was going to create some beautiful new hybrids. He obviously had a very satisfying future to look forward to in the horticultural world.

Keith had nearly finished his studies at Glasgow University where his tutors said he had a brilliant future in front of him in the electronics industry. He eventualy wanted to grow plants and was going to finance his dream by working in the electronics world.

I shall remember Keith not only as a very good friend, but as a grower who never ceased to want to learn more about the plants he loved - pleiones - whenever he had the chance.

IAN BUTTERFIELD

"THE GENUS PLEIONE" by Phillip Cribb and Ian Butterfield is published by Royal Botanic Gardens Kew in association with Christopher Holmes and Timber Press Price £15-95

Although pleione orchids are becoming more and more popular, literature on the subject is still rare so this book is particularly welcome.

The **"GENUS PLEIONE"** is A Kew Magazine monograph and every aspect of it is well presented. It contains twenty colour plates in all, fourteen of which are superb watercolour paintings mainly by Christabel King of Kew. The remaining plates are photographs, reproduced several to a page and are a help to the reader to identify many more species and hybrid pleiones.

The cultural section of the book would enable the least experienced of growers to do well, as composts, growing conditions and dormant period are all clearly explained. The few pests and diseases that affect the pleione are also attended to.

All the species and natural hybrids are well described and where further description is needed line drawings are used with great effect and clarity. The technical information is of the highest standard but if technical reading is not to your liking, leaving it out does not detract from the book.

"THE GENUS PLEIONE" concludes with a listing of artificial hybrids and also gives their parentage.

This is an excellent book for anyone interested in pleiones and should appeal to all who grow or appreciate orchids.

PB

SOMERSET PLEIONE REPORT

1988/89 has proved a very satisfactory season for the number and size of pseudobulbs, producing some exceptionally large bulbs of **Formosana, Vesuvius, Tolima** and **Eiger.** The largest bulbs came from compost containing about a quarter of chopped local coarse moss which had been sterilized in a solution of Jeyes Fluid.

Quite small bulbs of **Formosana** have flowered this year. It has certainly been a good season for flowers in spite of the poor summer.

The blooms have lasted well too - a **Formosana alba** remained in pristine condition for nearly four weeks.

The practice of repotting annually leaves the compost only partially depleted. In the interests of economy I have this year experimented with re-using it mixed half and half with new compost. So far the growth appears quite satisfactory. The dust having been sieved out of course.

As an experiment last year I planted a number of bulbils of **Formosana** in water repellant Rockwool and fed them on Bob Dadd's special fertilizer. They grew extremely well and look like being flowering size next season. This year I am trying other varieties and hybrids in this medium. Maybe they think it is moss.

Owing to the very mild winter, night time heating has only been required on one or two occasions. The problem has been keeping day time temperatures down and damping down and use of a fan has been necessary on many occasions. Insulation with polythene bubble sheeting has also been helpful as semi-shading on sunny days. My greenhouse being glass to the ground I insulate the lower two feet

with two inch thick polystyrene sheets.

Once growth is established I find galvanised trays useful for accommodating the pots on a layer of clean chippings which are kept damp and help reduce the frequency of watering. I am a little worried as to what happens to the fertiliser washed out into the chippings - is it available through osmosis?

I have noticed that Pleiones are becoming very popular at Orchid Shows - they provide very colourful edgings to displays. One constantly hears lady visitors remarking on their charming beauty. However they never seem to receive awards and a judge friend of mine attributes this fact to their usually being shown grouped in pans. It would seem improper to give an award to a group of individuals and difficult to assess the merits of a single pleione when compared to other Orchid plants. Perhaps a special class can be introduced.

I often wonder why Pleione hybrids have been named after volcanoes. The genus was named after Pleione the goddess whose seven daughters, the Pleiades, were fathered by Atlas. They were changed into doves and placed among the stars. Another source of hybrid names?

At the moment (15th. March) my cool greenhouse is a riot of colour - **Formosana Oriental Splendour, Alba, Serenity, Avalanche** and hybrids **Tongariro, Tolima, Alishan Merlin, Eiger, El Pico,** and still more to come. **Versailles, Tarawera, Vesuvius, Pricei, Forrestii, Confusa, Rakata** and **Limprichtii** - another colourful two months. I grow many other orchid genera but if I was allowed to grow only one genus it would most certainly be pleione, so undemanding as to

heat and compost, so vigorous and prolific with flowers of such modest beauty who could ask for more.

IVOR BALDWIN 3 Waverly, Somerton, Somerset.TA11 6SH.

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PLEIONES IN NEW ZEALAND

This is not so much a national survey as a brief report, based on a recent home visit of three and a half weeks, during the New Zealand autumn, and of necessity limited in time devoted to orchids. It is my impression that pleione growers are scattered throughout the country but since members of my family live in the northern third, I have no details of southern enthusiasts whose climate is more suited to those species requiring winter cold.

Two obvious problems face collectors; supply and identification. The former is affected by the high cost of importing small numbers of plants so that more recent hybrids and rarer species are available from local suppliers, but at a price. Most growers depend on sharing spare bulbs, and some excellent cultivars of **P.formosana,** unknown elsewhere, are in circulation. Identification will become less of a problem with the publication of Cribb and Butterfield's book, two copies of which I took with me.

The area for which I have more detailed information is the city of New Plymouth, situated on the west coast of the North Island between Wellington and Auckland.Here the climate is virtually

frost-free with an evenly spread rainfall of between 70 and 80 inches. Ken Davey is a keen local grower whose only orchids are pleiones. His plants grow outside under trees in his garden, with only the 'better' varieties protected from the rain. With such a long growing season, **P.formosana** thrives luxuriantly, especially **'Blush of Dawn'.** Containers are variously clay or plastic pots, or wooden seed trays for more vigorous varieties. Ken's current potting mix contains equal parts of dust-free coarse sawdust, 1cm. crushed bark and compost from the previous season, together with a sprinkling of dolomite lime and superphosphate. Liquid feeds are used through the growing season. He also reports very good results using fresh Pinus radiata sawdust alone, or else fresh sphagnum moss. Notable pests include looper caterpillars, aphids and mice.

About fifteen miles outside New Plymouth in the foothills of Mt. Egmont, a large dormant volcano, are the 900 acres belonging to the Pukeiti Rhododendron Trust. Here, with an annual rainfall well in excess of 100 inches, is grown a rich collection of rhododendrons and other plants in a natural forest setting. However the tropical Asian species require the protection of an unheated glasshouse, and it's in this that the colonies of **P.formosana** are established as naturalised specimens in the borders.

Visitors to the 13th. World Orchid Conference, to be held in Auckland next year, are sure to see pleiones and to meet their enthusiastic growers.

DAVID MENZIES, Botanic Gardens, Glasgow. G12 0UE.

PLEIONE X CONFUSA

Of the many beautiful plants introduced from the wild by George Forrest and which have become established in cultivation is the yellow hybrid **Pleione X confusa** as it is now described. In fact for many years this orchid was grown as **Pleione Forrestii** until, in 1981 Dr. Harberd of Leeds University determined the plant grown was of hybrid origin, a finding confirmed later by studies completed at Kew Gardens.

Only in recent years has it become more generally available from the few nurserymen specialising in it's propagation.

In my personal experience here in the North East of Scotland during the last thirty years it's cultivation, flowering and increase by means of off-set pseudo-bulbs has not presented any special problems. As a first natural cross between two species it demonstrates full hybrid vigour.

Perhaps the most important reference is that during these years it has been grown cold, i.e. in an unheated alpine house without the use of any form of artificial heat at any time. Observations indicate that dormant pseudo-bulbs survive several degrees of frost without any harm provided they are kept dry and preferably cold. A winter temperature at around freezing level appears to be beneficial. When frosts have been severe a covering of newspapers serves. When frosts have been severe and prolonged, at intervals down to 12° Fahrenheigt a sheet of hessian has been thrown on top of the newspapers.

Whenever the temperature rises above freezing, the covers are removed to prevent moulds, and ventilation is free at all times, except during periods of severe weather.

There have been a few losses over the years but these have been insignificant.

The compost used consists of five parts by bulk i.e. one part each of peat,coarse sand,John Innes No.2 compost (which I buy for the purpose), and two parts of fresh sphagnum moss which is available locally. It is important to note that the peat is natural and coarse. The finely pulverised peat commonly in horticultural use is unsuitable for the purpose.

Good bottom crocking plus an open mixture ensures rapid drainage of surplus water but, by it's humus content the mixture retains moisture to support growth and does not readily dry out. The J.I.2 content provides an element of nutrition beyond which no further feed is applied. Repot every two to three years into fresh compost.

Growth buds in spring indicate the beginning of a new season, at which stage a very little water is applied, not to the top but to the bottom by dipping the pan into about an inch of water for a short time. After flowering and when leaves are in full growth the bulbs are given monsoon treatment i.e. drenching them for several weeks in high summer by means of spray hosepipe-a finger over the outlet creates the spray! By the end of August it is time to ripen the bulbs before the onset of winter and they are exposed to more light and air. The alpine house blinds have been in use throughout most of the summer, but for the ripening period they are raised

to admit more light and air. By the end of the autumn the wooden lathe shading blinds are used again and these provide several degrees of frost protection throughout the winter months.

Without fail these procedures have resulted in an annual display of flowers, usually in April, plus a steady increase in the number of bulbs.

J.D.CROSLAND

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PLEIONES ON THE PENNINES

The new year of 1989 heralded a promising year for pleione flowers, old friends and new types that had never been seen before were developing buds. The stage was set.

A phone call from Ian Butterfield on Friday, 13th. January changed all those post Christmas high spirits. Ian informed me of the most tragic death of Keith Rattray. For those who new Keith will realise that this brilliant chap had been denied a promising career in electronics and horticulture. His ideas for pleione breeding were fantastic and he was a good friend. He will be missed.

The cool and cloudy summer of 1988 had produced a good batch of seedling and flowering sized bulbs. Many of these seedlings will flower this spring, more about those later.

Praecox produced it's flowers from late September through to January 16th. **Tarawera** and **Barcena** were very late to flower, again they were still in full flower into late January. We had warmer and sunnier days in December and January than we had in the autumn. I think praecox types respond to the sunlight and warmth, sunny autumns produce flowers in September and October.

February passed into March with all the humilis based hybrids blooming. We flowered some of our own humilis based hybrids, our forms of **Danan** produced some interesting results. Many of them had large red spots dotted over the lip as Ian Butterfields have, but a few had them only in the keeled area of the lip.

We have also flowered our own forms of **Versailles**, we used **Formosana 'Big Lip'**. This is a large flower with markings in the lower half of the lip only, it is also shaded yellow cream. The results of this cross are unlike other **Versailles** these are amethyst-rose flowers with spots in the lower part of the lip only.

This raises the question of why do we bother to give a flower description to the R.H.S. when recording a new hybrid, when no two remakes of the original hybrid using different clonal parents produce the same results?

My only comment is that it will create some confusion at the show bench with the same hybrid name on plants from different growers. No two breeders stock will look the same.

P.Tsingtau is a hybrid raised and flowered by H. Pinkepank, (P.humilis X P.praecox). Praecox and humilis hybrids grow and flower quite well, so one would think that a hybrid between the

two would produce similar results. However this is not so. **Tsingtau** has proven next to impossible to grow outside the flask. We had over two hundred seedlings of this cross and over the year we were reduced to nine plants. I asked H.P. how he managed to grow and flower it, his comments were few.

We have some interesting **Praecox** hybrids in flask germinating this year. The aim is to produce a new range of flower shapes and colours in the autumn flowers:-

Praecox X Jorullo
" X **Vesuvius 'Linnet'**
" X **Rakata 'Shot Silk'**
" X **Arkengarthdale**
" X **Stromboli**

A new autumn flowering hybrid that we have potted up is **Lassen Peak** (Lagenaria X Praecox) X **Eiger.** We hope that these will grow more easily and flower better than **Lassen Peak** does.

Hookeriana when grown as a species proves to be rather difficult to keep alive, but when we used it with:-**Rakata 'Pink', Vesuvius 'Linnet'** and **Irazu 'Cheryl'** they all grew quite well and we would expect to flower a few in the next two years. We will report on these.

Other hybrids that we are flowering and hope to flower in a few years time are:-

In flower
Swaledale = Versailles 'Holt' X Stromboli
Langstorthdale = confusa X Etna
Arkengarthdale = limprichtii X confusa

To grow & flower — **Vesuvious 'Leopard' X Rakata 'Pink'**
" **'Linnet' X Irazu**
" " **X Asama**

And in flower our own forms of:- **Danan, Soufriere, Kubla Khan, Versailles, Wunzen, Shantung, Kilauea** and **Novarupta.**
Some of these hybrids are few in numbers.

Yellow. Pure yellow hybrids seem to be very difficult to produce. H.P. produced so I am told a **forrestii X formosana** hybrid. He must have used an alba clone of **formosana** to produce yellow with red spots on the lip.

I have tried to produce yellows using two forms of **confusa** crossed onto each other and **confusa No2** crossed with **forrestii.** Both crosses produced pods and seeds, but alas no plants.

When **forrestii** is selfed it produces a lot of very small **humilis** type seedlings that prove very difficult to grow, and in some case just a lot of protocorm in the flask which doesn't develop into plants.

When two unrelated clones from widely distributed stocks are used the results are more promissing, fewer plants but larger bulbs.

Confusa No2 has proven to be a more reliable grower and flower. The seedling it produces grows well, so we have high hopes for this form as a parent.

WARNING

A number of nurseries are offering plants under the name of **yunnanensis**, they are not and may prove to be a natural hybrid between **yunnanensis** and **bulbocodioides**. True **yunnanensis** is not widely available yet. I have photographs of both if anyone wants to compare them with their stock.

A few years ago Roy Lancaster went in search of pleiones in China and the B.B.C. produced a programme called 'In Search of the Golden Pleione'.

To call **forrestii** golden was a bit strong so I thought, but in fact there is a golden pleione. Keith Rattray will always be remembered for cultivating and naming the pleione **forrestii 'Buttercup'** This is a pure golden self coloured flower, the lip is devoid of any markings. It is a perfect flower. It's growing place is secure and it's future safe. This plant is an example of the high quality of Keiths stock.

Good growing

Anthony D Smith LTCL. LLCM. 6 Thornleigh Road, Crosland Hill Huddersfield. 0484-648407.

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SERENDIPITY, MY FIRST WILD PLEIONE

As a young lad, my father took me on a memorable visit to Wood Walton Fen in Huntingdon to see the mythical Large Copper Butterfly which had been reintroduced there early in the century after it's extinction as a native species in the 1850s. All day long we searched the dykes and meadows of the fen but to no avail. At last we reached the car ready to return home burdened by an immense disappointment. Nature called however and I took a leak behind a convenient hedge as a last gesture to the fen. Lo and behold! I found myself in the midst of a dozen darting butterflies and my earlier chagrin disappeared in a welter of brilliant copper and powder blue wings. As with so many discoveries from specific gravity to penicillin, luck had a major role to play and it seems equally true of my adventures in plant-hunting.

I had the good fortune three years ago to make a second visit to China and hoped that the itinery would take us into regions where we might hope to see pleiones in the wild. After working on and off of the genus with Ian Butterfield, David Harberd, Don Wimber and others for several years, I had yet to see pleiones in their native habitat and was, to say the least, keen to do so before completing the text for "The Genus Pleione". What the travel brochures never tell you is the immense scale of China and how little of it remains unspoilt and potential pleione territory. The country is vast but the population even larger and voracious. Little natural vegetation remains in the accessible parts and

everywhere is cultivated or deafforested. The trip took us to Yunnan and we intended to drive from Kunming, the capital, westwards towards the ancient city of Dali and the Burmese border region.

Although within the tropics, most of Yunnan has a mild mediterranean climate because the country is essentially a plateau averaging almost 2000m. elevation dissected by rivers and with ribs of higher mountains descending from the Tibetan plateau. The journey from Kunming to Dali takes a hectic long day, or a more leisurely two, and the road passes over several of the mountain chains and through a number of densely populated and heavily cultivated valleys. Our journey was never dull, because, apart from the scenic route, we had a kamikaze driver apparently intent on forcing all other traffic over the precipitous edges of the road. His favourite trick was to overtake on the outside of bends with a drop of a thousand or more feet below- wonderful stuff for the nerves.

The long day and dare-devil attitude of the driver led to frequent "comfort stops" and a few of these were botanically most rewarding. We saw a dozen different rhododendrons in full flower, the most spectacular being the scarlet-flowered tree species, **R.delavayi**, and the pale pink trumpet-flowered **R.decorum**. In early May this part of Yunnan is still waiting for the first rains that herald the coming of the monsoon and we were not surprised to find few herbaceous plants in flower in the scrub and relict pine forest that had survived in too few places along the main road. The leaf

litter, comprising rhododendrons, lyonias and other Ericaceae, was so dry that it crackled as we walked on it. I had begun, therefore, to despair of seeing the elusive pleiones in flower thinking we must be too early in the season.

A glimpse of a fine specimen of **Rhododendron delavayi** was the excuse for our first post-lunch comfort stop on the second day out from Kunming. I took most of the group off to see this fine plant and anything else we stumbled over. The view itself was worthwhile over a lightly wooded valley of **Pinus yunnanensis** with a fine display of **Rhododendron decorum** on the opposite and enticing slope. Fifteen enjoyable minutes later we were back at the minibus and began loading up when the one independent member of the group who had headed off in the other direction produced from his pocket a wilted flower which he wanted identified. Imagine my astonishment as he showed us a flower of **Pleione yunnanensis,** a delicate shade of lavender pink. Imagine also my anguish when he told me it was the only flower where he had found it! My wife says that my jaw dropped and my face looked like thunder. I only admit that I was disappointed.

Anyway hiding my grief I asked to be shown the spot. Fortunately our companion had not looked too carefully, no doubt preoccuppied as he had been. There, under the surrounding bushes, we found a large colony of the orchid, growing in deep leaf litter on a gentle slope and in bone-dry leaf litter under various ericaceous shrubs. The flowers varied from blush pink to almost white and were mostly well-spotted with purple on the lip. The most surp-

rising fact was that the pseudobulbs were invariably buried up to 5cm. down in the leaf litter, much deeper than they are traditionally planted in cultivation by us.

Well you can see that luck featured strongly in this exciting discovery. You will also not be surprised to hear that we did not find this pretty species anywhere else on our travels during the following fortnight, although we did find **P.bulbocodiodes** in abundance. Thankyou "comfort stop" and I suppose serendipity!

P.J.Cribb, Royal Botanic Gardens, Kew, Richmond, Surrey. TW9 3AB

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IT'S A GOOD DAY

COMPOSTS

All forests are gigantic compost deposits where all material is turned into plant food by nature as insects, mites, worms, white ants, bacteria etc. do their job in life. Rats, animals and birds do their job also. Even the old 'Bush Wireless' (blowfly) does his job and gets rid of dead animals and birds. To supplement nature I rot down all weeds and leaves to make good open compost. If your compost is too heavy, add some black sandy loam. Drainage is most important with all bulbs.

PLANTING

I use white poly fruit cases (expanded polystyrene) for planting, as these have no temperature change and no evaporation

problems. To a standard box (six inches deep only), I fill up with good open compost to within an inch from the top. Add an average handful of sheep manure, and the same quantity of straight fowl manure. Mix into the top three inches of soil. This is a very similar condition to the way Mr. Hima Laya has been growing them for countless centuries. They are cold climate orchids which grow at high altitudes from Northern India across the continent to Taiwan.

I usually start planting out when the leaves have all died down, early in June. I grow these on the ground level of a shade house which is 70% shade. The manure does grow a lot of weeds, but that makes good compost for the following year. I wouldn't work a horse without feeding him, so why not give the pleiones what they receive in the wild. This is my honest, down to earth way of growing pleiones - no hidden gimmicks or wrinkles (except in the mirror).

I believe we only get out of life what we put into it, and would like to see every grower do well with these. I have not got a jelous bone in my body and if I can help anybody grow a bulb, I will. I have grown pleiones organically since 1945. Except for war service I have lived here since 1937 and have been growing bulbs for this time.

When we get hybrids from overseas there are many good ones entitled to be named, and if they measure up to my expectations then they get a name. I keep my largest breeders to produce vigourous stock (you would not breed from poor cattle). Don't forget to feed the snails. I know I am an Emu sticking my neck

out too far but I am broad minded and thick skinned, so I don't mind.

I usually shift my pleiones each year and when I lift them I cut the roots off to within half an inch of the bulb, as new roots come from the flowering buds or new growths. I replace the top two inches of soil with new compost. I try to keep them in equal size if I can - twelve large breeders to a box, fifteen to twenty flowering size and forty to sixty small size to a box. Try to keep the weeds down a bit and a little shade is helpful as I think too hot a sun could burn the leaves. I only plant the pseudobulb to about one third depth of the bulb. In hotter climates I think I would plant over half the bulb under the compost. Always be careful not to damage the flowering bud when planting. Don't water the plants when the leaves are hot - just a habit I got into.

This is written in plain simple words and no botanical names or areas are used - just for the everyday gardener like you and me to use. I use six 50'X14' and one 80'X14' sheds (shade houses) of 70% shade to grow these little gems in. I bend the pipes and make these sheds myself. Of course I made a few while trying to perfect one.

Please do not think this is the only way to grow pleiones I wouldn't like you to think it was, it's - just my experience.

Yes it's a good day if we get out of bed in the morning.

Good growing, Norm.

Norman Victor Collins, Gladysdale, Victoria 3797. Australia.

THOUGHTS ON PLEIONE SHOWING

I've been asked to look into matters relating to the showing of Pleiones at Orchid Society table shows and annual shows, and while gathering material on this I had an opportunity to raise the subject of Pleione judging with the R.H.S. Orchid Committee chairman The. Hon. Dr. A.Morrison.

The Orchid Committee is the body which awards the coveted First Class Certificates, Awards of Merit and Certificates of Cultural Commendation to orchids which are not considered to be eligable to be classed as Alpine and fall in the domain of the R.H.S. Joint Rock Garden Plant Committee, which is the judging body for hardy terrestrial orchids. There seem to be odd anomalies here, for many hardy terrestrial orchids are lowland plants, and many subtropical epiphytes come from high altitudes, e.g. many New Guinea Dendrobiums; species of Pleione share habitat with Coelogynes and with Paphiopedilums in various parts of their geographical range, and of the species of Pleione in cultivation some are epiphytes or lithophytes and others terrestrial, some are high altitude plants and others from comparatively low altitude; but the physiology of the plant is that of an epiphyte. The development of the pseudobulb in the Orchidaceae appears to be an adaption to an epiphytic way of life and the truly terrestrial orchid genera do not posess pseudobulbs.

The F.C.C, and A.M. awards are given by the Orchid Committee to outstanding clones of species and hybrids, and are for the quality

of the flower, taking into account the standard reached in the past by awarded clones, for which there is a detailed pictorial record covering over a century of judging. In the case of Pleiones this record is absent as they have very rarely been put forward to the committee and no awards have been made. This state of affairs seems to some extent to have resulted from doubt as to whether Pleiones are eligable to be judged by the Orchid Committee rather than by the R.H.S. Joint Rock Garden Plant Committee, which has been responsible for all awards to Pleiones so far.

Dr. Morrison's opinion is that there is a strong case for Pleiones to come before the Orchid Committee and he wishes to encourage growers to put their fine clones of species and hybrids forward to be considered for awards, and to give the committee the opportunity to establish criteria of excellence in Pleiones. Flowers to be judged must be at their peak of condition, as they are judged 'as seen', with no allowance made for lack of full expansion of the flower or for any sign of ageing.

The C.C.C. is given for the size and quality of the whole plant in flower, and it must be a single plant; so in the case of a Pleione it would have to be an impressive and floriferous colony produced by the undisturbed increase from a single bulb. The compost can be renewed but the bulbs must not be split apart.

At the local level there are difficulties with Pleione judging compared with other orchids; the usual criteria at a table show are a combination of flower quality and the cultural condition of the plant and it's size. At flowering time Pleione foliage is

absent and the only evidence of the standard of culture is the size of the bulb, length of flower stem and the size and substance of the flower, and these are genetically variable features in addition to the effect of culture given within a species, we have one clone of **P. formosana** whose mature bulbs are over 40g and another which the maximum has been 9g with the same cultural conditions. Several species are best grown with their pseudobulbs completely buried, so that these are not visible to be taken into account in judging. Some societies policy is to judge a pan of Pleiones as a whole so that an impressive show of flowers gains high marks, whereas others consider that a single plant constitutes one bulb, so that a Pleione appears incapable of winning a 'specimen size' grade marks! There are other orchids in which growths are annual and a natural colony consists of a group of unconnected crowns, eg. Stenoglottis and Disa, but these seem to be unhesitatingly accepted as large 'single plants'. Strange are the operations of Orchid Show Judges.

K.Fairhurst(Mrs), Greenhill Cottage, Cradley, Malvern, Worcs.WR13 5JE

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GROWING CYPRIPEDIUMS AS BOG ORCHIDS

MARGINAL AND BOG GARDENS

These areas are usually in full sun, with continual moisture around the roots of the plants. The orchids which grow in such places greatly appreciate the cool root-run provided, but tend to root shallowly in the well aerated upper layers, amongst humus mats, or mosses such as **Sphagnum.** Anaerobic or sour conditions around their roots will kill or damage orchids in these situations, as elsewhere.

When considering hardy orchids for these sites, we are limited to those which will grow in drier marginal areas. From applying this system of cultivation in the U.K. and from the work of Holman and Beckner in the U.S.A., the critical depth of unsaturated soil for the orchids to root into is 75-250mm (3-10 in.). This depth depends on the species of orchid, its provenance and habitat. Below that, the substrate can be completely waterlogged. This will provide both a cool root-run, and continual reserves of moisture that the orchids can call on as required.

The 'Holman Bog', has been used with great success for hardy slipper orchids, especially as modified by Whitlow. **Cypripedium reginae** and **C. calceolus var. parviflorum** are best suited to this system. The actual construction is not especially arduous. A trench 300mm (1 ft.) deep is required. The length and width can be modified to suit the space available, although Holman originally used

an area 1.2m. wide by 4.2m long (4ft. X 14ft.). It should be in good light for much of the day, and certainly not heavily shaded.

The trench is lined with a polyethylene sheet, 4 or 6mil. thickness, attatched to a hardwood frame 150mm deep, at a point half way up. This leaves the top 75mm (three inches) of the frame to drain either into the liner, or over the top and into the surrounding soil. The bottom liner is then filled with soil taken from the hole, mixed with organic matter (we would suggest sphagnum peat, to say 25% of the volume). Holman then filled the top 75mm (3in.) with black lake bottom peat from the area where the orchids grow. With our knowledge of how most orchids grow well in pots in standard composts, we would suggest that this is not critical, and that the top layer could equally well be filled with your normal potting mix.

The orchids are planted into this top layer, with their roots no more than 50mm (2in.) deep. Over a period of four years the only further feeding and mulching that the beds needed was a layer of leaves heaped over the bed to a depth of about 300mm (1ft.), at the end of each growing season. In Holman's artificial bog the the plants thrived, increasing both vegetatively, and in improved flowering, outperforming control populations observed in the wild. Conditions in the bog appeared quite stable, and watering was only required infrequently, not surprising when one considers that the water can only go one way, ie. upwards!

The method described by Beckner is very similar, but he used large plastic containers, and the method will be discussed at

greater length in the section on container growing.

Whitlow has also produced excellent results when growing **Cypripedium** in beds. He used a modified Holman Bog system to grow a wider range of species than Holman. Most plants were grown in conditions of open shade, with good light from a northerly aspect, although **C.reginae** and **C.candidum** could withstand full light, if grown with a cool moist root run. The zone of permanent saturation in his 'bog' was 150-250mm (6-10ins.) below the surface of the soil, achieved by varying the depth of the plastic liner. Most of the species were kept at around the latter level above the water line.

For a bog with a slightly acid/neutral pH (derived from a mixture of garden soil and peat) he recommends **Cypripedium reginae, C. calceolus** (the European species), **C. calceolus var. parviflorum, C. candidulum, C. speciosum** and **C. macranthum** (as C. hotei-atzumorianum).

A more acid soil based upon pine duff and quartzite grit suited **C. formosanum, C. arietinum, C. guttatum, C. guttatum var. yatabeanum** and **C. cordigerum.** He succeeded in growing all of these species under his conditions in Iowa, and their cultivation can obviously be attempted using the artificial bog system without the necessity of creating woodland garden conditions.

Whitlow recommends fertilising the beds, using a general fertiliser at one tenth of its recommended concentration. It may be that this would be best applied as a foliar feed, which can be beneficial to orchids, without the problems that may be encountered from artificial fertilisers in 'ecological' growing systems.

One of the great merits of using artificial bogs is that they may be set up anywhere, for example in a small patch of border alongside a greenhouse. They provide very specialised growing conditions with minimal maintenance requirements, when compared to pot culture. The response of the species which have been tried in them suggests that other species might also respond to this method of cultivation.

GROWING BOG ORCHIDS IN CONTAINERS

Container growing techniques provide the greatest control of the conditions in any orchid collection. These are best used in conjunction with protected cultivation in frames or glasshouses. The basic aim of container growing is to provide a root environment for the plants which is completely under the control of the grower.

Container growing in the American 'mini-bogs' described below has been successfully employed for some of the previously 'uncultivable' wetland species.

The basic sink garden or trough is something that is well understood by most growers. The creation of bog conditions in miniature is rather more of a novelty, and the fact that under such conditions orchids might thrive, is something which appears to go against most of the basic principles of orchid growing. However, for the majority of 'bog' orchids it will be seen that the critical aspect of this system of growing is the creation of a micro-habitat, wherein the plants with which bog orchids are associated, part-

icularly Sphagnum mosses, will do well.

This style of growing has been pioneered by the carnivorous plant growing fraternity, and those in the U.S.A. who have evolved the system do indeed use carnivorous plants (which naturally abound in many bog orchid habitats), as companion plants to the orchids. It will be seen from the description of the basic methods detailed below, that the orchids with one or two exceptions, are actually growing in open, moist, well aerated and highly organic substrates, well above the zone of permanent saturation, in conditions that very effectively mimic those of their natural habitats. These systems follow quite closely the principles of cultivation which we have already discussed, which take into account the ecology of the plants in question.

Certain genera, particularly **Cypripedium** from wetter habitats, appear to have benefitted greatly from growing under artificial 'bog' conditions, both in containers, and in beds. This is not to say that their requirements cannot be provided when grown in standard containers in a frame or glasshouse, but greater attention to watering is undoubtedly required then, and the merits of growing in the artificial bog mean that it deserves close attention.

I have found that the American species **Spiranthes cernua var. odorata** will certainly grow in a wide variety of conditions, either directly in water (given a marginal position to establish itself in), in pots with a saturated zone in a clay loam based compost, or in pots with normal drainage, given a retentive organic compost and more regular watering. This suggests that a number

of 'bog' species may be amenable to differing approaches, as long as their basic requirements for an overall moist root-run are respected. These species are probably in the minority, however, and certainly most seem more at home in the conditions described below.

Beckner's growing methods, described in the American Orchid Society Bulletin (Vol. 48 No. 6), are those which appear to suit the widest variety of bog orchids. Plastic containers without drainage holes can be used. Beckner suggests that orchids prefer large containers, in fact (up to and including paddling pools), and no less than 200mm (8 in.) deep. A zone of permanently saturated medium to within 75mm (3 in.) of the top is created. A few short narrow slits in the side of the container at that level are provided to allow for drainage of excess water. A further 50mm (two inches) of planting medium is then placed above this, and the top 25mm (1 in.) is finished off with living **Sphagnum** moss.

The containers should be set in an area which receives full sun for most of the day, and is fully open to the air. Beckner suggests that they should also be fully exposed to the winter cold, but as the plants in question were being grown in Florida, that is a relative cold, and in more northerly latitudes it would be wise to ensure that the containers did not freeze solid.

The growing medium suggested by Beckner consists of 5 parts Perlite, 3 parts vermiculite and 2 parts sphagnum moss peat. Planting is done by spreading the orchid roots over the surface of this medium (which it will be remembered ended 25mm (1 in.) below

the surface of the container), with the whole thing being finished off by living **Sphagnum** carefully placed around the plants to keep them upright while they establish. The planting height may be varied to suit the plants in question. Those which appreciate wetter conditions may be placed lower, closer to the saturated area (eg. **Spiranthes cernua var. odorata**), and those that grow under drier conditions higher (eg. **Pogonia**).

All watering must be done with rain water. If tap or other water is used it must be softened prior to use. No fertilisers at all are used in this system (**Sphagnum**, like many orchids, is most intolerent of mineral fertilisers). Once the **Sphagnum** is established and growing well, the health of the orchids seems to be assured, genera such as **Spiranthes, Pogonia, Platanthera, Cleistes** and **Calopogon** thrive under this regime. It can be surmised that good results should be obtained with many other orchids from other parts of the world which share this habitat.

Christopher Bailes, R.H.S. Garden, Rosemoor, Torrington, Devon. EX38 8AH.

Much more information is contained in **'HARDY ORCHIDS'** by

P.J.Cribb and Christopher Bailes.

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SOME MORE ESSEX ESSENTIALS

I would guess that amongst the many contributors to the National Pleione Report, I am more of a casual enthusiast than a dedicated amateur. I say this for a number of reasons: to begin with I cannot say that I have any special passion for pleiones although I do confess a thirst for orchids in general. Also work schedules during the summer prevent me from making a dedicated commitment to pleiones and they do have to look after themselves a good deal. Restrictions of time, space and effort have therefore forced me to cut corners a little. Whilst this in itself is not a commendable virtue, it does at least demonstrate that pleiones can be grown with some success - but not to show standard - as long as certain basic fundamentals are fulfilled.

Of all the lessons that can be learned by the novice, and one which was so clearly highlighted by the authors of last years report, that correct water balance is perhaps the most critical factor in determining success or abject failure. I believe that overwatering of bulbs, during or shortly after winter dormancy is by far the commonest reason for failure, and for the widely held view that pleiones are a 'difficult subject'. Conversly, underwatering leads to poor flower quality and shrivelling of the pseudobulbs. All this can be confounded by stocks which perhaps lack vigour. Fortunately, most modern hybrids from the specialist nurserymen exploit hybrid vigour, often through interspecific hybridisation. Degeneration through countless cycles of vegetative propagation

is thus avoided.

Last year I reported that for reasons of time, space and efficiency, I would experiment with biennial rather than annual repotting. As the results of such trials cannot really be known until the season after repotting, it is only now that I can recount my experiences. Was it a success? Well I guess it depends upon one's criterea. Without adequate comparisons my views are at best subjective and at worst biassed - but here goes.

Although bulb size was not noticeably smaller, flower quality did appear to suffer somewhat. This was apparently manifest both in terms of the number of flower stems per bulb and more especially in the number of multiple flowers per stem. Very few bulbs of any clone produced 'twin' flowers per stem even amongst those with naturally large pseudobulbs. However, enforced overcrowding did help protect the smallest offsets which tended to shelter amongst their dominant neighbours - which was one of the objects under review. The question is, whether I would repeat the exercise? The answer undoubtedly yes although I must hasten to add two years is the longest I would delay repotting. for me the slight loss in flower quality was compensated for by the advantages in 'efficiency' sought. However, for those demanding topmost flower quality - perhaps for show purposes - annual repotting is probably more desirable. Aside of the cultural management, how did the various clones perform?

This year for the first time, I invested in the winter-flowering hybrids **P.Barcena** and **P.Tarawera** derived from **P.praecox**. They were

already well in bud when received in late November and duly flowered within a matter of days - and very attractive they were too. After flowering, however, leaf growth was extremely slow and chlorotic, and only now (early May) have the plants really begun to pick up. Such a delay has filled me with some apprehension concerning cultural requirements, as well as making watering difficult. Having a significant proportion of **P. praecox** in their parentage perhaps they need more warmth earlier in the year. Certainly Butterfield and Cribb (1988) state this in their recent monograph, suggesting a winter temperature of 5°C is the ideal - and I would not disagree.

Aside from this setback, the season has generally been kind to the traditional spring-flowering species. **P.Eiger** lead the procession of flowers starting on 7th March, a little earlier than usual. Although disadvantaged by short stems inherited from the **P.humilis** parent, **P.Eiger** is still one of my favourites. It is vigourous, productive and undemanding as well as early. The dark-purplish foliage is similarly attractive, and contrasts well with the bright green leaves of **P.f.'Avalanche'** and **P.f.'Clare'**. The latter pair are both excellent whites, flowering relatively early and are long-stemmed and vigorous.

Both increase freely, producing very large polished green pseudobulbs.

In contrast, **P.f.'Blush of Dawn'** is somewhat disappointing, being less productive and a little faint-hearted. In addition, flower stems tend to be short and weak. The delicate flower colouring and

marking, although extremely attractive, does not in my mind compensate for a rather inferior growth habit.

P.Tolima, on the other hand, is bright, bold and erect. This **P.speciosa X P.formosana** hybrid is certainly one of the best I have in culture. Similarly, **P.Stromboli**, which has somewhat characteristic large flattened pseudobulbs, has the strong depth of colour associated with the **P.speciosa** parent. And so the list goes on. However, before moving on, it would be remiss of me not to briefly mention **P.Shantung**. In terms of flower size alone this variety outshines all others in my care. This in combination with a delicate flower colouring of hues of pink and cream through to yellow, surely makes **P.Shantung** one of the outstanding hybrids on the market.

And what of the forthcoming season. My future plans are largely centred upon experimenting with different composts. A close friend and neighbour of mine in the village has a commercial orchid enterprise. He is currently testing several new and novel composts, including artificial products such as rockwool (both water absorbant and water repellant kinds), large pieces of Oasis (as used by flower arrangers), and natural products including Dicksonia tree-fern and Sphagnum moss, both imported from New Zealand. Most of the products appear promising for pleione culture.

I plan to try Oasis in my 'sub-soil' compost along with hard peat pieces. The Oasis has excellent water retention properties, whilst retaining structure without disintegration. It should suit my two year potting regime. I guess rockwool would be a suitable

alternative but this product can irritate the skin. Above this 'sub-soil' medium, I plan to incorporate Dicksonia fern and chopped Sphagnum moss into my normal bark mixture: this will help maintain an open texture in which to plant the pseudobulbs.

To many, all this paraphernalia may seem either daunting to the begginer or trivial to the expert. Perhaps so, but I rather enjoy tinkering about with various composts, and it all makes for interest.

My neighbourhood nurseryman is even trying a few pleiones on a hydroponic system along with several species of South African **Disas.** To date, progress is unexpectedly good and I await future developments with interest.

Out in the garden we have had a poor season so far as 'terrestrial' orchids are concerned. A combination of wet days in April followed by night frosts on several consecutive occasions has caused considerable damage. I managed to protect some of the **Dactylorhiza foliosa** with a sheet of glass and these have recovered. Fortunately, the **Cypripediums** were safe in a covered frame. However I have probably lost **Orchis morio**, but this is little in comparison with an alpine enthusiast only a few miles away, who I understand has lost a whole bed of **Dactylorhizas** and is now left with only a few scattered seedlings around the garden.

Dr. D.W.Joyce, Sable Homestead, Dunmow Road, Gt. Bardfield, BRAINTREE, Essex. CM7 4SF.

From the previous page D.W.J. sums it up thus:

"Where he falls short, 'tis Natures fault alone;

Where he succeeds, the merit's all his own.."

Charles Churchill 1731-1764.

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MALVERN PLEIONES; A LETTER AND A REPLY

As a result of my article in last years N.P.R. I received the following request for help:-

I read your article in the N.P.R. with interest, as I too have been growing pleiones for some years indoors. Mine are grown in plastic half-pots or quarter size trays (oblong) in the old "7" mixture - equal parts of fibrous loam, leaf mould, sand, peat, rotted pine wood, chopped sphagnum moss and old cow manure, all from lime free sources. The last few years I have reduced the leaf mould and loam content, replacing it with peat and bark chips. I add B.H.C. against vine weevils and a dusting of 'Seagold'.

Potting is done in January and the pots stood on two north-facing double glazed windowsills. The less cherished stand on shelves in the porch, also double glazed and north facing. After

flowering the plants are foliar fed every five days, first with Phostrogen and later with Liquinure.

When the leaves begin to fade and fall the pots are removed to situations away from the windows/shelves, although they still have some light. The temperature in the porch is kept just above freezing, while indoors it would be 45/50°F in winter. This is because I grow far too many things besides and window space is at a premium.

For a few years I tried placing the pots outside along the north wall in summer but so many leaves were broken by the wind I desisted.

What I wanted to enquire was whether you find that the amount of light available after leaf fall has any effect on flowering. I do not think that I obtain the same flower production-in some years less than others- as I used to and have been trying to analyse the cause. Do you consider that double glazing may have affected the light in dull years, or that removing them from the window has any effect? I see that yours are stored in bags so presumably would not receive light either. At what stage are flower buds initiated? Your guidance as to the amount of light necessary throughout would be very welcome.

I had for many years a fine pan of **P.praecox**, repotted in autumn and kept in the bathroom. Three years ago increase prompted division into three smaller pots. From then on they developed the brown tips you mention, dwindled and are now no more. I have not had this trouble on any other variety. In general my bulbs seem of re-

asonable size and are apparently healthy.

R.Baker (Mrs.) 'Hollyhocks', 9 Larkfield Road, FARNHAM, Surrey. GU9 7DB.

Mrs. Fairhurst replied

I was most interested to learn of your pleione growing methods, and that you are having somewhat disappointing flowering performance from them. We generally have good results from ours although some species are more reluctant than others, but we have noticed some problems which our pleione-growing friends have had and wonder if any of these could account for your shortage of flowers.

If you are achieving a good pseudobulb size at the end of the growing season (keeping in mind that commercial 'flowering size' bulbs are usually only barely so and the optimum size is often very considerably larger) I'm wondering if low light intensity during the growing season might be a factor, as you are growing on a north facing windowsill which will only get quite a low level of indirect sunlight, and it'll be cut down even further if there are trees outside. In low light conditions photosynthesis is below optimum and we've seen plants with very thin textured leaves and small pseudobulbs which have been kept in badly lit sites, and in these conditions flowers are scarce. I suspect that light intensity in summer and autumn may have a direct effect on flowerbud initiation. Flower and shoot buds are formed during the growing season

and spend the winter period of dormancy fully developed, just waiting for their final expansion in the spring when there is a surge of sap into the cells of the bud. During dormancy the bulbs expect a low temperature, but light or lack of it is immaterial. I think an east or west aspect would be likely to give you better results, and another option might be to put them outside for the summer in a wind-sheltered position; protection from wind seems to be the most important consideration; wind can cause severe scorching by drying the foliage faster than the roots can supply replacement water and the tissue collapses. We've been surprised at how much sun pleione foliage can take without damage so long as the leaf temperature is low and there's no water on the leaves; they enjoy direct sun in the early morning and late afternoon, and we have kept pleiones in April and May, before they can go outside and when there's a shortage of windowsill room, in south and south-west facing windows where they've had a great deal of sun, with no signs of trouble; we have been careful to ensure that the room itself didn't become overwarm.

Watering is another aspect of pleione culture which we've noticed people often have problems with. In their natural habitat spring is quite dry and the plants have water only from mist and light drizzle, so the new roots emerge into only slightly damp conditions and in cultivation can suffer badly and even fail altogether if the compost is too wet at this stage. We've run into problems ourselves with **P.praecox** and it's hybrids this season; they went into my husbands new orchid house early in the spring

where they had done well last year, but there are now more epiphytes on bark and hung over the benches, and I didn't notice in time to save the new roots that the pleione pots were being dripped on heavily when the plants above were sprayed. Some are completely without roots and we are spraying the foliage frequently with very weak fertilizer in the hope of keeping them going long enough to form bulbs, however small; some years ago we did save some this way when we'd a similar accident.

I was interested in your experience with **P.praecox**, my current theory on leaftip dieback is that it results from shortage of water and insufficient sap flow into the leaf, either due to dryness at the roots during the growing season or failure to establish a good root system initially. As three small pots dry out faster than one large one, I wonder if they could have been underwatered? We find pleiones seem to like their own company and thrive in large colonies, so we go for large pots and lots of bulbs together. The flowers look well in large groups, too.

I notice that you are using shallow containers and a compost including materials which might result in a rather close texture, not sufficiently well aerated or drained, and I wonder if you could improve your bulb size and flowering performance by using more generous containers and a more open medium. Most pleiones are epiphytic or lithophitic, growing with their roots in mosses and leaf litter, and I believe that most of the terrestrial species also grow in clumps of thick moss, a very open and freely drained medium, and for best results we need to try to imitate this in

cultivation. Many composts have been advocated for pleiones and modern advice is for a bark based medium, but bark is becoming rather scarce and as they benefit from annual repotting it seemed to us rather wasteful to use a long lasted ingredient only to discard it after a few months, so we looked for an alternative medium and now get quite good results from our rather unconventional mix - freshly fallen oak leaves and dead bracken, including the stem, shredded, with the addition of a little peat to aid moisture retention for the terrestrial species, or of chopped green tips of common lawn moss for the epiphytes and particularly for the more tricky species. We use this in preferance to sphagnum as it lasts better in the compost and won't go soggy and lose air retention with heavy watering. The bracken is best gathered quite late in the winter as moulds develop if there is any sap present. Beech leaves would I think do just as well as oak, they are thick textured and springy and will not compress badly as softer leaves would, and are slow to break down. Beech often grows on chalk or limestone and there the leaves will contain some lime, but I doubt if this matters - I've seen references to media based on John Innes compost which of course is limed, and **P.forrestii** apparently grows wild in crevices on limestone cliffs. The result is a very spongy mix with a generous matrix of fine air spaces, very freely drained but sufficiently moisture retentive for a convenient watering programme so long as it is not used in very small pots.

There seems to be a generally held belief that pleiones are

shallow rooted and that shallow containers are appropriate, but our experience is quite contrary to this; we pot in generous sized full depth pots rather than shallow pans or trays and don't find any need for inert drainage material at the bottom, and the root systems take full advantage of this; we find roots typically 12"-14" long on mature bulbs.

Some pleiones seem to need more in the way of feed than others to realize their full potential; in recent years we've been using weak fertilizer more frequently both for watering and foliar feeding. This hasn't made a noticeable difference to our vigorous,free flowering species and hybrids but in some weaker growers we're getting bigger bulbs and very much better flowering performance; **P.limprichtii** has responded well, but our best improvement has been in an alba form of **P.formosana** which we've had for many years and has been a very weak grower producing very small bulbs and very few small, short lasted flowers; for the past two seasons we've had a fine display of flowers from it, the difference being first the new compost, followed by an improved feeding regime, and after years of being near to discarding it as not being worthwhile we now appreciate it as being rather a good form in comparison with the named white clones. I see you are feeding quite generously and this isn't too likely to be your problem.

I do hope you may find something in these ideas to help, and that you'll soon have magnificent displays from your pleiones.

K.Fairhurst(Mrs), Greenhill Cottage, Cradley, Malvern, Worcs.WR13 5JE