1993

NATIONAL PLEIONE REPORT

INCORPORATING

HARDY ORCHIDS

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incorporating

HARDY ORCHIDS

Cover by Trevor Jones picturing P.Barcena flowering just after Christmas.

Report compiled and produced by Peter Bradbury. Publication date 14:06:93.

Back cover illustration by Sandra Dibb.

PLEIONES, COMPANION PLANTS FOR RHODODENDRONS

My home is located about twenty miles south and west of the city of Portland, Oregon. U.S.A. We are about seventyfive miles inland from the Pacific Ocean and our weather is often compared to that of the British Isles. We normally get about thirtyfive inches of rain per year. Most of the rain arrives as steady precipitation rather than in heavy downpours. While considered wet by most people, we have a true Mediterranean climate with July through September almost free of precipitation. Our winters are relatively mild with our record lows about 0°F. A normal winter brings a few days of wet snow, perhaps a week or two of nights below freezing and lots of steady rain. Every fifteen or twenty years we get a real killer winter like we did in 1989-90. A mild fall came to an abrupt end in early December with three weeks of temperatures that did not get above freezing, strong winds and light snow that soon disappeared. A brief respite at New Year, and three more weeks of the same. The cold set records all the way into southern California and immense damage was done. Much to my surprise, Pleione in a rather exposed location in my garden, survived without damage. We had five days of lows under 10°F and days in the mid 20s°F.

Summer temperatures range into the high 90s°F with occasional days over 100°F. Nights are in the low 60s°F. On hot days, humidity can be very low, ie 20-25%. We often get strong winds during hot weather and this increases moisture loss. We are often frost free from mid February through late November, however frost is not uncommon into late April. We are located on a hill at 550′ and this gives good air drainage. We usually escape late spring and early fall frost.

As you might guess from the nursey name, Red's Rhodies, my main interest is in Rhododendrons. I discovered Pleiones about ten years ago when a friend was

closing a wholesale nursery. He gave me several flats of what looked like brown dead leaves. I stored them in the back of my cool greenhouse and immediately forgot them. The next spring I was surprised by a fantastic display of flowers that lasted for over a month. Several years passed before another nursery friend expressed an interest and I finally started to pay attention to them. Ignorance is bliss. I couldn't find any literature to tell me I was wrong, so I planted a patch under a pine tree in the front garden and potted the rest up in a commercial mix I use around the nursery. I have since planted them in several areas of the garden and have had good success in all locations.

Our native soil is a coarse clay loam with very little organic matter. The property was a wheat field until 1961. The orevious owner planted several varieties of pine and fir that now provide some shade. They have also built up a nice layer of needles about three inches thick. The Pleione seem perfectly happy planted on the surface of the soil on the north side of the trees and come up through a layer of pine needles. In the back garden, the bulbs are on the surface of the soil with a light covering of litter of a Sequoiadendron giganteum. They are on the north side of the tree, just outside the drip line. The bulbs are barely visible without disturbing the litter. I do not give them any protection from cold or wet! They receive summer irrigation and broadcast fertiliser along with the rest of the garden. Nothing special. To date **P.bulbocodioides, formosana, limprichtii, Oriental Splendor** and **Blush of Dawn** have survived six or eight years in the ground and have spread nicely.

My original several flats have now turned into in excess of one hundred. We try to re-pot about half of the plants each year. The mix we use is ground Douglas fir bark, peat and pumice. The bark makes up from one third to a half with the peat and pumice in equal proportions. I purchase this mix by the truck load from

a local supplier. I add a fertilizer, 10-6-4, that contains slow release N, dolomite and trace elements at the rate of about one pound per cubic yard. I divide in January and hold off water until they start to bloom. Bulbs intended for sale go into 2¾" pots, all the rest into flats at the rate of eighty per flat.

We sell to several speciality garden centers and at a number of plant society sales. We also do a pretty good mail-order business. We average about twenty to twentyfive flats, thirtysix per flat, each summer. My biggest problem is delaying bloom until mid April and early May for the plant sales. I have found all varieties can be stored in the refrigerator to delay flowering. **P.formosana** and it's cultivars need the most time in the cold storage and **P.bulbocodioides** the least. Placed in cold storage in early January, **P.formosana** and it's cultivars will bloom within four weeks in an unheated plastic house. **P.bulbocodioides** needs no refrigeration for bloom in mid to late April. Stock plants in a frost free plastic house start to bloom in March and go through mid to late April. Plants in the garden start about mid April and last through late May. I try to give the stock plants a spray of Peter's 20-20-20 about every three weeks from mid June until mid September. I have never had burning problems with this water soluble fertilizer. Watering is by automatic system. Plastic is removed from the structures in April and 47% shade cloth replaces it.

One problem with growing on this scale is that all varieties get the same treatment, like it or not. All are planted on top of the mix, not covered. **P.formosana, 'Blush of dawn', 'Oriental splendor', 'Polar sun',P.limprichtii** and **P.bulbocodioides** all do very well. I notice some growers mentioning that **P.bulbocodioides** is slow to flower and form new bulbuls. Mine bloom heavily and produce large quantities of bulbuls.**P.maculata** does fair, increasing very slowly. **P.speciosa** and **P.Alishan** do fine. **P.forrestii** has about disappeared.

The bulbs may bloom and put out leaves but soon die off with no new bulbs. **P.yunnanensis** and another form of **P bulbocodioides** have multiplied nicely. **P.aurita** has provided mixed results.

I succeeded with one cross in 1991, **P.bulbocodioides X P.forrestii,** and twelve this year. A young collage student is growing the seed for me. He is also attempting to tissue culture **P.forrestii,** without succes at present. I was fortunate enough to be able to visit the Chelsea Show and see Ian Butterfield's slides of several new hybrids. They are fantastic! We also spent part of a day at his nursery and had the pleasure of meeting Peter Bradbury. I am very grateful for their help in clearing up several name problems and identifying several unknown plants. I am interested in exchanging or purchasing pollen. I am also interested in slides of hybrids and several species. I have given one talk on Pleione to a local Orchid group and am scheduled to do a couple more in the spring. My copy of The Genus Pleione is well worn. I even entered my first Orchid show this spring and was pleased to place first in two categories.

In general I think Pleione are hardier than most people think. Given the proper location they should do well in most gardens in our maritime Northwest. I have had them in the garden for about eight or ten years and a friend has grown **P.formosana** for over twenty. My advice is to try them, you'll like them.

Thanks for the opportunity to sound off. I would be more than pleased to exchange letters and plant material with other growers both in the U.S. and abroad. Karen and I had a great vacation and I really appreciated being able to pick your and Ian's brains. Is there a list available of the parentage of newer hybrids? I would like to obtain one if available. It might be a good subject for the next report.

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CYPRIPEDIUM CULTIVATION

I first fell in love with the genus **Cypripedium** about twenty years ago and determined then to grow as many species as I could lay my hands on. At that time acquisition was not too much of a problem - many specialist nurserymen were offering an array of mouthwatering species - usually at somewhat inflated prices!! I have in front of me a copy of the autumn 1975 catalogue of 'J.A.Mars of Haslemere'. Amongst the other genera of hardy and European orchids, the following species of **Cypripedium** were offered: **CC. californicum, fasciculatum, parviflorum, acaule, arietinum, calceolus, cordigerum, japonicum, macranthum, montanum, pubescens, reginae** and **speciosum.** Altogether an amazing selection and certainly not one likely to be offered again, at least not for a very long time. The great sadness is that without doubt every plant on offer had been lifted from the wild!! - a deplorable practice.

The genus **Cypripedium** is represented on every continent in the northern hemisphere. The largest number of species occur in China where the amount is fairly regularly increased by new discoveries. The least well endowed continent is Europe where (discounting Russian taxa) only one occurs - our own exquisitely beautiful **C.calceolus.** Fortunately it survives in some fairly large colonies in central Europe, but tragically has been reduced to one single, heavily guarded, plant in Britain. The American continent is very well represented where cypripediums grow from the arctic regions of Canada to the montane areas of Mexico and Guatemala.

I'm convinced that most of my early failures at cultivation were simply due to the very poor quality of the plants available at the time. Most were sold bare root and showed obvious signs of being wrenched from the wild - I.E. badly

damaged and broken roots, bruised buds etc. The chance of such damaged material producing a healthy plant is very slim when one considers that it takes at least two or three seasons fo an average plant - of say, **C.pubescens** - to produce roots robust enough to sustain one good flowering sized growth point!

In recent years great advances have been made both in seed germination (in vitro) and in the subsequent weaning into a more permanent growing medium. Hopefully in the not too distant future more and more species will become widely available (growers in the USA have even grown some very interesting and beautiful hybrids to flowering). However, until such times we must concentrate our efforts on growing and vegetatively propagating what species we already have and, of course, where possible supplying the boffins with good viable seed. After all's said and done there's not much point in concentrating on seed gremination if we can't grow the adult plants!

Articles have appeared in several recent publications about the do's and dont's of cypripedium cultivation and I feel I ought to respond and impart some of my experiences.

A logical starting point within the growth cycle is re-potting, which I perform annually, usually in late autumn (mid November - or about two or three weeks after the leaves have died). This time is chosen for several reasons. Firstly the compost that I use is pretty much exhausted at the end of a growing season and also quite often it is infested with worms of enormous proportions!! Secondly, the condition of the roots need to be thoroughly checked as soon as possible for vigour, fungal damage, disease, rot, etc. Thirdly, I believe it to be the best time to attempt any form of propagation I.E. surgery - this gives the newly propagated pieces the advantage of any residual heat left in the new compost before the cold winter rest (more on propagation later). Fourthly, and on a purely personal note, it fits in very well with my other growing and

re-potting activities.

COMPOST

To start with I never 'carry over' any of the previous seasons compost - I have always been perfectly satisfied with the results achieved with the mix described below and also I believe one is much more likely to introduce embryo diseases and unwanted fungal spores with spent compost.

One of the most essential qualities of the growing medium is to have every possible part of the roots and rhizome in very close contact with the soil. Any air pockets should be rigourously avoided as these will surely introduce rotting. This might at first seem a contradiction of normal and established methods of cultivation. Of course we need a soil structure that allows air and water to percolate through every part of the container - what we do not need are air pockets, which are sometimes caused by poor potting practices. I believe the compost and the method described below will help avoid these.

Bearing all this in mind, a very free running, barely moist, soil mix is initially needed. After many years of experimentation with different mixes I have settled on the following, all by bulk: 3 parts beech leaf mould (NOT STERILISED), 3 parts fine chipped pine bark (as used by tropical orchid growers) 2 parts J.I. No.3 and 1 part coarse grade Perlite. Most of the ingredients need no comment. A few words however on the leaf mould. Although I use beech, I'm sure oak, ash or any other broad leaf tree will do just as well. I collect mine from the 'Wild' shortly before needed. Once a good area has been identified, the top layer of recently fallen leaves is brushed aside revealing the rich, mostly decayed, under layer - this is what is required. I sieve mine through a fairly coarse grade sieve, on 'site' - removing a lot of unwanted coarse, fibrous, undecayed material. Back at home and shortly before actual potting it is sieved again, this time through a ¼inch (5mm.) mesh, this serves two purposes

firstly to further reduce particle size (and very importantly) to visually check for any unwanted 'beasties', vine weevils etc. The reason for not sterilising is quite simple - I believe that fungal symbiosis does occur in the adult plant (albeit to a lesser degree than in the juvenile stages) not sterilising is my concession to the fungus which I'm sure is present in leaf mould collected from the wild. I have not tested the PH of this mix but I suspect it to be on the alkaline side - J.I.No.3 has added chalk and the leaf mould is collected from an alkaline area. Most of my plants have responded well to this compost. The taxa requiring acid soil conditions will be discussed later.

Once satisfied that all the components are correct, mix thoroughly and potting can commence.

CONTAINERS

I now use plastic full pots. After spending fortunes on replacing frost damaged clay pots I decided to try plastic. Although I had to modify my watering habits it soon became apparent that the plants themselves preferred plastic.

WATER

The tap water in my area is very hard and alkaline so when possible I use collected rain water. I say 'when possible' because several times during the past five years my rain water buts have completely dried up and I have had to resort to tap water - with no obvious detrimental effects.

FEEDING

I never feed my plants. If they are re-potted annually (in fresh compost) there should certainly be no need to artificially fertilise. I conducted a brief experiment several years ago and watered a few plants with half strength

Maxicrop. At the end of the season they were compared with un-fed plants and no difference was noted - nor were there any changes the following season.If feeding is tried I would recommend only organic fertilisers. I'm sure the use of chemicals would compromise the delicate balance of the symbiosis and be detrimental to the plant.

PLANT PREPARATION

When I am just re-potting an established specimen, an inspection of the roots and removal of the dead ariel stem is all that is really necessary. A newly aquired plant however needs more attention. Most arrive via the mail - quite often the packaging leaves much to be desired, causing even more damage to an already traumatised plant. After unpacking, remove any soil or moss from the roots and carefully check the growth point - it (or if lucky, they) should be white and firm, then check the roots, ideally they should also be firm and a whitish colour - some might be blackened but as long as they are firm and well attatched to the rhizome leave them be. Any obviously broken or crushed roots however should be cut off immediately above the damaged area, using a sterilised knife.After any 'surgery' allow the cut area to dry before coming into contact with any compost. At this stage some growers recommend a dowsing in fungicide - this would almost certainly be detrimental to the symbiosis that I am eager to encourage so I do NOT recommend this practice.

METHOD

Having completed all the preparation potting can begin. A pot should be selected that barely but comfortably accommodates the roots, with the top of the bud no more than about ¼" (5mm.) beneath the soil surface. After crocking (I use Hortag), add a thin layer of compost, then hold the plant in the required

position and slowly add the compost (some accounts suggest 'spreading out' the roots) - if this is possible the orchid is in very poor condition! Healthy Cypripedium roots should be firm, stiff and fairly brittle. If the compost is of the correct consistency it should easily fall through the roots, to the bottom of the pot - when about half full tap and rock the pot to make sure the compost is well settled, then continue carefully adding the rest of the compost, regularly shaking and tapping the pot, till the bud is just covered - a final vigorous shake of the pot is now all that is needed - I don't recommend firming. To complete the process I usually top the pot with a thin layer of the coarse sievings which were left over from the leafmould, this not only looks attractive but helps to prevent compaction of the top layer of the compost. The pots are then watered liberally and left to drain.

WINTER TREATMENT

The great majority of Cypripedium spp. in nature grow in areas where for at least part of the winter they are covered by a blanket of snow, insulating them from the harshest weather. In cultivation we should try to emulate these conditions closely by keeping them as cool as possible and avoiding any extremes in temperature. I plunge my pots (almost to their rims) in a cold frame situated at the base of a north facing wall where, during the winter months, they never see the sun. The plunge material consists of equal parts sharp sand and garden soil. The frame lights are closed but slightly propped up to exclude all rain but allow good air circulation. The pots are then left for the winter. When the temperature is expected to fall below say -5 degrees, I close the frame lights and cover with a blanket or an old carpet but as soon as ambient conditions allow the frame is reopened.

SPRING/EARLY SUMMER TREATMENT

From early March the frame lights are removed to allow any rain to reach the pots. By this time, with the advent of slightly warmer weather, some species have already started to appear above the soil surface and will certainly need water. Great care is needed from now on and some species will require different treatment. Some, for instance, would be damaged by late frosts, particularly after the leaves have un-furled so be vigilant and keep the frame lights (and the carpet!) handy. One serious problem minifested itself early last season ('92). We suffered some very heavy rain storms and a number of plants were severely damaged - the soft new tissues of the leaves was split and torn by the ferocity of the rain, so once again be prepared to cover the frames.

By about the first week in April most will be in growth, some will even be quite well advanced. At this point treatments will vary. I have found that most Chinese spp. resent overhead watering from this point. Although foliage usually grows well, flowers often either abort or rot before they emerge from the leaves. One must try to consider the conditions in which they grow in the wild (see N.P.R. 1991 'Pleiones in China by Ian Butterfield). This and other accounts suggest that they grow in fairly deep leaf litter, usually on steep gradients at altitudes above 8000 ft. At these high levels snow lays throughout the winter months. With the onset of spring, abundant melt water percolates through the loose leaf soil, supplying the water needs of all in it's path. I believe to succeed with Chinese spp. the cultivator should try to simulate these spring conditions. Mine are removed from the frame and positioned in a shaded greenhouse where they receive water only from beneath - the pots are stood briefly but regularly in trays of water where they draw whatever they require. After flowering however they are returned to the open frame where they remain for the rest of the summer.

All the others remain in the frame and complete their flowering in situ.

SUMMER TREATMENT

This period is most critical. Having completed flowering (and seed production where left to do so) all reserves, built up from the previous year, have been exhausted - and must be replenished. A period of intense underground activity now takes place - with new root production and forward growth of the rhizome, then, towards the end of summer, bud initiation for the following season.

With a few exceptions (noted below) all the pots remain in the open frame where they are shaded from the worst of the summer heat and sunshine by their position at the base of a north facing wall. The only exceptions to this are three American species, **CC. candidum, parviflorum** and **reginae.** In the wild these species grow in very wet, boggy or marshy conditions in full sun and thus should be treated similarly in cultivation. I sink a plastic bowl into the ground in a position which receives maximum sunlight, then fill it to the brim with pea gravel. The pots are plunged into the gravel to a depth that allows about two thirds to remain above the rim of the bowl. It is then filled with water and the surrounding soil is replaced to allow just the tops of the pots to remain visible. This process ensures that water is available to the plants at all times but also creates a reasonably cool root run.

During the summer period all plants are watered freely and in the case of the Asian species, copiously. It must be remembered that areas which support most species are prone to very high summer rainfall, particularly the monsoon districts of the far east.

AUTUMN TREATMENT

As the season progresses watering should slowly be decreased until eventually,

when the leaves die, it should cease altogether. After the leaves die however root growth sometimes continues for a while, particularly in multi-leafed species (**CC. pubescens, parviflorum, californicum** etc.). This was noticed, several years ago, purely by chance when selecting a plant for re-potting - the roots had forced their way through the crocking material, through the drainage holes and into the plunge medium. They had the appearance of being very fresh and active so I measured them and very carefully replaced the pot back into the plunge. When next examined (two weeks later) they had grown about ½ an inch (1cm.)!

We have now come full circle and arrive at repotting time again - a few words on vegetative propagation are appropriate at this point.

PROPAGATION

Cypripedium roots vary cosiderably from species to species, some happily wander through the compost, forming quite long easily recognised rhizomes, whereas others are very much clump forming with the new buds growing very close to the previous seasons stem. The mode of growth of the long rhizome species, of which **C formosanum** is a typical example, provides us with the easiest material for propagation. If well grown the forward creeping rhizome will frquently branch, forming two growth points for the following season. As this process is repeated in successive years, propagation is almost obligatory due simply to overcrowding. To separate parts of the plant it is necessary to select only pieces with at least two buds, making sure that each has its own healthy root system. Make a clean cut with a sterilised knife through the rhizome at a point before the branch. After any 'surgery' always allow the cut ends to dry before coming into contact with the new compost. When dry they can be potted up and treated as normal.

The clump forming species are treated in exactly the same way, the only problem is finding the rhizome amidst the mass of matted roots. Great care must be taken not to damage any of the roots while trying to cut the rhizome (sometimes impossible) - always remember to select pieces with at least two buds.

THE SPECIES

I won't describe every species that I grow, the interested reader can easily find out from the various reference books (Dr. Cribb's monograph is eagerly awaited!!).

The species that have responded well, over a number of years, to the methods and conditions described above are as follows: **CC. candidum, parviflorum, reginae, pubescens, cordigerum, montanum** (now sadly lost), **henryi, ?segawii?** (a smaller **henryi** look alike), **formosanum, californicum, plectrochilon** (the Chinese form of **arietinum**), **macranthum, speciosum** plus a number of un-named Chinese spp. most of which seem to be allied to the **macranthum** complex. Last, and by no means least, the diminutive **C. debile** but this sp. is treated slightly differently. This and **C.reginae** demand a totally lime free compost - mine consists of: 2 parts pine mould (collected from a lime free area) 2 parts shredded sphagnum moss, 1 part fine chipped bark, 1 part medium chipped bark and 1 part course Perlite.

THE 'PROBLEM CHILDREN'

Several species have resisted all my attempts to keep them going for any length of time. I'm sure the reasons are different for each species and when material is available I will try again. The taxa concerned are: **CC. calceolus, acaule, guttatum** and **yatabeanum.**

GARDEN CULTIVATION

Once a plant is well established and a number of propagations have been taken, it is well worth attempting to grow it in the open garden. Generally speaking a site should be chosen that offers dappled shade or at least a position that is shaded during the hottest part of the day. The addition of some leafmould dug into the soil is the preparation needed. I have succeeded with three species so far: **CC. pubescens, reginae** and **formosanum.** The only problem experienced to date has been from late frosts, **C. formosanum** being particularly vulnerable.

CONCLUSION

Although beauty is supposed to be in the eye of the beholder, very few gardeners would deny the sheer lovliness of these orchids. I hope these few paragraphs will assist other growers and encourage would be growers in succeeding with these plants. Availability will, unfortunately, be a problem for some considerable time but occasionally reputable sources do supply legally obtained material. No effort should be spared to keep these beautiful plants in cultivation.

Good Luck

Barry G. Tattersall. Middlesex.

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PLEIONES AT THE BOTTOM OF MY GARDEN

Having grown cacti with some success for the last twenty years, I have been disappointed with my attempts to grow the genus pleione. Season after season, the bulbs were getting smaller, no matter what compost I used or how I watered them. A complete re-think seemed necessary.

Living on the edge of the peak district, we are subject to some extremely hard frosts, and until now I had always tried to keep my pleiones "comfortable". According to the books, they would grow in a variety of composts, so long as the drainage was good, so it had to be something other than compost that was causing my problems.

Under the plum tree, at the bottom of the garden, we had two rabbits that lived in a large hutch, strongly made, (to withstand the local fox!) and now empty due to them having departed through old age. This I decided would make a new home for my pleiones. With eight square feet of growing area, a semi clear plastic roof and a mesh on the front only, the whole structure was raised on legs to a convenient height.

After one season in this new environment, there were marked improvements. Growth was better, the bulbs larger, and a lack of brown tipped leaves. I assume that the added ventilation and dappled shade were beneficial.

This year the hutch is to be modified. Some of the woodwork will be removed and mesh sides introduced. The roof will remain, as a protection against the heaviest rain, but the aim of the exercise will be to provide maximum ventilation and correct light values. All pleiones will be potted in square pots, which are then butted up to give the appearance of an unbroken area of compost.

It is my intention to overwinter my pleiones next year in this new home, but I will have to devise some form of fine mesh to prevent the local field mice from moving in and helping themselves to the fruits of my labours!

As the year progresses, I will be monitoring my results closely, in the hope of finding the pointers that I am seeking - I might even get to see some flowers!

David Thompson, Chesterfield

SOME REMARKS CONCERNING ASEXUAL PROPAGATION OF TUBEROUS EUROPEAN ORCHIDS

I live in an alpine limy range where about forty different species of orchids grow. It means about half the number of French species. In fact except for the acid bog or Mediterranean you can find sites for every Continental species.

In a small field part of my "garden" about ten sp. grow. So naturally I had the temptation to try growing them, first by transplanting and then by potting some. I worked with ORCHIS (5sp.), OPHRYS (3sp.), DACTYLORHIZA 6sp. and clones) GYMNADENIA and ACERAS.

I grow these plants in pots, in a mixture of one third sand, one third peat and one third "garden loam" containing lime and clay. A topping consisting of gravel or pine barks or chopped fir-cones is provided. Pots are kept in a frost free frame during winter. Repotting is annual with partial change of the soil about the end of July after flowering and watering is then stopped until October unless propagation methods explained therefor is chosen.

Growing means multiplying and with such plants it is not easy. I've tried asymbiotic in vitro sowing, without success in moving plantlets out of their flasks. Probably partly due to the lack of laboratory conditions. For the same reason symbiotic sowing was impossible and it's a pity for it seems to give good results.

Two facts led me to Asexual propagation:

- Observing the formation of clumps in the wild.

-An article * published by Mr Carson E. Whitlow concerning propagation of some American species.

In the wild I observed formation of clumps with almost every species. The same patterns on the lips of neighbouring spikes testify for their belonging to the same clone asexually propagated. Such formations occur in the absence of grass - contesting for water and nutrient - and with a certain climatic conditions. The matter was to reproduce this in cultivation and the article mentioned gave me some help. The methods described for some genera applied to my plants gave various results depending on their type. Basically I grow two types of tuberous orchids:

1. Some Scrub and clay plants=
   Hand palmed tubers=
   Dactylorhiza, Gymnadenia, Platanthera

2. Dry pastures plants=
   Round shaped tubers=
   Orchis, Ophrys, Aceras

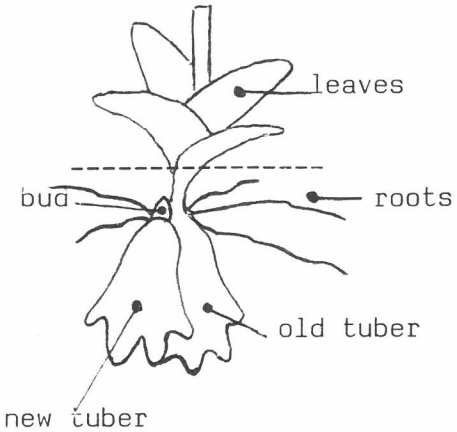
With the first group, after flowering the leaves are still very green. Carefully removing the underground system of the plant one finds two tubers and roots. Leaves, stem and roots are linked to the old tuber, while the new one - stuck to the old one - is brighter in colour and shows a conical bud. Carefully twisting the tubers one can divide the plant in two different pieces. The new tuber plus bud that is dormant, can be shipped or must be planted. The old tuber, roots, stem - spike has to be removed - and leaves that you have has to be repotted carefully. Providing him growing conditions it will give a second new tuber.

Repeating the process you can get three tubers a year with some strains but

the last one needs at least two years to reach flowering size. In the wild this happens without division under a rainy summer. It is like the plant builds up a second new tuber after the first one has reached a certain size.

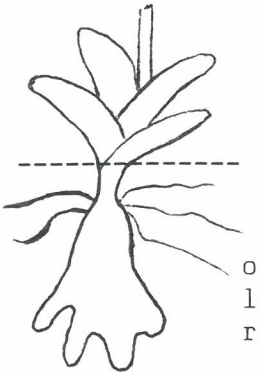
With the round shaped tuber plants, you observe clumps in the wild but inducing the process in cultivation seems less easy. Often the leaves are turning yellow when plants are blooming; it is very true for Ophrys, less for Orchis.

Fig 1



new tuber (dormant)
to be planted

Fig 2



Blooming for such plants is probably a signal for the beginning of dormancy. So you can't easily keep them growing like Dactylorhiza. I haven't tried yet, but removing the flower bud could be useful for I observed unflowering rosettes

to have a longer life. Variations occur anyway with the species concerned. Aceras is a free multiplier, some Ophrys strains also but they are more "moody" and very sensitive to watering, "Big orchis" like **Purpurea, Simia** and **Militaris** are often giving a second new tuber but very little, it gives only one leaf the next year and needs time to reach flowering size. So for these plants experiment has to go on.

Pierre Mercan, 27 Avenue Marie Reynoard, 38100 Grenoble, France

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ANGLESEY PLEIONES AND HARDY ORCHIDS

It is a few years since I presented an article for the National Pleione Report so I thought it was about time I surfaced again. I must say I have enjoyed reading all the articles and fully support the incorporation of hardy orchids. The 1992 issue inspired me to think harder about what I am doing with my collection and revived my determination to get some of the more difficult ones to flower, e.g. various Calanthe.

For a number of years I have successfully grown a clone of **Dactylorhiza fuchsii** subjecting it to a variety of growing conditions. It has grown in sun or shade, in time consuming mixes of leafmould, moss and garden compost as well as bog standard potting mixes. My plant has proven to be most adaptable and never misses a year for flowering. (Incidentally, I obtained it in about 1977 from a work colleage who rescued it from a farmer's plough, so it was received with the owners permission.) I established a colony in my parents Buckinghamshire garden in a raised bed and when I came to North Wales I removed a few tubers

for pot culture. It increased rapidly and I have divided it now and again to give to friends. The tubers seem to separate very easily. This year I was given another clone of **D. fuchsii** from the Treborth Botanic Garden (University College of North Wales) and I am looking forward to seeing if this provenance is as easy as its English relative. The best time for transplanting and/or repotting this species seems to be late summer/early autumn when the new seasons growth is about to begin. Considering their ease of culture, I am surprised **Dactylorhiza** are not cultivated more widely especially in this day and age of wildlife gardening - they are a hit with pollinating insects. I suspect it is a case of availability. They make very attractive plants in the herbaceous border, rockery or alpine house. Perhaps nurserymen should take note.

The first time I contributed to the NPR (1988) I reported having successfully "germinated" those minute bulbils of **Pleione humilis.** You know the ones - they are sometimes formed in small masses of fifty or more on the top of the old bulbs. These have taken a long time to come to maturity but with the current importation restrictions I am very glad to have persevered. I expected my first flowers from these bulbs this winter (1992-3) but alas it was not to be. Maybe next year!

This year (1993) I am using a 2.5cm. layer of dry bracken fronds in the bottom of my pleione pots in an effort to conserve expensive orchid bark. I have tried finely chopped bracken before as part of a compost mix for the first pleiones I ever grew viz: **P. formosana** (unnamed clone).There were no obvious detrimental effects then so I am happy to take a chance now. The reason for including the bracken only as a basal layer is partly due to laziness (it takes a lot of work to chop it up fine enough to incorporate into a compost) and partly because I have noticed pleione roots rarely seem to exploit the bottom of my 5½" half pots anyway. A third reason could be to do with my dislike of handling the

stuff when knowing that at least in its green state bracken is decidedly carcinogenic.

In the 1992 issue of NPR I was interested to read of Dr Phil Cribb's excitement in seeing a photograph of an autumn flowering "one-leaved" pleione which was probably **P. saxicola** Tang and Yang. I have grown unifoliate **P.praecox** for many years! It may be time for revising the botanical key dichotomy that uses leaf number as a diagnostic feature within the genus.

While on the subject of autumn flowering pleiones I don't know about anybody else but I have a great deal of trouble repotting them. It seems that I am always a little to late. I never get round to it until after leaf fall and by that time new, fragile root systems have already emerged making the act of dividing the bulbs a bit risky. The main repotting fear is the long accepted doctrine that pleione roots do not branch and will die back if damaged or broken. This may well be true for the spring flowering species but one of my **P.praecox** had a distinctly branched root system last time I repotted it! Over the years I have tended to pot-on the whole undivided clump of pseudobulbs into a pot large enough for a two year stint and thus providing minimal disturbance. In other words, treating them like most other orchids. Although this method was originally employed to postpone propagation it has produced tight specimen plants that are very attractive in flower.

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WILD ORCHIDS IN THE CHANGING LANDSCAPE OF CRETE

Our first surprise was, very appropriately, **Ophrys cretica** just a few watchful steps above the olive groves. It stood in imaculate black and white well worthy of admiration, and then came the second surprise, the extremely prickly phrygana vegetation which made photography of Crete's orchids a distinctly uncomfortable pleasure.

Rough-legged buzzards soared overhead as we set off uphill heartened by immediate success. Above us rose a series of terraces separated by loose, limestone crags. The spiny ground cover was not tall but nor was it grazed to the ground so it looked like promising orchid country. Two more bee orchids soon confirmed this impression. **Ophrys spruneri** and **O. tenthredinifera**, both single specimens and both in perfect condition in the last week of March. In the shelter of a narrow gully on the south-facing slope many spikes of the giant orchid, **Barlia robertiana** were growing amongst the wild asphodel, their waxy green and pink flowers glistening after a sudden squally rain shower. Then sunshine again, the hillside quickly dried and as if by magic, hundreds of **Gynandriris sisyrinchium** flowers opened in various shades of blue. Their iris-like buds seeming to unfurl in minutes.

It is always a pleasure to see an orchid familiar in cultivation, growing wild for the first time and it is exciting to draw on those aspects of its natural environment which may help to provide for its well-being. **Ophrys bombyliflora** is common in Crete but I was particularly pleased to see it, as I have been puzzling over one facet of its cultivation. Most of our Ophrys species give of their best when grown singly in 5½" pots. **O.bombyliflora** does not however, seeming to produce an inferior flower spike and fewer new tubers than those on plants grown in groups. Its tendency to produce several new tubers from each

old one would also point towards a species which grows in clusters. Clumps of rosettes with little, round, furry flowers wherever the soil was bare on steep parts of the hill would seem to confirm this idea.

The hillside rises in steps to about 2000 feet. Close to the top it was noticeably colder than on the lower slopes and moister under foot. Perennials in flower close to the olive groves were not even in bud and the main colour was provided by the pink butterfly orchid, **Orchis papilionacea**, which was dotted everywhere over the higher terraces and growing in drifts in the sheltered damp hollows. Most were a very dark pink colour but the whole range of variation was represented with pure white individuals visible from several yards. **Orchis collina** was much less obvious as its subtle pink and green flowers blended in to the background, but it was also widespread at this height.

Panoramic views opened up, the dramatic profile of Mount Juktos completely blocked out the southern horizon and we could trace the full course of the river rising on its eastern slopes, flowing past the intriguing ruins of Knossos below us and on into the sea near Iraklion. The tightly-packed, white-painted houses in the village were surrounded by small vegetable fields and the vineyards producing saltanas, one of Crete's main exports. Above the vineyards the silver of the olive groves, their leaves flashing as they were turned by the wind. Here and there a white-painted chapel dating back hundreds of years surrounded by the darker green carob trees, and above these the barren hillsides uncultivated but grazed intermittently and habitat of orchids and bulbs which have drawn people to the island for the last century. From the hillside the pace of life in the village looks slow and the landscape has a timeless quality so it is hard to comprehend the immense changes which have occurred to bring about the present aspect and those, which in a shorter time-span, could alter it forever.

Several thousand years ago this valley and indeed the whole island was clothed in evergreen oak and conifer forest. Over centuries the trees were taken by successive civilisations for fuel and building. Grazing over the denuded slopes resulted in many grasses and legumes being removed from the island flora completely and in the preponderance of spiny plants found today. Soil erosion compounded by the lack of leaf litter has led to the very poor soils found on the slopes. The origins of the olive and carob are confused by time but over centuries they have been selected from wild stock, planted and encouraged until they dominate the landscape. The widespread occurrence of orchids in Crete today is a direct result of deforestation, overgrazing, soil erosion and subsequent land-use by man. Now our attempts to make the land more productive is resulting in their decline.

Greece is one of the poorer European Community nations and Crete particularly. E.C. grants for research and agricultural developement will have far-reaching affects. Traditional strains of olive and vine will grow only on the lower slopes of the hills. New cultivars of these crops are being developed which will tolerate the higher hills bringing more land into production and reducing the phrygana where the orchids grow. New fodder crops may be sown on the higher hillsides to improve the poor quality of the grazing and thus improve productivity. Large quantities of subsidised herbicides are being used on existing vineyards and olive groves to eliminate competition from weeds. Inevitably chemicals drift onto uncultivated areas and also find their way into the ground water, killing native plants.

Other changes are more direct and immediate. Crete's northern coastline close to Georgiopoulis had been recommended to us as a good area in which to find **Orchis laxiflora.** In the last two years the entire colony has gone because the dune slacks and marsh have become the foundations for a string of new hotels

along the edge of the beach. Tourism also poses a threat to Crete's natural beauty.

To suggest that these processes are in imminent danger of destroying Crete's orchids for ever may well be an exaggeration, but the pace of change is now so rapid that a habitat which has developed over centuries can disappear in a matter of months.

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MORE ABOUT ORCHIDS IN NORWAY

It gives me considerable pleasure when I take the back issues of the N.P.R. out of the bookshelf to look for information about cultivation, species, methods and tricks people have applied to their favoured little gems in the orchid world. There is always a piece of information there that I've overlooked or forgotten. So perhaps I should dedicate this article to the memory of Mister Gutenberg or perhaps the Romans who introduced our present alphabet, maybe those in Palestine who domesticized the wheat or those who built the first cities? it is now that you start realizing that you are on top of the pyramid of human experience with all other earlier experience to draw on. It is strange to think that what we write today is history tomorrow. You suddenly start to feel incredibly old after having said this,- at the age of 38!

"Yes my son, Daddy has always been an old man. Now go out and play and leave us geriatrics alone! No, I wasn't born with a grey beard you cheeky little so and so! I can't take you to the football match, no. I am working with my ORCHIDS

can't you see? Don't know what ORCHIDS are, - don't they ever flower? So you like Dandelions eh, because they flower all year. Thought so, - you must be taking after your Mother since you can't even pause at beauty incarnate. You just come back in May when the PLEIONES are in flower, that'll teach you! Yes I know it's May now you insolent-----I had one plant in flower, didn't you see it.

It's amazing what you young ones are able to overlook! I must be getting something for my rheumatism and start planning my memoirs. I will of course retire in 2022 which my son tells me must be next year. They really know how to give their parents compliments don't they?

I guess it isn't always too easy to justify one's hobbies when confronted with critizism from others. That's the advantage of writing for the N.P.R., you write for people belonging to the same denomination and don't have to justify what you are doing!

Last year was a very good season for me although it didn't look too promising from the start. We had five weeks of drought from the end of May and daytime temperatures were at around 28 centigrade. I therefor had to move my Pleiones to the northern side of my house where the pots were plunged in polystyrene boxes containing sand. I gave all Pleiones sphagnum for compost this year too but added both pineneedles and sawdust as I think this will sufice for feeding the plants. I am sceptical towards the multi-element complexity suggested by various authors for Pleione composts. The fact of the matter is that you will never find such complexity in the wild as the plants will feed on mosses, grasses and material from deciduous trees and not much else. I am still too lazy to remember feeding my Pleiones so I want to go for composts that will feed the plants well even so. Since my biggest **Pleione x Vesuvius** weighed 35g. when I cleaned it in November I feel I'm on the right track as for compost.

I got bulbs of increased size compared with the year before except for **Pleione scopulorum** and one pot of **P.forrestii** that froze by accident in early spring. **P.scopulorum** remained the same size but produced more bulbils than ever so I didn't lose anything as for number at least. There was leaf-tip dieback in **P.limprichtii** but the bulbs increased in size even so.

Two years ago Peter Bradbury kindly sent me **Pleione X Shantung** and **aurita** seed for me to try out in vitro. I sowed both types on Manfred Meyer's recommended medium for Pleiones SBL-C. **P.aurita** was in addition given 2.5% unsweetened pineapple juice, Ph adjusted to 5.5 - 5.7. Germination was around 100% for both. **P X Shantung** responded quickly and vigorously, grew tiny leaves but after a while the base of the protocorms turned brownish and some died, the medium was also discoloured. **P.aurita** was much slower germinating but I never saw any discolouring of these plantlets or the medium which is why I also transferred **P X Shantung** to a medium containing pineapple juice. I have kept these seedlings in their flask for two years and have transplanted them twice to fresh mediums. Last year I also had some proliferation as the bulbs got bigger. I never lost any **P.auritas** at the flasking stage that I could see nor any more **P X Shantung** after pineapple juice was given as additive. All seedlings have now been transferred to pots containing finely cut mosses, the top covered by polystyrene film to avoid dehydration at this crucial stage. All I can say at present is that I am hopeful of success. While I'm at it let me also mention that I stopped dieback in **Bletilla ochracea** protocorms when they were given pineapple juice as additive. I use pineapple juice as additive for nearly all the orchids I propagate from seed. **Orchis morio** is not too fond of such juice but this is the only species I am growing in vitro that appears to grow better without it.

My **Calypso** gave me considerable pleasure last year, not least because they

flowered for me for the first time so I didn't really know what to expect. The first two flowers appeared in March last year, one from Japan (var. speciosa) and one from Pacific Canada (var. occidentalis). The flower buds are strange in the way that they emerge upside down and then turn 180 degrees after having spread their flower parts. The stem elongates after the flower has opened, as much as 5-6 times its original length when opening up. The main difference between the two mentioned varieties is that var. speciosa is less colourful than var. occidentalis. Speciosa has a lip that resembles white mother-of-pearl slightly tinged with very pale pink. The inside is streaked pale brown in zebra fashion but the petals are bright pink and twisted like in all varieties. Its flowers are bigger than those of var. occidentalis in spite of being a much smaller plant. Japanese Calypso also has the intriguing characteristic that their flowers are fragrant, a faint smell reminiscent of tropical orchids. My Canadian var. occidentalis on the other hand have no fragrance at all but are very colourful in their early stages. Its spotted pink lip is very decorative as are the zebra stripes of strong pink inside the pouch. The flower is in addition a little different in shape from its Japanese cousin, more upturned and slenderer. One of my Canadians also has a pinkish colouring to the tip of its leaf that is permanent since it has returned this year too. These plants stayed in bloom for one month and then I decided to selfpollinate each one of them. I don't know for how long they would have stayed in bloom if I'd let them. The selfing caught at once and the flowers dwindeled within the next week. Two of my Canadians didn't open at all and stayed like this even by the middle of April, one month after the first plant had opened up. Then I forgot the pot on the floor of my living room, left when I went to bed one night by mid April. When I woke up eight hours later the flowers had opened and alreay turned their 180 degrees! In retrospect a rather unexpected way of finding out at what

temperatures Calypso bloom. I selfed all my four Calypso flowers and they all took, so I was able to harvest three pods of Canadian and one of Japanese origin from June to August. I sprinkled the seed from one pod across the pot surface to see if I can make any seeds germinate and grow there. I have also sown seed in a few flasks but there is no sign of germination yet. I have stored the flasks in a cold place now to see if cooling might encourage germination, like it does in several other orchid species.

This autumn one of the Canadians put up one extra growth whereas the Japanese plants haven't increased in number since I bought them. I therefore cut the old tuber from the new one on my biggest Japanese Calypso in October. I took care that the new leaf was fully out and the new root fully developed on the new plant before I did this. Since I have tried the same procedure before on a Swedish Calypso tuber I know that the old tuber will put up an extra growth this spring at the earliest, next autumn at the latest. One has only to make sure that the old tuber is still very firm to a gentle pressure when removing it or else it won't contain energy enough to put up an extra growth. The new tuber that I "knifed" will regain its old size before it dies down by midsummer.

I have learned that letting too small bulbs flower might be too much of a strain on these plants. I therefore removed the flower buds from two Japanese plants this autumn. All the Canadians will be in flower by April. I have got a few of Californian origin too and these grow at lower temperatures than their Canadian cousins which to me is no advantage at all. These plants opened their flowers this week and one of them surprised me by being fragrant. There is otherwise no difference between var. occidentalis from British Columbia and California, which was to be expected. I feel I control Calypso fairly well on the whole now so I will intensify endeavours to propagate them from seed now that I have got a regular supply of seed,- my own plants.

The theory of aging in Calypso eventually causing them to die after some years of "old age" is one that I don't believe in. There is however a build-up of harmful elements in composts that are not changed for some years, especially in a pot, which may cause the plant to die as a cosequence. We should beware of signs of reduced vigour as this is a sign that something unwanted is about to happen in the compost or to the plants. It may also interest some of you that I water my orchids with normal chlorinated tapwater which dosen't appear to harm the plants at all. It may be that ther's less chlorine in the drinking water here than in England but it proves at least that orchids will tolerate some chlorinated water if need be. I water my Calypso with tapwater from November until May and also occasionally later in dry periods. Hazardous treatment of rare plants? Perhaps, if it were not for the fact that the plants don't seem to be bothered by our tapwater at all. They flower regularly and increase as for number of growths which should be proof good enough of my point.

One last point of interest. A friend sent me one Calypso that the slugs had had an easy meal at, eating both leaf, stalk and root. It now produces a new tuber coming out on top of the old tuber, Pleione bulbil fashion. This was a surprise and naturally a very welcome one.

My Cypripediums have increased well and **Cyp.calceolus** with vars. doubled or more as for number of new pips produced. I have also got **C.guttatum var yatabeanum** under control as my two established plants produced two and three new pips respectively. It prefers a rather compact type of soil and tolerates even fairly rich composts. **C.flavum** is hardy and appears to survive well here. I give it the same compost as my **C.reginae** but I am growing **C.flavum** in a shadier spot than the Queen. **C.farrerii** was a newcomer last year and a very special one as such. This species also appears to be hardy enough for our climate although it may be a little sensitive to winter wet. **C.henryi** is not hardy here unless kept in soil that is fully frost free and protected from the worst of winter

rain in addition. It is a rather awkward species because it breaks early and is touchy to spring frosts. It shares these traits in character with **C.segawai** and **C.formosanum,** unfortunately. I don't know what to do eventually to make these species establish in my outside garden. The only possibility appears to be to dig them down somewhere convenient, topped by a greenhouse! When **Cyp. macranthums** are concerned the difficult period is their first season. Make sure the plants you get hold of are fully stabilized, preferably grown independently for at least one year when you get your hands on it. Several times I have lost **C.macranthum** propagations because they grow until all energy is spent. Other species usually stop growing after some time when they find out that their remaining piece of rhizome is running out of energy whereas **C.macranthum** often grows until it topples over, all energy spent putting up its leaves. The rhizome has rotted or is rotting as a consequence since the plant has no more energy to fend off aggressive fungae or germs. I would recommend splitting off **C.macranthum** propagations two weeks after flowering if the process is impossible to undertake over two years. Then the split off propagation will at least get most of the summer and the autumn for building up its energies and should be fairly stabilized. Those propagations removed with a sudden cut in late autumn are the problematic ones which I have dealt with above. Survival rates are exasperatingly low for the mentioned types and the sudden removal of propagations in late autumn should therefor be discouraged by most growers. The material in cultivation is still more scarce for both particular clones as well as rarer species and we should not risk losing propagations because of impatience or dealing with them rashly.

When propagation from seed is concerned I mostly use Manfred Meyer's TGZ-N for most **Dactylorhizas.** I often reduce the strength of the medium recommended to about 80% as species of northern origin sometimes need some reduction to

germinate.**Dactylorhiza sambucina** is a bit touchy to high levels of pineapple juice and the Ph levels are also important for it. Germination rates of close to 100% can be expected if the conditions are right for it. The British grown **D.foliosa/elata** clones show hybrid vigour in some cases and the seeds germinate unevenly, possibly because of genetic diversification. The true species are harder to grow on TGZ-N and should at least be given more sugar to grow well i.e. around 5-10 grammes extra per litre. Some species like **D.praetermissa** need a period of cooling to germinate, some three months below 5° will normally suffice. Dactylorhizas should be sterilized and bleached in 1% NaC10 for 6-12 minutes depending on the species and clone in question and then sown. Last years N.P.R. gave a good description as to how sowing is done so I can see no reason to repeat this outline. I'll give a better presentation for treatment of seed next year if wanted. On average Dactylorhiza protocorms and seedlings should be replated on a fresh medium three months after germination and again when the first small tubers turn upward to produce their first leaves. This article should suffice to get people started and perhaps get over basic mistakes and blunders. You can't avoid them so try and live and learn from them. Send me a note if everything gets tied up and all you produce is excellent cultures of mould. Basic mistakes are usually not difficult to rectify.

Orchis morio grows excellently on TGZ-43, a product not listed by Meyer but which can be ordered if required. They should be put under lights as soon as they reach the green leaf stage and then given cool temps. for tuber production after the roots have developed.

I grow **Ophrys apifera** in ¼ strength Vacin & Went sometimes mixed with ½ TGZ-43 but 2.5% pineapple juice is always added. They grow to perfection in this medium. Lately I've started using a medium developed by the Swedish surgeon Svante Malmgren. Since both Dactylorhizas, Orchis, Ophrys, Platanthera, Cypripedium

and a lot more species grow on this medium with variations, it is the one I would recommend most people to grow orchids on. It is based on a complex fluid meant for intravenous use, as a temporary substitute for blood, during deficiencies, low blood Ph etc. This fluid is called Vamin and can be bought at the chemist. You will need a prescription to buy one such bottle in some countries which is no problem usually. You will risk a surprised, professionally raised eyebrow when confessing that you intend to use the liquid for orchids, but not much more. The liquid should be transferred to 20ml flasks and frozen for later use to avoid that all the amino acid mix should not be contaminated and a new expensive bottle will have to be bought. The full complexity of this medium containing Vamin is enclosed at the end of this article with extra recommendations of use for different taxa. These mediums are easy to mix for the average amateur and easy of use. Believe me I got no formal education in natural sciences at all and teach languages,literature and history. When I can propagate orchids from seed, anybody else can do it too!

Most seedlings of northern origin should be planted out in January or February in a pot topped by a close-fitting jar or polyethylene film. When the plantlets are removed from their flasks they are very vulnerable to dehydration as 100% relative humidity of the air is what they are used to from the flasks. Low temperatures will keep the growth of bacteria at bay whereas fungae can only be inhibited by watering. Orchid seedlings are not exposed to much heat when planted out early in the new year and will get the chance to adapt as the temperature is slowly increasing. At this stage the cover should be lifted a little by little to adapt the plantlets to normal conditions of air.For Dactylorhiza survival rates are very high if the plantlets are in growth when planted out. Weak stagnant plants very often die soon after having been planted out though. The plantlets survive best if they have roots that are half an inch long or

more but survival rates can be high even so. It is often beneficial to plant the seedlings in soil that is already infested with mycorrhiza of some kind. I either use some of last year's discarded pleione compost or I put Herminium tubers into the pots some months in advance. The compost I use for Dactylorhiza seedlings consists of marl mixed with crushed desalted seashells and finely cut mosses from firwood forests. The mentioned moss is acidic but beneficial as it breaks down slowly. I drop the calcareous material for the plants of the D.maculata group generally and substitute the lime for a mix of peat and sand, preferably bark peat of commercial origin as its Ph is close to neutral. I also wean Platantheras following the latter method but often add soil from areas where I've seen them grow. Since Platantheras often grow in gravel in roadside ditches here the soil can be removed without damaging the habitats.

For Orchis and Ophrys I haven't got much experience of weaning. I have been recommended using desalted beachsand only as this sand is round in structure and drains well in addition to being close and limy. This method appears to work well. The plants can be left on the medium until sinkers and new tubers are produced. These sinkers can be cut off from their "mother" plants and planted in sand as mentioned. This will facilitate the process of weaning the plants. What's more, the plant still in its flask will produce an extra tuber or two depending on vigour and how far it has come in its growth cycle. Whole plantlets with fully developed sinkers can be planted out in January-February as mentioned before. In my experience this is a less effective method than removing more or less fully developed sinkers for careful adaption to normal dormancy.

Cypripedium seedlings should be planted out when dormant. From what I have seen they are fully weaned after three months of dormancy and need no extra cover to keep humidity high. They should be watched carefully though as Cyp.

seedlings don't tolerate negligence. Plunging the pots in moist sand or peat will be a good idea and will provide a relatively stable level of moisture in the pot which Cyps. most depend on anyhow. Clay or plastic pots is a matter for taste as I see it. I prefer plastic myself as clay pots dry out more quickly than plastic ones and I go for stable levels of moisture as mentioned before. I also cover my pots with turves of moss taken from stones and boulders in the wild. Such turves are often very compact with a low content of humus. I use them as lids on my pots and they are excellent both for seedlings and fully grown plants. Cultivation in containers is probably ideal for seedlings provided that these are also covered by material that prevents evaporation through raw topsoil.

What else is there to say? I've surely forgotten a lot and have definitely got a lot more to learn about weaning. This will have to do though and good luck to anybody wanting to try their luck on propagation from seed. For me this kind of propagation has become an all year pastime and a very rewarding hobby. I got problems of storage sooner than I thought possible which I would have thought to be pure advertising of the most primitive kind if having been told so only a few years ago! (Sounds tempting doesn't it?) I know about people on all five continents that are fairly good at propagating Cyprpediums from seed, just as an example. The next decade will bring about a considerable change in availability of Cypripediums propagated from seed. Other local and more easily propagated species will also be more readily available. The result will probably be seed offered for sale at a high price and a consentration on the out of the ordinary varieties. If I'm right botanists and enthusiasts will have to discuss the threat of genetic influence from garden grown orchids on wild habitats. There is considerable resistance to such genetic interbreeding in wild habitats but not an unlimited one. I think it would be wise of us to forsee

and prepare for a debate on the topic of genetic interbreeding. It is our responsibility as growers not to overlook the consequences of our activity even when they appear to have a rather unpleasant bearing on the relative freedom we have within the limits of our hobby.

With these hopefully not too gloomy words I'll end this report from central Norway. Santa also sends his love from below the icecap and says he grows orchids too! He has got no trouble with slugs and snails but his reindeer appear to be terrible and don't respect the Washington Convention at all! I just thought you'd like to know, - nobody avoids all the problems even if we luckily don't share them all.

Good Growing!

The Vamin medium for orchids of northern origin (plus a few more) per 1 litre medium:

75mg $Ca_3(PO_4)_2$	75mg KH_2PO_4
75mg $MgSO_4$	10mg $FeSo_4$
8 gr. agar	1 gr. charcoal
10 gr. succrose	0.75 gr. Vamin

+ 2.5% pineapple juice (Ph adjusted to 5.5-5.7, use NaOH 5%)

For orchids from temperate regions add more succrose if necessary.

For Cypripediums use:

1 gr. Vamin and add (also per litre):
5 mg. Kinetin (growth hormone)
1 ampoule Solu-Vit (B-vitamens)

AND GOOD LUCK!

Einar Myrholt, Blabærveien 14, 7200 Kyrksæterora, Norway.

PLEIONES AND HARDY ORCHIDS AT THE 14th WORLD ORCHID CONFERENCE

GLASGOW 27th APRIL - 2nd MAY 1993

In complete contrast to the dire predictions of cold wet weather and an indifferent public, the 14th World Orchid Conference attracted not only dry sunny weather, but also well over 1000 delegates and at least 30,000 members of the public, all enchanted by the show revealed to them during the five days it was open.

Looking firstly at the show, a number of displays featured pleiones and other hardy orchids although not always prominently. Unfortunately, conditions in the hall, particularly at night, were especially hostile to the pleiones and many of their flowers had withered in the first couple of days. The East Midlands Orchid Society used well-filled pans of **Pleione formosana** in many cultivars while the Royal Botanic Garden, Edinburgh had **P.limprichtii** among an interesting selection of tropical orchids. With some of the participants involved in long distance travel, it was sensible for them to combine resources, and an impressive display was mounted by a combination of four societies and two commercial nurseries from the southwest of England. The orchid societies of Wiltshire, Somerset, Devonshire and Bristol and West of England were joined by Whitmoor House Orchid Nursery and Greenaway Orchids to show a wide range of plants, including groundcover pans of **P.formosana** and many individual plants of **P.Shantung** dotted along a mossy bank. The other displays featuring pleiones were both from commercial growers. Ian Butterfield managed his customary high standard with a natural setting about four metres square covered with treasures both old and new, including selected clones and examples of **P.aurita** which really stands out. As was mentioned in the beginning, conditions in the hall were difficult, but it was interesting to see those plants which had survived

into the fourth day. In particular, one noticed **P.El Pico 'Goldcrest'**, some examples of **P.yunnanensis** and **P.bulbocodioides**, and **P.Keith Rattray.** Springwood Pleiones from Leeds had a smaller display where the pleiones were enhanced by a variety of attractive foliage plants, among which were acers, ferns, grasses, mosses and conifers. **Pleione Shantung 'Ridgeway'** is unique to the nursery, coming from the original cross, and it was joined by pans of **P.speciosa - 'Blakeway Phillips', P.Soufriere, P.forrestii, P.limprichtii** and again, the lovely **P.aurita.**

Hardy orchids were there to be found although sometimes with difficulty. The German Orchid Society (D.O.G.), had gone to enormous trouble to show a wide range of superb plants and in a prominent position were examples of **Cypripedium parviflorum 'Glasgow', Serapias lingua 'Glasgow'**, and two recent **Cypripedium** hybrids, **C.Gisela 'Glasgow'** and **C.Carolin 'Glasgow'.** For such a large institution, the Royal Botanic Gardens, Kew had a small plant display which included **Orchis laxiflora** grown from seed, and a small yellow Cypripedium, possibly **C.parviflorum.** Their other educational exhibit featured the important work of the Sainsbury Orchid Project where many species of European orchids are being propagated. **Orchis laxiflora** also appeared in the Orchid Glen alongside the stream at the centre of the whole show. Another Cypripedium, **C.pubescens**, was noticed on the stand of the Thames Valley Orchid Society, while the Harrogate O.S. used two colonies of **Dctylorhiza foliosa**, the larger one being about 30cm across. Perhaps stretching the definition a little, but certainly hardy at Kew, were lovely examples of the dwarf Japanese **Cymbidium goeringii** shown by the Orchid Society of Great Britain and the Scottish O.S. Also from Japan, and probably needing a cool greenhouse or cold frame, were **Habenaria radiata**, still to open its white flowers, and several clones of **Ponerorchis graminifolia** in shades of pink, white or pale lilac, displayed by the All Japan Orchid Society.

For those inclined to buy, potted pleiones were available from Ian Butterfield with Norman Heywood of Orchid Sundries expanding into hardy orchids with a number of European species in pots.

Of course the show forms only a part of the proceedings at such an event and the lecture programme is of equal importance for many. Of particular interest was a well-attended lecture by Ian Butterfield, never one to stand still, showing new pleione hybrids in 3-D. This is stunning when it works, but there are still improvements to be made if audiences aren't to suffer some discomfort. Other lectures of interest here were by Christopher Bailes on Hardy Orchids as Garden Plants, Werner Frosch on the Cultivation of Cypripediums, and together with Carson Whitlow of the U.S.A., Hybridising Cypripediums. Altogether an exiting week, but don't expect too much to report from Brazil in 1996.

David Menzies, Glasgow Botanic Gardens.

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ROUNDUP

I think the first thing you will have noticed about this years report is its coloured cover. It has been very kindly donated to us by J&J Photographic and came as quite a pleasant surprise. Trevor Jones is a friend of mine and I know the cover wasn't given as an advertisement for J&J. To repay the kindness of J&J why not let them enlarge that favourite print you've always been going to have done. Give J&J a ring on Bourne End 0628-524876 for details and mention the N.P.R. You never know, if we support them they may support us with a cover

for next years N.P.R.

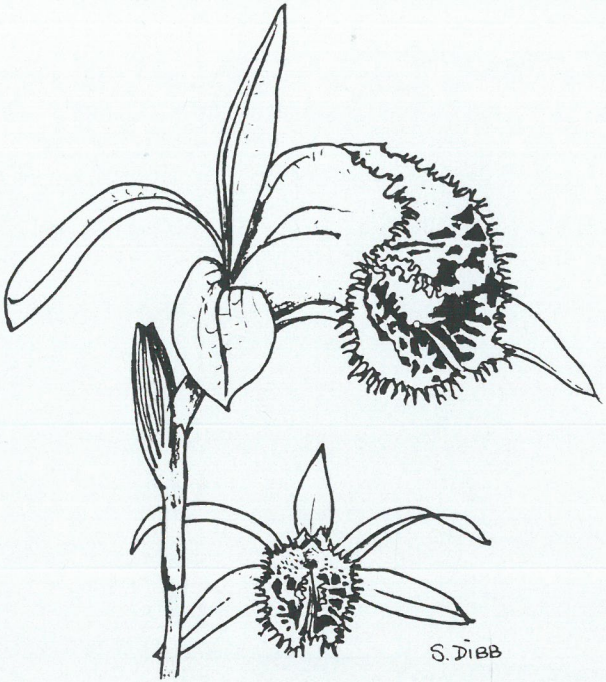
Einar Myrholt has asked me to give the U.K. address for the Manfred Meyer seed growing mediums. It is, Orchid Sundries, New Gate Farm, Scotchey Lane, Stour Provost, Gillingham, Dorset. SP8 5LT. Einar also mentions Vamin in his article. I made enquiries at my local chemists and the dispenser kindly gave me the telephone number of Kabi - the manufacturers in U.K. I rang their enquiry desk and was told that there are four different types of Vamin available varying in price from £6-60 to £12-70 per 500ml. Now for the bad news, it is only available on prescription, so you need to find a kindly doctor who grows orchids. The second piece of bad news is that it is only supplied in 12 litre cases. I have been promised by Kabi that they will look to see if anything more in keeping with our needs can be arranged so perhaps all is not lost.

As always we must offer our grateful thanks to all the people who have contributed to this years report. It is a fact that needs repeating that without contributions there would be no report so please support all previous contributors by writing something yourselves. If you havn't written an article before don't be put off having a go. Think of it as writing an open letter to a group of friends - you will find it much easier than you think.

Why not let us try a problem page where we can seek advice from other growers who may have overcome a particular problem you may have with culture. I think it could be quite interesting and helpful.

Don't forget to give Sales and Exchanges a try. I have heard of several good deals having been struck also nice contacts being made.

Peter Bradbury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