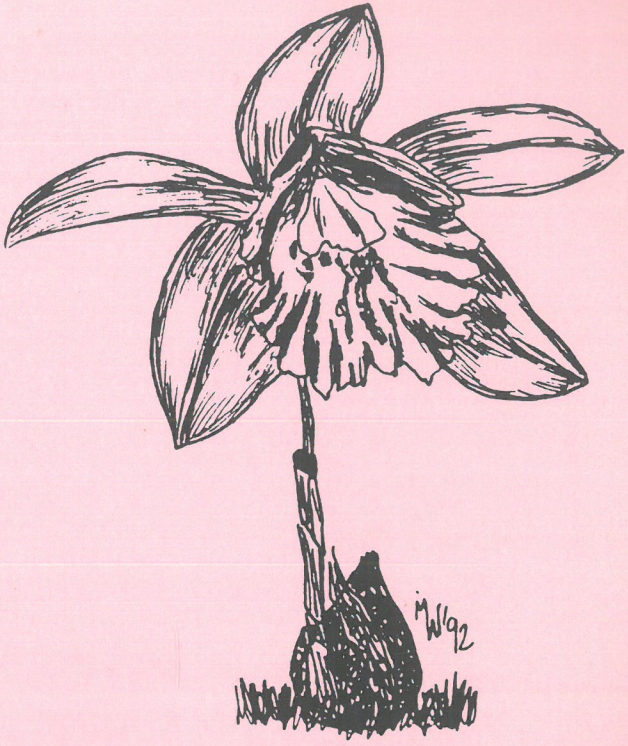
1992

NATIONAL PLEIONE REPORT

INCORPORATING

HARDY ORCHIDS



NATIONAL PLEIONE REPORT 1992

incorporating

HARDY ORCHIDS

1	An Ardent Admirer	Doug Bessey
3	An Experiment in Terrestrial Orchid Culture	Sandra Bell & Dr M.J. Earnshaw
6	Winter Flowering Pleiones	Ian Butterfield
8	Growing Orchids in Norway	E. Myrholt
14	The Rise and Fall of a Pleione Collection	Graham Jones
16	Orchids in the Thames Valley	Richard Manuel
22	Adventures and Misadventures with Pleione Seed	Kath Fairhurst
29	Orchis Militaris	Bill Havers
33	Pleione Aurita	Dr P.J. Cribb & H. Pfennig
35	Further Thoughts on Pleione Species	Dr P.J. Cribb
38	Roundup	P. Bradbury

Front cover illustration of P.aurita by Marion Watson

Terrestrial Orchid illustrations by Richard Manuel

Report compiled and produced by Peter Bradbury. Publication date 15:06:92

AN ARDENT ADMIRER

Until I came upon Ian Butterfields stand at the 1982 Chelsea Flower Show I have to admit that I had never heard of or seen examples of the species Pleione.

Like many people before me I immediately became an ardent admirer and the Summer months could not pass quickly enough to enable me the opportunity of growing my first Pleione pseudo-bulb. During this period I attempted to improve my knowledge of Pleiones but the only information I could unearth was a pamphlet from Butterfields Pleiones titled "How to grow Pleione Orchids" and an article in one of the gardening magazines by Kenneth Beckett titled "Pleiones".

Since then there has been Curtis's Botanical Magazine and a Kew Magazine Monograph both titled "The Genus Pleione" and these two publications together with the annual National Pleione Report have all been extremely informative and helpful.

My first Pleione purchase was **P limprichtii** which was grown in composted bark in a three inch pot in a six feet X eight feet greenhouse situated in a South facing garden, it flowered the first Spring, didn't the second and expired before the third Spring, thus my learning curve had begun.

Subsequent purchases e.g. **P Eiger, Vesuvius** and **Shantung,** grown in Butterfields recommended compost in the same greenhouse with Summer shading from April to September, and with the benefit of experience and tips from other growers, survived and multiplied and the descendants are still with me.

Due to the high Summer temperatures experienced in this greenhouse a lean-to greenhouse was obtained and sited on the East side of the house to obtain more shade which, it was considered, would give improved growing conditions.

However, the transfer of all my Pleiones to this more shaded greenhouse coincided with an extremely poor Summer of low sunlight levels and temperatures which resulted in substantial losses and small pseudo-bulbs of those varieties

that survived.

This prompted me to question some cultural conditions I had always considered essential to the successful growing of Pleiones i.e. good shade and cool growing conditions. Needless to say all the surviving stock of Pleiones were returned to the cold greenhouse with the South facing aspect the following year.

My experience since has tended to indicate a compromise condition is required with some light shade being essential together with good air movement around the plants but it does appear that Pleiones do appreciate quite warm ambient temperatures up to approximately 30°C. provided plenty of moisture is available and the humidity is kept high. It would also appear that the longer the growing season can be extended the larger the new pseudo-bulbs will be, in years with late Springs and/or early Winters the size of the new pseudo-bulbs is somewhat reduced.

Although having gained experience over the years, observations such as those mentioned have not prevented me from still experiencing difficulty in producing flowering size pseudo-bulbs in the following **P speciosa** and **confusa** and hybrids **P Versailles 'Bucklebury'** and **P Rakata.**

Do certain varieties require particular growing conditions and/or compost, perhaps other growers have experienced particular problems with certain varieties, any advice would be most welcome.

DOUG BESSEY, Shepperton, Middlesex.

****

AN EXPERIMENT IN TERRESTRIAL ORCHID CULTURE

There is an old adage which reminds us that there are as many methods of growing a given species of plant as there are growers cultivating it. Those who grow tuberous European orchids have been debating the relative merits of their techniques for some years now both verbally and in print. Two seemingly conflicting accounts can be read in last year's National Pleione Report pp 1-7 and 19-23. While such debate adds relish to the enjoyment which the experienced grower gains it must also confuse the novice seeking success with their first plant.

Orchid seeds are very small, containing few food reserves, and there is no doubting the paramount importance of the fungus in providing nutrients for the developing seedling. The most contentious issue, however, concerns the role played by the orchid/fungus relationship in the annual lifecycle of the mature plant and any implications of this relationship in the method of cultivation. We need to know whether the needs of the fungus must be accommodated when growing a terrestrial orchid or whether they can be ignored. There is no doubt that opinions will be aired on this subject for many years to come and we have designed an experiment which may resolve or add fuel to this controversy. The experiment seeks to compare groups of plants grown together under the same conditions but by different methods. In particular, we are especially interested in examining the importance of the fungus under both low- and high-nutrient conditions. For example, it is possible that the fungus may be required when nutrients are low but may become effectively redundant at higher nutrient levels.

Our trial batch of plants consists of 270 tubers of **Serapias lingua** which are all derived from a single collection made in 1983. It could be argued that **S. lingua** is not the most suitable species to use as it is one of the easiest

to grow, however the advantage it offers is a useful number of genetically similar tubers after vegetative reproduction over some years in cultivation. Genetic variation in the results across the six trial batches should be negligible. Each batch contains 45 tubers potted at the rate of 5 tubers in 5½" half pots. The same standard potting mix of 3 parts grit, 1 part loam, 1 part fine orchid bark, 1 part sieved leafmould and ½ part coir was used throughout with the tubers planted into one third of the compost carried over from the previous year. Only one variable is changed from batch to batch so that any differences in the results can be linked to one factor.

The six final batches are as follows:

Standard low-nutrient
1 Using the standard, low nutrient compost without added nutrients and without the use of fungicides. This is the method of cultivation currently in use at Kew.
High nutrient
2 The standard compost is fortified with John Innes base fertiliser to bring the nutrient level to the equivalent of a John Innes No 2 compost. No fungicide is used.
Low nutrient + fungicide
3 Tubers were dipped in a suspension of a readily available fungicide prior to potting in the standard low nutrient compost. Periodic watering with fungicide suspension will be given.
High nutrient + fungicide
4 Tubers were again treated with fungicide, then planted in the standard compost with nutrients added to John Innes No 2 level. Periodic treatment with fungicide suspension will be given.

5

Low nutrient, sterile
5 Tubers were chemically sterilised prior to planting in compost in which both the new standard, low nutrient mix and the old compost were sterilised by autoclaving.
High nutrient, sterile
6 As batch 5 but the sterilised new compost had fertiliser added to raise the nutrient to John Innes No 2 level after autoclaving.

All six batches were prepared on 11 October, 1991 and the pots have been arranged randomly along a stretch of staging in a light, airy, frost-free glasshouse. Watering will be the same as far as possible from pot to pot except for those pots to be treated with fungicide at set intervals and for these the fungicide application will also serve as watering.

Some thought has been given to the way in which the results will be measured and we have decided to look at new tuber production and dry weight of growth above ground. The new tubers produced by the Summer will be counted and weighed one week after watering in August. The growths from each pot will also be harvested when they die back after flowering and the dry weight measured.

At the time of writing all the plants are growing well and we look forward to the first years results with interest. Time also has a part to play in the success or failure of orchid cultivation and it is our intention to continue this experiment over several years to monitor any gradual decline in our trial plants which might not be obvious after a single year. We hope to publish the results in a future edition of the National Pleione Report and look forward to discussing any implications which they may have on our methods of cultivation.

4:ORCH-EXP

Sandra Bell, Royal Botanic Gardens, Kew, Surrey

Dr Mike Earnshaw, University of Manchester School of Biological Sciences, Department of Cell and Structural Biology, Manchester

****

WINTER FLOWERING PLEIONES

As we all know Pleiones **praecox** and **maculata** flower in October and November and then we have a gap until **P.humilis** starts to flower in late January and February. I wondered whether it would be possible to have hybrids to flower in this gap.

To this end I collected pollen from **P.praecox** and kept it in the refrigerator (not in the freezer) until the Spring flowering plants were in bloom, when I did a selection of crosses. I have never managed to get any viable pollen from **P.maculata** yet, so all my hybrids are from **praecox.** The seed was sown and grown in the usual way taking four years to produce the first flowers.

The cultivation of these Pleiones is exactly the same as all the others except that they need slightly higher temperatures in the Winter (about 40°F or 5°C) as some clones hardly have a dormant period and they are trying to flower anyway.

It is possible to find some live roots at almost any time during the Winter so repotting has to be done very carefully. This is best done very soon after the leaves drop off and the bulbs have their short dormancy period.

The hybrids that have been made so far are **P.Barcena** (P.formosana X P.praecox)

There have been three crosses made so far to produce this hybrid that have flowered. The cross made using **P.f. Avalanche** has very uniform flowers of medium lavender pink with waved and frilled lips which are stained inside with orange brown. Needs large bulbs to flower well.

The cross made using **P.f. Cairngorm** have petals and sepals of mauve pink but the lips are white and have red brown spots and blotches inside. It flowers well on smaller bulbs than the previous grex.

The last cross to flower was made between **P.f. 'Snow White'** and **P.praecox 'Everest'**. In spite of both parents being white the resulting seedlings are pale mauve pink. These flowered for the first time in November 1991 on very small bulbs about three eighths of an inch across. It is going to be interesting to see how they perform in 1992 when they are larger. Very floriferous I hope and there might even be a white one if we are lucky!

P.Lassen Peak (P. praecox X P.lagenaria). The petals and sepals are amethyst violet with the outside of the lip being slightly paler. The inside is almost white with large purple violet blotches around the edge of the slightly frilled lip. Another clone has almost no blotching on the lip. As the flowers age they get darker. They are also fragrant.

P.Sangay (P.limprichtii - pink form X P.praecox). This is the earliest Winter flowering hybrid to bloom, coming very soon after **P.praecox** in November. All clones have very pale delicate mauve pink flowers with red brown spotting on the lips. The leaves can turn a lovely autumnal colour just before they fall, as does **P.praecox** of course.

P.Tarawera (P.Versailles X P.praecox). The flowers vary from pale mauve pink to dark lavender pink with nearly all clones having heavily spotted lips. It is a very floriferous cross which will flower on very small bulbs which can be as small as $\frac{1}{2}$" in diameter. **P.Tarawera** has a longer flowering season than most crosses so far but this is because one parent is a hybrid.

P.Tsingtau (P.humilis X P.praecox). This cross was originally raised and named by Heinz Pinkepank in Germany. The very small stock that we now have in England was raised by Tony Smith in Huddersfield. Originally there were several hundred seedlings but most of these died before reaching flowering size. I have four bulbs left and Tony Smith has three. It flowered for me in November 1990. The flower is very like **P.humilis** except that it is on a better stem and is faintly scented. It is almost white with a very faint mauve flush. The lip is very frilled and marked with orange brown.

Heinz Pinkepank has produced another cross called **P.Nero Wolfe** (P.bulbocodioides X P.praecox) but I have not seen any pictures and do not know anything about it.

I have a vigorous cross which should flower in two years time. It is **P.Lassen Peak X P.praecox 'Chris Bailes'.**

Tony Smith has two crosses which should flower in the 1992/93 season. Both are good growers. They are **P.Hekla X P.Lassen Peak** and **P.Hekla X P.praecox 'Everest'**

On a less successful note Tony has just a few seedlings of **P.Erebus X P.praecox** which are terrible growers, which just goes to prove that you cannot win all the time.

Ian Butterfield, Bourne End, Bucks.

****

GROWING ORCHIDS IN NORWAY

O.K. Peter, it seems I've got no choice but to write the article for the NPR that you've 'ordered'. Yes I give in, but don't blame me for comments on cult-

-ivation which are not accepted by your public.

In short I haven't been growing orchids for very many years even if I've grown alpines from the first time I got access to a garden. I was aware of the beauty of hardy orchids from the start but didn't know if they were growable in a garden, especially choice species like **Cypripedium** and **Calypso**, which I can still remember from my childhood floras at school. An article in the NORWEGIAN GARDENING BULLETIN, dealing with the cultivation of **Cypripediums** and certain **Dactylorhizas** was the trigger to release it all and it sent me spinning off into the world of orchids.

Like most people nowadays I wasn't too fond of writing letters, used to the phone or simply shutting up like we normally do. But we got a saying in Norway that if you are naked you've got to learn how to spin. I think I learned how to 'spin' and I was lucky and found extremely generous people along the way. Lately, the fact that I know enough English to make myself understood, has had the consequence that I write too many letters each year to too many people in too many countries over the world. In addition I've started propagating orchids from seed the asymbiotic way after a method developed by a Swedish surgeon over the last fifteen years, and with due respect, this method produces more seedlings by far compared with the symbiotic method results published by the SAINSBURY CONSERVATION PROJECT at KEW. In addition any average enthusiast will be able to copy the Swedish surgeons method, using your kitchen as the only facility needed to create a laboratory of your own. The method suffices for the propagation of the species **Cypripedium, Dactylorhiza, Orchis, Coeloglossum, Leucorchis, Calypso, Ophrys, Himantoglossum, Gymnadenia, Platanthera, Nigitella** and **Pleione** with a few exceptions plus the propagation of a wide range of orchids from tropical and sub tropical areas. There is a focus on orchids of European origin from those of us who are trying out the mentioned method, in some cases an endless row of disappointments, mixed with a lot of begginers

luck. **Cephalantheras** and **Epipactis** are among the difficult species, but we've got **Cephalanthera** protocorms, so there is hoping even here.

Personally I grow most of my species in the outdoor garden, which may come as a shock to those of you who think that everything North of Glasgow is tundra and permafrost, close to where Santa keeps his red nosed reindeer. Well, I grow my **Cypripediums** here, **Epipactis** two **Cephalantheras** and several tuberous orchids. I also grow a few Mediterranean species, a few from New Zealand and 5-6 **Pleione** species imported from Asia through the Norwegian Orchid Society, a legal way of importation which will be stopped soon it seems. My Pleiones are grown in compact Sphagnum mostly, except for **P.limprichtii**, although I will try other mediums next year. Each pot gets a 1-2 inch layer of yellow pine needles at the bottom, partly for drainage, partly because they seem to thrive in cellulose material that is decaying slowly. To me an average flowering bulb is satisfactory and I forget about feeding them regularly anyhow. So far I've only added a little crushed lime to my compost in the few cases when the leaves have not developed properly as I realise my composts are a bit too acid. My Pleiones give me precious little work, they are very reliable and average rainfall here makes watering hardly necessary at all. My pots are fairly big and deep so there's a lot of room for hungry roots. When I go away for a few weeks in Summer, I place my pots in shallow trays that I fill with water. The plants receive direct sunshine until 10am and after 6pm, and I haven't been bothered by pests so far of any kind (touch wood!). The range I am cultivating is very limited as I haven't got enough room for a wider range, due to storage problems in Winter. The species that I grow are **P.limprichtii, forrestii, scopulorum, formosana, aurita** in addition to a few I haven't been able to identify so far, but **P.albiflora** is supposed to be among them. The only hybrid in my collection is **'Bucklebury'** a newcomer last year. Spring is the difficult time of the year as it is hard to get good flowering out of my plants without access to a green-

-house. **P.forrestii** doesn't seem aware of this though and it is the species I prefer in addition. My plants vary a little, only one having sepals and petals of a fine yellow colour, the others having varying hints of pink in them. One plant is rather far from reference book description, maybe a **P.forrestii** of an unusual pinkish colour. Possibly more about this next year.

When Cyps. are concerned I don't grow all that many species successfully, or I would prefer delaying triumphant reports until the moment I can see that the species in question is growing well and is firmly established. I should think that Cyps. may be subdivided into many groups as for preference of soil and environment. In my experience varieties within the **C.calceolus** group are the most tolerant as to richness of compost and they grow at a pace beyond my best expectations when I planted them. European **C.calceolus** grows extremely well in open, neutral turf, greyish clay common in calcarious areas and moist sphagnum into the bargain. A compost rich in leafmould seems to be alright, as is crumbly mineral soil of sandy type found in limestone areas. Aspect and level of moisture of the compost is however important, in many ways similar to how the common cowslip grows in the wild, so what's the fuss. I haven't tried fertilising the American **C.calceolus** yet, but I'm amazed at the way our native **C.calceolus** reacts to our most primitive fertiliser used for wheat, Hydro B. I give my group half a spoonful of such pellets twice a year, once when the stems are half way up, and once by mid August when the new pips are on their way up. The group reacts by doubling it's size for each year, and sometimes half the slippers are over-sized. A friend of mine in Oslo told me that his **C.calceolus** increased from one to thirty six pips in four years following the mentioned approach. Now I know what he was speaking about.

The main mistake we made so far is that we added too much drainage material to the medium on average, thereby killing off a few rare plants. Casualties have been reduced lately because I've started using less material that decays

rapidly and in addition much more sand has been added to create a compost that is much more close of structure. I also put some handfulls of sawdust into my composts. In my experience Cyps. especially are very fond of compost containing sawdust both because minerals are released when the dust decays and because sawdust keeps up the level of moisture in the compost. When adding that, such composts get a very good crumbly structure when the sawdust is broken down. I hope I have made my point as for why there is a sack of sawdust behind my basement door.

For any new species I now get access to I hardly give it decaying material in its compost at all unless I know what it prefers. Close composts and careful watering gives better results than open composts that you literally start 'washing' when the leaves get a brownish hue. Clones that are developing badly should be checked for brown patches on their roots in the Autumn. If there are several such brown patches, germs have attacked them because of too much decaying material - change to a compost containing minerals and non decaying material. In addition, remove the attacked roots if the plant is strong enough to stay alive without them. Germs also attack if the compost is over watered, soggy or too close, but start by removing all decaying material. I also think germs are the main reason behind bud rot in late Winter and Spring, whatever the experts say. From what I've seen fungae pave the way for an attack that is finished off by germs, and the proud bud is nothing more than a stinking lump of brown jelly. There are several formulae for avoiding such rot, the one more magic and spiritual than the other. In my opinion the basis is that we should go for composts that support orchids and not germs. I've also got one Lake Bajcal macranthum which apparently dosen't bother about homesickness. **C.debile** and **japonicum** seem to be set on staying here, whereas **C.regina** is a little reluctant still. I must also say Mr Butterfield, Sir, that your article from China and Yunnan came one year too late to save my **C.plectrochilon.** The Japan-

-ese are rather secretive about their composts you see. Other Cyps. I grow are **C.acaule, C.henryi, C.guttatum** var **yatabeanum** and **C.segawai.** More news next year.

The next species I intend to mention, should also be of interest to the readers of the N.P.R. - why not International Pleione Report, Peter? The species in question is the Fairy Orchid - **Calypso bulbosa.** It should be grown in a compost mainly consisting of fir-wood litter, the more decayed the better. The compost should be fairly close and at the same time be draining excess water freely. When in growth the compost should be soaking wet, but even so it should be watered regularly as stagnant water is dangerous for the species. It is susceptible to attacks by fungae, but if you want to avoid the use of fungicides, it must be watered regularly as water in movement suppresses the growth of fungae. This is a point which may also be well remembered when cultivating pleiones.

In Sweden **Calypso** only stops growing in Winter when the soil freezes. There this species grows uninteruptedly all through Summer in extremely wet soils, looking more or less like the blackish type heathers grow in in mountainous areas. This kind of turf lets water through rather quickly because of its mat-like structure made by all kinds of tiny roots. In other areas of the world, **Calypso** is dormant during Summer. To know whether this difference in demand for Summer dormancy is due to different genetic requirements or whether they're simply relicks from the last Ice Age, is not for me to say. I have somehow a feeling that they all may be grown in the same way, both as for being dormant in Summer and growing uninteruptedly. The main problem will be fungal attacks when the soil dries out slowly, I should think and not much else. Now I am hoping to find my plants a nice insulated and cold spot for the onslaught of Winter, to see my first flowers next Spring. If Calypsos aren't mentioned in my next report, you will understand what has happened.

This report of mine is begining to swell into proportions that are not within

the scope of the N.P.R. Even if contributions are wanted, I should think that general interest would suffer if one person alone were to fill all the pages of the report. I therefor intend to come back if wanted (God forbid) to present the range of species grown here a little more comprehensively next year. The ones interested in propagation of orchids from seed, may otherwise study Mr Roy Barrows article on the subject - N.P.R. 1990. I'll give an outline for the mediums used by me, comments on the propagation of certain species 'in vitro' and a few words about weaning and aftercare.

Mind you don't start cultivating orchids! it's a lethal hobby - meaning you will be hooked until you die. I hope they will put a Cypripedium on my grave.

Einar Myrholt, KYRKSÆTERØRA, NORWAY.

****

THE RISE AND FALL (AND RISE AGAIN) OF A PLEIONE COLLECTION

My interest in Pleiones started in 1975 after seeing their delicate illustrations in the Dictionary of Garden Plants by Roy Hay and Patrick Synge. By the end of that year I had heard of Ian Butterfield and purchased three easy varieties of **Formosana** to start a collection. These were **"Blush of Dawn", "Oriental Splendour"** and **"Snow White".**

Early in March of the following year I visited Ian's Pleione house at Bourne End just after he had won a gold medal at the R.H.S. early show. I remember the sight of his plants flowering in mass and became hooked. I took home a fat formosana with two large flowers and from these few pseudo-bulbs my collection started.

The compost was based on what was fashionable for the mid-seventies; rough

bark, peat, coarse beech leafmould, perlite, a small quantity of crushed brick and a dusting of bonemeal. My plants were grown in clay pots and kept on a windowsill as I did not have a greenhouse. After flowering and the leaves attaining a length of three inches or so the plants were put outside in a small frame in semi-shade. Throughout the growing season they were fed on Tomorite at 25% strength on alternate waterings.

This method of growing continued until 1979. Despite not having a greenhouse I could not go wrong and I justly could call my small frame an "Orchid Factory". Starting with four pseudo-bulbs, each with two shoots, the collection rapidly grew to eight - sixteen - thirty two and so on.

With the addition of bulbils which matured in two seasons there was no stopping the build-up process.

In the Summer of '79 my family moved to Chard where I purchased an aluminium, 8' X 6' lean-to. After flowering my plants were stood under the staging on gravel. The compost was basically the same except that I was able to collect fresh sphagnum moss. Needless to say the collection continued to grow and by March '83 I had 250 or so flowering plants. The greenhouse looked a picture and all the neighbours had been to look at these exquisite flowers.

This was to be my best but final year of the success story. At the end of March we moved to an old cottage with a beautiful garden and a large but poorly ventilated greenhouse. The whole collection of Pleiones were moved, mainly in flower. As the season progressed I noticed that the leaf growth was stunted. By mid-season the leaves were only half the usual size despite there being no change in the watering and feeding routine.

At the end of that fated year most of the collection had faded away.

Sorting through the old bulbs I found that virtually no root growth had taken place. Re-potting in January 1984 yielded only enough flowering size pseudo-bulbs for two small half-pots. During the Spring only a few flowers appeared;

my collection had just faded away and so did my enthusiasm.
What had gone wrong? Was it Ventilation, A virus, Contaminated compost? I'll never know but I was so disappointed that I made no attempt to start up again. Meanwhile my collection of cyclamen species was growing and became the centre of attention.
On a visit to a garden centre in January 1989 I found some packeted, Dutch grown **"Formosana"** for sale. Having searched through a dozen or so packets I found a specimen of about 40mm diameter with two fat flower buds. Within two months I had two large wishy-washy pink flowers. A year later I had two vigorous plants. At the end of 1990 I wrote to Ivor Baldwin and told him of my background with Pleiones. I purchased two **"Tolima"** from him and three un-named formosana which have subsequently produced some fine flowers and many offspring.
As I write these notes at the end of March, **"Tolima"** is in flower and the others are in bud with colour showing through. I hope that by the end of this season I will have regained my confidence with this genus and maybe purchase some more colourful varieties for 1993.

Graham Jones, Oaklands Cottage, Chard, Somerset. TA20 1HB.

****

ORCHIDS OF THE THAMES VALLEY

The Thames Valley is one of the richest areas for wild orchids in the U.K. In Berks, Bucks, and Oxon, the three main counties, no less than thirtyfive species have been recorded, of which only three no longer occur. These figures include several national rarities which still survive, but only just: it is some time since the last **Military Orchid** was picked at Uxbridge!

Most Spring flowering orchids are woodland species, taking advantage of the brighter conditions before the trees come into leaf. Almost any ancient, or at least, well-established, mixed or deciduous woodland can be expected to provide a suitable home for orchids, especially if it lies over chalk or limestone. One of the most promising places is a recently felled clearing of, say, three-six years age, which has since been left undisturbed. The extra light will have encouraged any resident orchids to flourish and flower - prior to this awakening they may have lain dormant, their presence unsuspected, for years. Woodland edges, especially where they 'taper off' through saplings, scrub, tall grasses, etc, can also be productive. The critical factor is that they should not have been poisoned by chemical sprays, had their drainage altered, or otherwise interfered with by man.

The earliest species to appear is usually the Early Purple Orchid, **Orchis mascula.** Its purplish flowers are loosely displayed on a spike 20-40cm tall arising from a basal rosette of shiny, dark green, purple-spotted leaves. This orchid typically appears at bluebell time - sometimes even growing amongst them.

A May walk through a shady beech wood, such as the steep 'hangers' of the Chilterns, may reveal two unusual orchids growing up through otherwise bare leaf litter. The Wite Helleborine **Cephalanthera damasonium** has a tall green stem with handsome oval leaves spaced alternately along its length. These diminish in size towards the top where they form bracts at the bases of the erect, cream/white tulip-shaped flowers. White Helleborines are fairly common throughout the Chilterns, where they can also be found in relatively young conifer plantations, an apparently unlikely orchid habitat.

Another denizen of shady beech woods is the honey-brown Birds Nest Orchid **Neottia nidus-avis.** This is a true saprophyte (obtaining nourishment from dead, decaying vegetation) possessing no chlorophyll and hence lacking any green

colouration. It is named from the tangled mass of roots, from which a scaly flowering spike thrusts up through the litter to a height of 30cm. The often dense head of yellow-brown flowers opens around the middle of May and remains prominent long after the flowers have shrivelled; last years spikes are often in evidence nearby. Like many orchids the last two tend to occur in localised 'colonies', without any obvious reason for their abundance in one place and absence in another, apparently identical part of the same wood.

The diminutive Fly Orchid **Ophrys insectifera** sometimes occurs in deep shade but is more frquent in open glades or at the woodland fringe. Although often quite tall, up to 50cm, the slender stems, bearing up to a dozen 1cm 'flies', are among the most difficult of plants to find, so well is it hidden amongst grasses and herbage. If you can spot it without first being shown you can truly claim to be an accomplished orchid hunter.

Intrepid searchers for fly orchids are quite likely to come upon the crystalline white flowers of the Greater Butterfly Orchid **Platanthera chlorantha.** The starry, long-spurred flowers are borne on tall open spikes which blend in well with the dappled shade which they favour. Another species, Lesser Butterfly Orchid **P.bifolia** is much less common in our area and tends to occur in denser cover.

Both butterfly orchids bear a pair of broad oval leaves just above ground level, and this is also a feature of the Common Twayblade **Listera ovata**, our commonest orchid. The slender spikes of this species reach at least 50cm in height and bear fifty or so inconspicuous greenish flowers. It may be found in almost any habitat where orchids grow, from densely shaded woodland to open fields, even wet fens.

Most 'field' orchids flower later in the year but the delightful Green Winged Orchid **Orchis morio** is a true Spring flower, often found alongside cowslips in old pastureland or hay meadows. It cannot survive ploughing, chemical poisons,

or other agricultural 'improvements', and has suffered more than most orchids from habitat destruction. This orchid is not unlike an early purple, but its leaves are unspotted and the dorsal elements of the flower combine to form a distinct hood. The typical colour is light violet-purple, with a paler, spotted throat and the characteristic green stripes on the lateral petals; but pink or white variants are not uncommon. Once one of our commonest, this orchid has disappeared from many of its former haunts, although there are still one or two meadows which, in a good year, can still produce a real purple patch of flowers.

In the moister areas of fields containing green winged orchids one can often also find the Early Marsh Orchid **Dactylorhiza incarnata**, a fleshy, hollow-stemmed orchid up to about a foot high, with relatively small narrow flowers held in a cylindrical spike. As the name suggests the flowers are typically orangey-flesh coloured with a lip pattern of scrawled wiggly lines. A purple variety is common in the Oxford area. The leaves are pale green, unspotted, the uppermost clasping the stem and often as tall as the inflorescence. Although uncommon nationally, there are still some fine colonies of this orchid around, mostly in low-lying water meadows - which flood in Winter but are more or less dry by now - as well as in true marshland or fen, sadly a fast disappearing habitat.

The Southern Marsh Orchid **D. praetermissa**, is an altogether larger plant, usually about half a meter high, with darker foliage, still unspotted, and larger flowers of purplish pink. It is found in similar places to **incarnata** but flowers later in the year, in June.

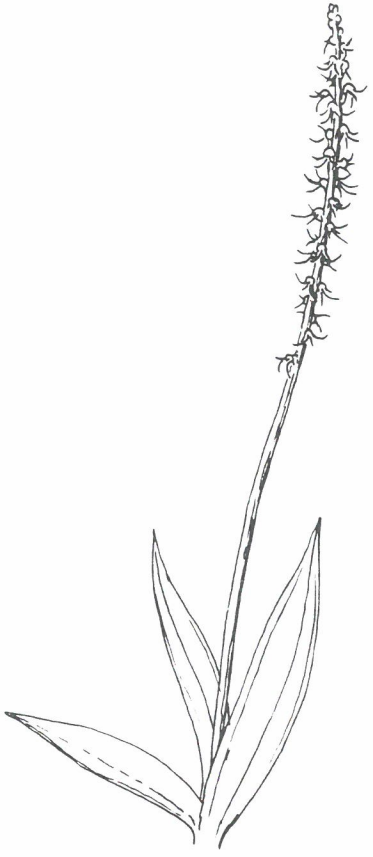
The two spotted orchids complete the genus **Dactylorhiza**. The common spot, **D. fuchsi**, is probably the most widespread orchid in the area. It has greyish, purple-spotted leaves and flowers varying from white through pink to violet or purple the three lobed lip bearing the usual dark wiggly line pattern of the

group. Its stature varies from place to place but at its best it can be 60cm tall with a 20cm inflorescence. It prefers the calcareous, or at least non-acidic soils which predominate in our area and may occur in wet, damp or bone dry habitats; grassland or scrubby areas. This wide habitat tolerance frequently results in hybrids with other species that share its abode; and very confusing they are, often producing very robust plants which generally favour the **fuchsi** parentage in looks. In the few regions of heathland or acidic-clay soils in the Thames Valley one can expect the Heath Spotted Orchid **D. maculata** ssp. **ericetorum.** Usually more delicate and fewer flowered than **fuchsi** its main feature is the wider, rounded lip, usually white or pale pink.

Moving back to the closely related genus **Orchis** we have two British rarities (although common on the continent, further South) in the Monkey Orchid **O. simia** flowering in late May, and the impressive Military Orchid **O. militaris** a little later.

Almost as elusive, partly because of its diminutive size - scarcely larger than a clover stem - and partly because of a steady decline in its numbers, is the Burnt, or Burnt-tip, Orchid, **O. ustulata.** The tiny pale pink, mannequin-like flowers, appearing in early June, are each crowned by a hood of reddish brown sepals so that, with the uppermost flowers still closed, the effect is of a small plant singed by fire. Its rarity is due to its need for short, well grazed, undisturbed turf, nearly always in downland (yet another threatened habitat) and its extraordinarily long life-cycle - it is said to take at least fourteen years from seed to flowering size! There is one unusual site where it flowers later than normal, in July; but after fourteen years developing you can't blame it for being a little late!

One of the best known, and most attractive of our orchids is the Pyramidal, **Anacamptis pyramidalis,** which starts to flower in late June and often continues right through July. The stem rises from a rosette of plain green, channel-



Musk Orchid

-led leaves and is usually about a foot high. Flowers are typically rich deep pink, very rarely white, and open from the base of a conical (hence the name) inflorescence. This is a frequent plant of grassy slopes in well drained, sunny situations, as is our next subject the Fragrant Orchid, **Gymnadenia conopsea.** This has a more open inflorescence of very long-spurred, waxy flowers not unlike the Butterfly Orchids, but the colour, varying from pink to rich purple,distinguishes it from these. White fragrants are not uncommon, though, and then reference must be made to the short trifid lip and long, channelled leaves arranged in two opposing series, for identification.

Our next two orchids are altogether less flambuoyant and conspicuos - almost 'botanical' - and share the habitat needs of the little Burnt Orchid already described. The uncommon Musk Orchid, **Herminium monorchis** has small, slender spikes, up to about 12cm tall, of tiny yellowish green flowers said to smell of honey. the curious Frog Orchid, **Coeloglossum viride,** is larger but still infuriatingly difficult to find, although it compensates by having a very long flowering period, from June to August. Its green or reddish flowers have a long notched lip and a turban-like helmet formed by the sepals and remaining petals. But try as I might I cannot make out the frog in them.

Lastly an old favourite, the Bee Orchid **Ophrys apifera.** Although startlingly bright in colour and distinctive

in shape, it can be overlooked with surprising ease. Its leaves appear in December - betraying its Mediterranean origins - forming a rosette flat against the ground. But the flower spike does not arise until June, with flowers opening one by one from late in the month well into July.

There are many splendid sites for these grassland orchids in the Thames Valley, in fact the Chilterns and Berkshire have numerous odd little corners and slopes even roadsides, which have escaped modern agriculture, where some of these orchids can be found, occasionally in abundance.

Richard Manuel, Oxford.

****

ADVENTURES AND MISADVENTURES WITH PLEIONE SEED

Our Pleione collection started about twentyfive years ago when we visited several spcialist Rhododendron nurseries looking for stock for our new large garden, and at one of them fell for the unexpected temptation of some Pleione **limprichtii** plants newly potted up for sale and in flower. More Pleiones followed, and in time we realized that our collection could only progress further by the addition of the expensive or unavailable fine selected clones resulting from modern breeding that we saw and admired at shows, and we thought about the possibility of producing our own, based on our collection of species and primary hybrids, and selecting the best clones from the seedlings.

My interest in orchids and in the challenge of raising them from seed must have started quite early in life. When I came to need a record book for my Pleione pollinations my thoughts turned as usual to what could be recycled for the job, and a rummage in the loft produced a scarcely-used ancient notebook

in which I had written down the original 'Knudson' formula about forty years ago, in an almost unrecognizable schoolgirl hand!

The first pollination was a remake of the famous yellow hybrid **Shantung**; the pollination 'took', the column descending during the following day to block access by insects or human pollinators to the heart of the flower, and over the Summer the capsule swelled, ripened and eventually split. Knowing that **Shantung** capsules were likely to have only a small number of viable seeds which we didn't want to waste if the first attempt at sowing went badly, we bought two hybrid **Promenaeas** that Spring, in flower, and pollinated these to give a good supply of seed to practise on, as **Promenaeas** set plenty of good seed and their capsules mature quickly. They looked rather nice things to raise more of if all went well,too.

The need to sow the seed was now getting ominously close and we set to to research methods and decide what equipment we needed. We sent off to Kew for a copy of the booklet on orchid seed sowing, and got some tiny flasks and a bottle of 'Meyer' medium from Orchid Sundries. This comes in several formulations designed for various popular orchid genera, Pleiones and Promenaeas not being mentioned, so selection was made by guesswork. The instructions were in German - fortunately we have a German orchid growing friend who helped out with that. Improvising a 'Clean Air Work Station' was the next problem, and I remembered a large moulded glass acid battery jar once in use for tropical fish, lurking somewhere in the loft. This, laid on its side and with a polythene curtain taped over the open end and a couple of slits cut for access, turned out to be very practical and I'm still using it - wearing a plastic apron and a bleach swabbed pair of the long vetinary disposable gloves designed for reaching far inside a calving cow. Orchid seedsowing friends I've demonstrated the outfit to first fall about laughing and then ask if I can spare a pair.

Initially, surface sterilizing the seed turned out to be quite a challenge.

Orchid seed is exceptionally fine and it's very easy to lose the lot in the attempt. One suggestion we saw for home processing was to make up tissue paper packets of the seed and to dunk these in the bleach and wetting agent solution, but I found that the paper disintegrated, and my first attempt came to a premature halt. (I've since found that this method works well with filter paper, which is much stronger, so long as the contents are wetted thoroughly in the process, which they don't if theres too much seed in.) My next effort involved cutting a small filter paper circle from a coffee filter, arranging this over a tiny flask (all sterile of course), adding a pinch of seed, and dripping the bleach and wetting agent solution onto the seed for five minutes - which seems a remarkably long time in the circumstances! This was followed by a sterile water rinse, and finally the seed was scooped off the paper with a tiny spatula - not easy as the paper surface was rough and the seed clung to it. I remember the whole affair was quite traumatic, my hands shook at all the wrong moments and my 'better half' was sent off to make up more bleach solution in the middle of the job. I'm sure that if those early sowings had been a failure I'd have been unlikely to persevere, but by a miracle we did raise both the Pleiones and the Promenaeas, and we might possibly see the first flowers of both next year.

The first sowings done in Autumn on the 'Meyer' medium progressed very slowly, and I didn't replate the seedlings (to give them more growing room and a richer medium) until the following June, by which time we'd visited the Greenaway orchid nursery. There Bob Dadd raises a wide range of orchid seedlings on his own medium, based on the fertilizer he developed for rockwool culture, and he very kindly gave me his recipes and samples of some of the ingredients. Changing from ready-made to a home-made medium meant that I now needed a chemical balance and other laboratory equipment to make it up. Fortunately a friend was able to locate an old-fashioned and long disused balance which a school was

prepared to sell, and I found, through another friend, a helpful school science department prepared to help out by including my orders for laboratory ware with its own, in the absence of a retail source. I discovered that the local wholefood shop stocks agar, and gradually the essential equipment and chemicals were acquired or improvised. I've used the Greenaway recipes ever since with very good results - for Pleiones the time from sowing to replating is now typically 8 - 10 weeks, compared with the original time of around seven months.

The incubation cabinet for the bottles of seedlings in the early stages was a 'Ward' heated propagator with an ordinary tungsten bulb suspended above to give a fourteen hour daylength, and placed so that it also received indirect daylight. Sowings had been made in the tiny Orchid Sundries flasks with kitchen foil covers finished with a clingfilm wrapping, and the flasks of medium and all the equipment for the sowings were sterilized in the kitchen pressure cooker. I replated the seedlings when the protocorms had produced shoots 2 - 3mm long, when they need much more growing room and a deeper layer of medium, so when I reached that stage screwcapped jamjars were pressed into service. Friends and neighbours now helpfully dispose of these to me instead of to the bottle bank, and babyfood jars make excellent sowing bottles.

A screwcapped bottle also makes a good dessicator for seed storage; I consulted Phil Seaton on this (he researched seed storage at Kew) and he recommended using a saturated solution of calcium chloride as a desicant, which dries the seed to about 6% water content, rather than the anhydrous calcium chloride or silica gel, which dry the seed out too much. I put split capsules in an airy place (not draughty - the seed easily blows away) on a piece of tissue paper, shake the seed out of the capsule as soon as possible, and then pack the seed in tiny tissue paper packets, drop these into the bottle, and rest upright among them a specimen tube of dampened calcium chloride covered with a scrap

of fabric held on with an elastic band. Every so often I pour off the accumulated liquid and add a bit more calcium chloride, and the bottle lives in the fridge.

My next attempt at Pleione seed propagation was with **P.praecox**, as we visited Burnham Nursery in the same Autumn that those first sowings were made, and I spotted a particularly richly coloured one. We bought it and promptly self-pollinated the flower, but disaster struck the following Spring when water dripped unnoticed, into the developing shoot from a mounted orchid hung above it. The shoot rotted away and we lost the plant, but the capsule looked plump although about five months from the normal ripening time, so I read up the procedure for green-pod sowing technique and tried that out, also using the new medium for the first time. The result was a copious and vigorous germination, and not long after I replated the tiny seedlings rather over-generously into several bottles, where they grew at a most encouraging rate. My replating tools at that time were modified stainless steel kebab skewers.

With the addition of sowing of about a couple of dozen different Pleione hybrids the following Autumn the bottle collection outgrew the propagator, so we designed and built a cabinet in the spare room with fully automated light and temperature control - anyway that was the theory; we realized when Summer arrived that in the warm weather the cabinet could overheat, and we found from experience that Pleione seedlings resent temperatures of over 30°C. We quickly installed an extractor fan, but the **P.praecox** foliage yellowed and died quite suddenly and the tiny bulbs went into dormancy - in the middle of Summer! I've realized since that they were anyway liable to go dormant then because of the unusual sowing date - early June the previous year - and they'd been growing steadily for a full year, and were naturally sensing that Winter was overdue! They came into growth again later, but now with the original bulblets and dead leaves plus the new growths in the bottles they were desperately overcrowded,

and with a much shortened growing season before they would have to be encouraged to go dormant again in time for Winter deflasking and subsequent growth in phase with normal seasons. As a result they matured into much smaller bulbs than they should and proved difficult to rear, so I've now very few seedlings left, and those still very small after a year out of flask.

I've since experimented with a second season of growth on agar medium for bulblets which finish their first year small - some species and hybrids are much less vigorous than others - and replating the bulblets very sparsely on fresh medium has been very successful. Some species, and **forrestii** and **hookeriana** particularly come to mind, have the reputation of being very difficult to rear after deflasking, and if I someday have the chance to try these from seed, I'd grow them on for a second season on fresh medium so that the bulb size when they're finally deflasked is as big as possible.

Most Pleiones grow very well on the standard Greenaway replate medium, but **P.aurita** has been an exception; on the sowing recipe the seed grminates and protocorms grow slowly but normally, but when replated on the enriched medium the shoots become distorted and the protocorms turn into minute bulbs and go dormant, instead of responding with an enthusiastic burst of growth as is usual. Experiment has shown that they prefer a much more acid medium than usual (pH 4.5-5 rather than the 5.7 I normally use) and also a low sugar concentration. If left, the dormant seedlings on standard replate medium will eventually come into growth again and can make up reasonable bulblets, and theyre probably able to do this because the pH of the medium drops with time.

Seed sowing has now, from that clumsy beginning, become a quick and easy routine using several different methods. I now have around fifty different Pleione species and hybrids at various stages from new sowings to approaching flowering, and I'm raising many orchids in other genera too, concentrating here on species rather than hybrids as a conservation project. I've been very

encouraged by what can successfully be achieved using makeshift and recycled equipment and small scale methods, and it's fun watching the progress of the seedlings from germination to established plants. The first few flowered last year - and one dendrobium species gave a fine display of flowers while still in bottles, starting less than six months from sowing! I've developed many rewarding contacts with others in the field, exchanging seed, seedlings and advice, and I also feel that I'm contributing something towards orchid conservation in a world of shrinking and despoiled habitat in the wild.

The CITES regulations, designed to prevent overcollection, have to a large extent stopped international trade in wild orchids, and as a result many orchid species once commonly grown are becoming scarce in cultivation. The Himalayan Pleione species can no longer be imported and the more difficult to grow of these have disappeared from commerce, and it's likely that supplies of the Chinese species, including the recent discoveries, will also end as CITES tightens its grip. I think it's important that Pleione species should be raised from seed to perpetuate them in cultivation with as wide a spread of genetic diversity as possible, avoiding the fate of **P.limprichtii, speciosa** and **X confusa,** where all the cultivated plants originated from a very limited number of clones surviving from the original introduction, and there is little or none of the natural variability of the species represented in cultivation.

Finally, I'd like to take this opportunity to thank the many people who've helped me with materials, equipment, advice, encouragement, pollen and seed.

Kath Fairhurst, Malvern, Worcs.

****

ORCHIS MILITARIS

At one time the military orchid flourished in Britain. It was mainly found in the Chilterns where it occured in some numbers. In 1835 Hewitt Cottrell Watson reported:

> **Middlesex** - In the chalk-pit, by the paper mill at Harefield, plentifully.
> **Berkshire** - At Streatley, between Reading and Wallingford. Chalky hills about Reading, both sides of the Thames.
> **Buckinghamshire** gets no mention, but
> **Hertfordshire** - Between Wycombe and Marlow; between Henley and Fawley; between High Wycombe and Hitchenden(!)
> **Oxfordshire** - Caversham Warren. On the hills by the Thames, near Caversham Bridge, a mile from Reading; also at Pently Hangings, Stoken Church.

There are a few records from Kent and from the Box Hill area, but one has to remember that the monkey orchid was considered by many as a sub-species and may have been recorded as **militaris.**

The decline in numbers may have been partly due to climate change, but was undoubtedly due to collecting and agriculture. Druce was scathing about collectors and throws an interesting light on agriculture by quoting a letter from a Mr. W. Pamplin, writing about the monkey orchid **Orchis simia** in 1882-

> 'This plant, as well as militaris, was tolerably plentiful about Whitchurch till 1837. About 1838 or 1839, when going over the ground in late Summer, I was grieved and horrified to see the slopes pared and burnt in order to enrich the land with ashes, so I actually witnessed

the roasting alive of both Soldier and Monkey Orchis'

It is fascinating to study plants in herbaria and the number to be found there reflects the depredation made by collectors. As a result of these factors it was virtually extinct by the start of this century and was only rediscovered in 1945.

It is difficult now to determine what conditions favoured the plant: it is frequently reported as a woodland species in The Chilterns, but that may have been a refuge habitat from agriculture? Woodland plants also stand less chance of discovery by collectors, as we shall see. In Watson's time woodland was managed and looked quite different to what we now see, but records of the type of management in the known sites have so far eluded us.

We are not helped by looking on the continent for hints. The range runs from the Pyrenees in the South to the Scandinavian islands in the North. In France and Germany it grows in dry open grassland, even on motorway verges in some profusion, whilst in Scandinavia it is found in wet ditches and on the edge of bogs. We also have photos of plants in open pine woodland, a little like the Caledonean Forest perhaps!

East to West the range covers an enormous amount of what was the USSR where one will find a wide range of habitat and climate, again no help to the British conservationist.

The Western end of our current site may be ancient woodland, but the Eastern end, where the plant grows, was not wooded until somewhere about 1800. It seems likely that at that time it was planted up, possibly with beech, for the furniture industry.

In 1945 an eminent botanist of the day, Edward Lousley, found a number of plants in a clearing in the wood. Old maps indicate the clearing may always have been there, possibly as part of an old cart track. He was so wary of collectors that he would not even tell a great friend and well known flower photographer,

Robert Atkinson, where to find them and in his book on Chalk Grassland the only photo he took himself is of the military orchid.

The secret escaped, however, and a group of botanists tracked the site down, though it took them several years. Thank goodness they did, for BBONT (the Bucks and Oxon county trust) became involved and managed to prevent the site being planted with conifers.

County Trusts are notoriously strapped for cash, and therefor manpower, and the site had resticted attention and management from 1945 to 1985. Then, with help and encouragement from English Nature (then NCC) a clearing of about one acre was created, the aim being to recreate a secondary glade where plants had been found until shaded out by the beech.

We now have a group of very enthusiastic 'BBONTers' who manage the site. Our aim is to provide as wide a range of the type of habitat that you might find in The Chilterns as we can, in a mosiac of small related areas. We have been able to fence part of the site so that we can graze it with BBONT's Beulah sheep and this has improved the diversity of the vegetation and removed some of the long coarse grasses.

The rest of the site will be fenced shortly, providing more security for the plants (collector still a potential hazard!) What cannot be grazed by the sheep has to be strimmed, although we get help from rabbit and deer. Strimming means great labour expenditure, raking and carting away the cut material.

Rabbits create a number of scrapes and bare ground, bringing chalk to the surface. Within reason this is probably a good thing for a number of plant species, a fine chalky tilth should suit germination and the bare patches suit some butterflies. However both rabbit and deer (muntjac in the main, but roe and fallow too) are hazards and will eat the plants. Muntjac, in particular, will browse, picking the tops of anything that stands up above the herbage. We protect the plants with wire 'cages' but there is conflict between putting

these on in good time and risk treading on the burgeoning smaller plants. Last year we left the hatting too late and lost five fine flower spikes!

Contrary to many other sites we do not use any form of slug control except physically removing any we see actually on the orchids!

Although our management is designed for military orchids it also favours a number of other forms of wildlife. In the Spring we have wall-to-wall violets and primroses, followed by cowslip. Thirty six species of butterfly have been recorded and to see clouds of marbled white, with burnetts and cinnabars, feeding on a mass of oxeye daisy and knapweed is a Summer sight to treasure through the Winter. In all eleven species of orchid have been recorded.

All too little is known about the requirements of most of our native orchids and, by and large, the rarer the species the less is certain. By increasing the area and diversity of potential orchid habitat and recording what grows where we hope to be able to define the species' requirements more accurately. In addition the group continue their research, seeking help from specialists in other fields, (no pun intended). We are still looking for records of woodland management and agricultural practice at previous sites and we believe that one of the universities may be able to work, if not on DNA, at least on proteins, to determine how much difference (if any) there is between The Chiltern population and populations from the continent.

We also receive help and advice from Kew. Dr. Joyce Stewart and the Sainsbury Orchid Project team have for several years tried to germinate seed from the Chiltern site, with a little success. All that has been proven is that 'our' orchid is rare and the seed difficult to germinate whereas on the continent the plant is common and the seed germinates easily. It is difficult not to make one+one into two in this case.

Kew have also tried to isolate myccorhizal fungus from a piece of root, but the only fungus that could be isolated was pathogenic and destroyed the seed!

Research in both areas continues.

The military orchid site differs from most other sites for rare orchids in that we believe we can allow a limited number of the public to visit it without endangering the plants. Orchids are fantastic ambassadors for conservation and by showing them to people we can enthuse and educate our visitors, thus justifying the time, effort and money spent on the conservation of one species on the edge of it's range.

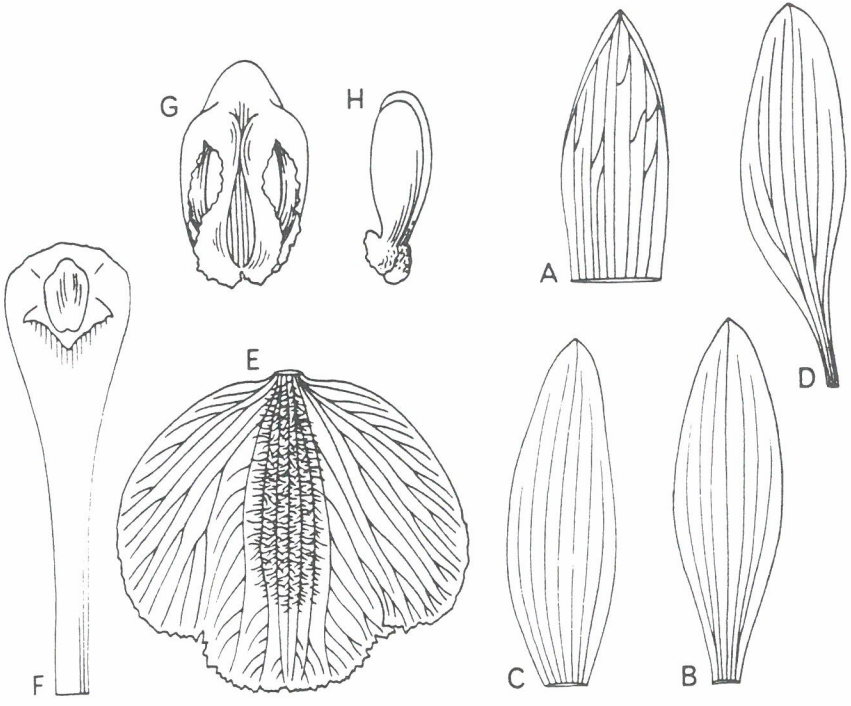
Bill Havers, Bourne End.

****

PLEIONE AURITA

This new species will certainly take its place alongside the most attractive species and hybrids in any collection.

Pleione aurita is apparently most closely allied to the widespread Himalayan and South-East Asian species **P.hookeriana**. Both are characterized by their one leafed pseudobulbs and flowers in which the lip is broader than long and bears a callus of several lines of long hairs, reaching from the base almost to the apex. It differs, however, in its very much larger pseudobulbs and overall habit and in its distinctively coloured flowers. The flowers vary from pale pink to deep bright purple and the lip has a central longitudinal yellow or orange-yellow stripe, which is dilated at the top and terminates a few millimetres from the apex. The lip is also distinctive in having an undulate margin and a notched apex, while the callus comprises four or five rows of long, yellow or rarely orange hairs on the central veins.



Pleione aurita. A, bract, × 1½; B, dorsal sepal, × 1; C, lateral sepal, × 1; D, petal, × 1½; E, lip, flattened out, × 1; F, column, × 2; G, pollinarium, × 6; H, pollinia, × 8.

Nothing is known of the habitat of this attractive species but the material sent to Kew is said to have come from Yunnan. It was received by the grower as **P.forrestii** which suggests that it might have originated in western Yunnan. Plants offered for sale by a Japanese nursery are said to have been mixed with **P.forrestii**. It seems likely, therefor, that **P.aurita** comes from western Yunnan, near the Burmese border. In this dissected country, slashed by awesome gorges, it is perhaps scarcely surprising that even a species as beautiful as **P.aurita** has been overlooked until now.

The specific epithet has been given for the distinctive attitude of the petals which resemble the ears of a rabbit or hare.

Cribb & Pfennig,* in Die Orchidee 39: 111 (1988). Type: China, Yunnan, fl. in cult. 22 March 1988, Pfennig s.n. (holotype K!)

****

FURTHER THOUGHTS ON PLEIONE SPECIES

It is one of the frustrations of life as a taxonomist that whatever is published on an orchid genus is out-of-date as soon as it appears. New records and even new species appear with amazing regularity. Indeed, publication of a revision or monograph seems to spur on others to put their own observations into print, the essence of the way knowledge is continuously refined. Since the publication of THE GENUS PLEIONE in 1988, new information on pleiones has continued to be published and I would like to comment on some of the new species and records that have been made recently.

* Extracted from Die Orchidee Volume 39

Pleione alba Li and Feng

Little is known about this spring-flowering white-flowered pleione which was described in 1984 by Li Heng and Feng Guihue based on a collection from Dayao in Yunnan. It was found growing by Feng in mixed forest at 2700-3100m. A line drawing accompanies the description. The authors compared it to **P.yunnanensis** Rolfe but it differs in inflorescence length and critical features of lip shape and ornamentation. In flower shape and structure this species is very close to **P.forrestii** which has been recorded with white as well as yellow flowers. The entire ridges of the lip callus suggest that it is not a hybrid of the P. X confusa group. Dayao, the type locality, is 60km. east of Dali, a well-known locality for **P.forrestii.**

Pleione kohlsii Braem

This beautiful pleione with purple flowers underlaid with yellow was recently described by Braem (1991) in the journal **Schlechteriana.** He compared it with **Pleione aurita** and stated that it was introduced in 1990 in a consignment of that species from Yunnan. The description is accompanied by excellent colour photographs. From these it is apparent that this plant is probably of hybrid origin with the parentage almost certainly **P.aurita** and **P.forrestii,** the latter providing the yellow "shot-silk" cast to the flower that is so typical of other hybrids involving **P.forrestii.** In other features the flower is also intermediate between the postulated parents.

Pleione pinkepankii Braem and Mohr

This new species was published by G.Braem and H.Mohr in the September/October 1989 part of the Italian orchid journal **Orchis.** The name is based on a plant flowered in cultivation by H.Pinkepank and said to have come from the Mekong

Valley in S.Yunnan, China. A drawing and coloured photographs of two flowers accompany the article. Comparison of these with the type material of **P.albiflora** Cribb and Tang suggests that **P.pinkepankii** is probably conspecific with **P.albiflora** and a later synonym. Further investigation is needed before this can be confirmed.

Pleione saxicola Tang and Wang

In the third part of the 1991 volume of The Rock Garden, the journal of the Scottish Rock Garden Club, Anne Chambers describes a strange Pleione that she photographed on a recent visit to Bhutan. The article is accompanied by an excellent photograph of flowering specimens of this orchid which she saw at an altitude of 2880m. in Tashiganag Province of E.Bhutan. The plants were unfoliate and the flowers did not open widely, were lilac-purple with slightly darker markings on the lip, and apparently had three entire low callus ridges on the lip. Most intriguing of all, the photographs were taken in October, an autumn-flowered one-leaved Pleione! David Harberd suggested to Mrs. Chambers that she had rediscovered the recently described Chinese **Pleione saxicola** described by Tang and Wang in Chen (1987) in the journal ACTA PHYTOTAXONOMICA SINICA. I must agree that these strange plants fit quite well the original description and drawing of **P.saxicola** in particular the overall flower shape and callus structure. I have not seen the type of that species and Mrs. Chambers did not press any material of the Bhutanese plants, and therefore it is not possible to be sure but it does seem possible that **P.saxicola** is more widespread than previously thought.

Meanwhile we can all gaze at the excellent photograph in The Rock Garden and wonder what other treasures are still to be discovered in the high mountains

of Asia.

REFERENCES

Braem, G. (1991). Pleione Kohlsii. Schlechteriana 2: 167-169.

Braem, G. & H.Mohr (1989). Pleione pinkepankii and Pleione pleionoides. Orchis 65/66: 121-126.

Chambers, A.M. (1991). Bhutan's autumn-flowering pleiones. The Rock Garden 88 (3) : 280-281.

Chen, S.C. (1987). New taxa of Orchidaceae from China (2). Acta Phytotaxonomica Sinica 25 (6) : 473-474.

Cribb, P. & I. Butterfield. (1988) The Genus Pleione. C. Helm.

Li, H. & G. Feng (1984). A new species of the Orchidaceae - Pleione alba. Acta Botanica Yunnanica 6 (2) : 193-194.

Dr. P.J.Cribb, Royal Botanic Gardens, Kew.

****

ROUNDUP

I have had some requests for addresses where Hardy Terrestrial Orchids may be purchased. Without looking too hard I have found plants available from a range

of growers from the glossy catalogue big grower to the one-man nursery. If you write to any of these addresses, or if you visit them always ask if they have any plants available that are not listed. I think you may find that some, especially smaller places will sometimes have limited numbers available too few to list but are prepared to sell the odd one or two. Whatever you do, buy your plants from reputable sources or exchange with other growers. Under no circumstances remove plants from the wild, it is illegal and immoral.

At this point I would like to thank all contributors to this years report for their generosity in spending time and freely giving from their knowledge. As Dr. Cribb says any additional information helps "refine" the knowledge, with this in mind let me have your contributions for the 1993 N.P.R. If you want it to continue you must put pen to paper and be equally as unselfish as those who have already contributed.

P.B.

ADDRESSES

Blackthorn Nursery, Kilmeston, Alresford, Hants. SO24 ONL

Bressingham Gardens, Diss, Norfolk. IP22 2AB

Broadleigh Gardens, 2 Bishops Hull, Taunton, Somerset. TA4 1AE

Edrom Nurseries, Coldingham, Eyemouth, Berwickshire. TD14 5TZ

Hartside Nursery Garden, Alston, Cumbria. CA9 3BL

Jaques Amand, Clamp Hill, Stanmore, Middlesex. HA7 3JS

Manavlins, Mrs. K.N. Dryden, Berries, 30 Sheering Lower Road, Sawbridgeworth, Herts. CM21 9LF

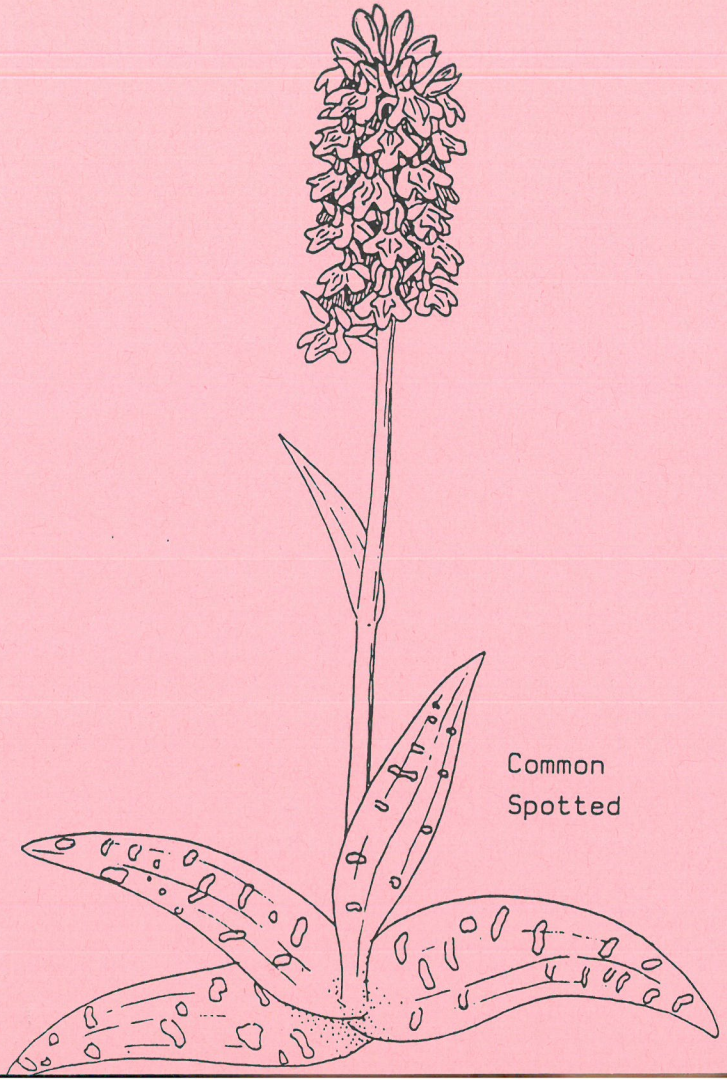
Oakdene Alpine Nursery, Scotsford Road, Broad Oak, Heathfield, East Sussex. TN21 8TU

Orchid Sundries, New Gate Farm, Scotchey Lane, Stour Provost, Gillingham, Dorset. SP8 5LT

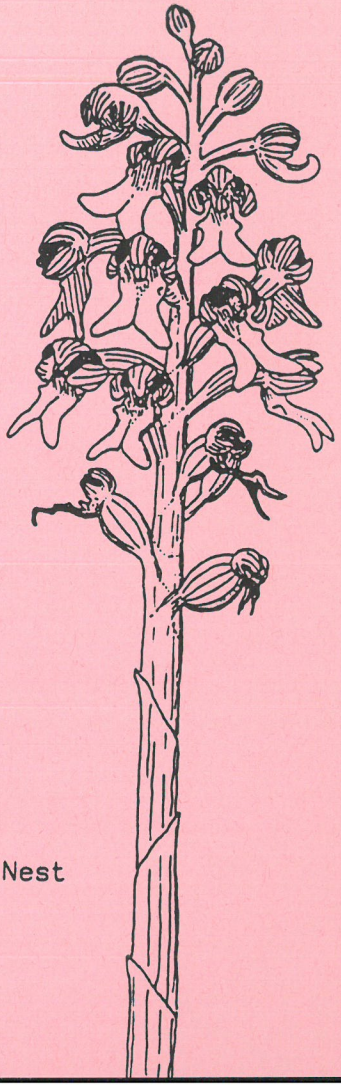
Paradise Centre, Twinstead Road, Lamarsh, Bures, Suffolk. CO8 5EX

Potterton and Martin, The Cottage Nursery, Moortown Road, Nettleton, Caister, North Lincs. LN7 6HX

Westwood Nursery, 65 Yorkland Avenue, Welling, Kent. DA16 2LE



Common
Spotted



Birds Nest