The Hardy Orchid Society Newsletter

No. 8 April 1998

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Editors and Committee notes

Richard Manuel and Carol Dash

We hope you like the new format of the Newsletter. There are still plenty of opportunities for change so if you have any suggestions or comments (positive or negative) please let us know. The forthcoming AGM is an ideal opportunity to voice any ideas so please attend. It is much more than just an AGM, as there will also be the society's annual show plus several lectures and talks - see below for further information.

Due to various minor problems in communication some of our new recruits have had delivery of their newsletters delayed. Some have called to express their disappointment in this and we quite understand their feelings. We can only apologise on behalf of all involved and hope that this will not diminish their enjoyment of our society too much. We hope to do much better for the remainder of 1998! To assist us in trying to improve our service, as well as trying to increase our knowledge of member's wants and needs, we hope to shortly be circulating a questionnaire. Please co-operate with us by filling it in and returning it promptly - it will be much easier than a self-assessment tax return, we promise!

Next meeting and AGM

Richard Manuel, Hon.Secretary

The sixth Annual General Meeting and Spring Show will take place at Pershore and Hindlip College, Pershore, on Saturday May 2nd 1998, starting at 10.30am. Attendance, as usual, is free but all refreshments must be paid for. Lunch plus morning and afternoon tea or coffee will cost £10.00 and must be paid for in advance - see the form enclosed with this newsletter, to be returned to myself. Tea and coffee can be purchased over the counter separately, if required. If you intend to come but wish to make other arrangements for lunch I would be grateful if you could let me know anyway.

Nominations are invited for officers and committee posts. This is not just a formal request, we would really like some new blood on the committee, and next year we will NEED it. A list of committee members is published at the front of the newsletter. The number in brackets following the officers names indicates the number of years they have been in office. This means that next year (1999) SIX of the committee posts will be vacated due to rule 12 (no officer may hold the same office for more than 3 consecutive years...). So PLEASE consider doing your bit to help keep the Society running and don't be frightened to talk about it with existing members, with no commitment of course!

All nominations for the committee should be recieved in writing by the Hon.Secretary a minimum of 14 days prior to the

AGM, with the names of a proposer, a seconder and of course the consent of the nominee!! In the event of no nominations for an office being received, nominations shall be accepted from the floor.

Provisional Programme

9.00 am Arrival. Coffee/Tea available 9.15-10.15. Sales Tables and Spring Show in upstairs room. Lots of informal chat. (Brief committee gathering at 9.45)

10.30 am 6th Annual General Meeting

1-2.00 pm Lunch

2.10 pm Sicilian Orchids. Richard Manuel (if the AGM finishes by 12.15 this talk will be given at that time)

2.40 pm Orchid Conservation: Factors Affecting Distribution And Abundance of Pyramidal and Fragrant orchids on Chalk grassland. Helen Scott.

3.10 - 4.00 pm A series of short talks - Cypripediums by Carl Hardwick. Weaning of seedlings from flask by Alan Dash and Adrian Blundell.

4.00 pm Tea/coffee and more informal chat.

5.00 pm End of meeting.

We have decided not to organise too many speakers for this meeting to allow more time to view the show plants and visit sales tables. The sales tables will, as usual, be available to anyone who has a lot of plants (or anything else) at a flat rate of £10.00 per table. There will also be a 'Society Table' on which members can place one or more plants for sale, on the basis of 10% of proceeds to the Society. Please make sure such plants are clearly labelled with species name, your name and price.

It's Show Time Again!

Tony Hughes

As usual, the Spring Meeting at Pershore is the time and place for our Annual Show. Last year we had an excellent display, but this year could be even better. The Schedule, which is much simpler than last year's, was distributed with the October Newsletter. You don't need to worry about pot sizes any more - if you can carry it, we can accommodate it! There is no need to enter in advance - just bring your plants along on the day. We will clear the hall for judging at 10 am, so please allow plenty of time before then to stage your entries. Who knows, you might even get your name on our magnificent trophy, awarded

for the 'Best Species'. Finally, we ask that plants are left on the show bench until the end of the meeting, so that everyone has plenty of time to appreciate them.

Alongside the Show we will again have a non-competitive Exhibition of anything orchid-related you care to bring along. It all adds to the interest of the day, and I am sure most people can think of one or two items that might amuse, entertain or educate the rest of us - please don't be modest!

Joining BOC - Autumn 1997

Richard Nicol

We have now become members of BOC which will increase publicity for the Society. The next BOC congress is in Canterbury on 3-5 April 1998. The 19th Congress which is being run by Cheshire and North Wales, is in Llandudno 17-19 September 1999. The 20th Congress is provisionally in Leeds 9-10 September 2000.

English Nature Species Recovery Project - Lady's Slipper Orchid

Alan Dash, Conservation Officer

35 members responded to the challenge of growing the excess of seedlings from Kew (plus me = 36). Best of luck to all those taking part. May your seedlings grow in vigour and health! Please remember to record your experiences - success and failure - its all useful information.

Many thanks to Kew for the release of these precious seedlings.

Sterilisation of culture media

Peter Revell

Like many in the Society who may have a laboratory background (mine was 45 years ago in Human Pathology and Brewing) I have always understood that 20 minutes at 15 pounds per square inch (psi) pressure in an autoclave or domestic pressure cooker is enough to kill all microbes and their spores. Then in December 1996 I bought "Experiments in Plant Tissue culture" by Dodds and Roberts (Dodds & Roberts 1995). This stunning book, biased towards Third World countries, revealed techniques undreamt of by me, such as micropropagation using pollen grains. It is a goldmine of ideas for the mass production of terrestrial orchids.

Dodds and Roberts agree that 20 minutes pressure cooking is adequate to sterilise glassware and metal tools (wrapped in

unwaxed kraft paper not aluminium foil!) but affirm that the effective time for liquids is volume dependant and cite the work of Burger (Burger 1988). The time required for sterility is 15 minutes at 121'C (250 F) which is attained at 15psi but it takes time for the medium to reach 121 C. Burger established minimum sterilisation times at 121 C using thermocouples and his figures are alarming. He advises minimum times per volume as follows in millilitres and minutes: 25/20, 50/25, 100/28, 250/31, 500/35, 1000/40 and 2000/48. The initial temperature of the medium is not stated by Dodds and Roberts so I assume that it was room temperature, whatever that was. Perhaps Burger's original paper is precise on this point. Taking into account the time taken for a pressure cooker to come to the boil, purge air, blow live steam and then come up to working pressure plus the slow cooling down later to prevent the medium frothing over, these times make very depressing reading indeed. Sterilising 1 litre of medium could take 1 and 1/2 hours - then you have to wash and dry the pressue cooker! Another serious disadvantage is that the ingredients of the medium, especially sucrose, are degraded by the prolonged high temperature (Ball 1953).

However, as my father used to say, there is more than one way to skin a rabbit and the obvious way may not be the best. The instructions which Dodds and Roberts give for Microwave oven sterilisation are very encouraging, although sketchy and could be a very rewarding field for further experimentation. They cite the work of Tisserat, Jones and Galletta (Tisserat et al 1992) who achieved complete sterilisation in 7.5 to 10 minutes at energy levels of 700 Watts to 490 Watts. They advise the use of bottles of water in the microwave oven to act as energy sinks to prevent the agar media boiling and frothing over so it is obviously the microwaves that kill the bugs not the temperature. The energy-sinks should be omitted to dissolve agar in the medium which takes about 8 minutes per litre at 650 watts. I suggest that 1 litre of medium in a 2 litre jug could be dissolved and sterilised in 10 minutes at 650 Watts without energy-sinks. Recent Microwave ovens have powers of 800 Watts or more so the time will be even shorter, perhaps 9 minutes or less. This is a tremendous saving of energy and time, both electrical and human, compared with the pressure cooker method. Furthermore, plastic Petri dishes don't melt in a microwave oven!

References

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Tisserat, B., Jones,D. and Galletta, P.D.(1992) Microwave sterilisation of plant tissue culture media. Hortscience. 27, 358-396
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Seedling Growth - The Rhythm Method

Flasking Forum Part 5 - Richard Manuel

It cannot be denied that growing your own orchids from seed takes a lot of initial effort in aquiring all the necessary apparatus and materials, making up media, and actually practising the techniques until you are proficient and getting results. All you have to do then is wait for things to grow. But you will only get good results if the timing is right.

It is always important to bear in mind that all our native orchids grow in tune with the seasons and that they must arrive at certain stages of their development at the right time. The majority of British orchids flower during May and June, at least in the south. This means that the seed ripens and is shed during July and August, depending on the weather. Germination probably starts in earnest around late August/September, with protocorms of many species growing to a few mm long and then going dormant for the winter whenever frosty nights become the norm. Protocorms in culture which are not given a good chilling through the winter often refuse to make new growth the following spring. Sticking them in the fridge for 4 months is the sort of treatment they expect and will thrive on. Plants requiring such treatment include virtually all Dactylorhiza, Gymnadenia, Platanthera and a few odds and ends such as Pseudorchis, Coeloglossum and others. These do not make their first proper tuber until the autumn of the year following sowing - just over a year - the protocorm functioning as a tuber during the first dormancy.

Conversely, plants of Mediterranean origin - the 'wintergreen' species - delay germination, in nature, and often in culture, until October/November because in their native habitat the summers are arid and there is no future in germinating until the onset of the autumn rains. Seeds of Ophrys (and ecologically related genera such as various Orchis, Serapias, etc) sown when shed, in May or June, will normally not germinate until this time, when the explosion of protocorms can be sudden and dramatic. So there seems little point in sowing these things in late spring, but instead to wait until autumn, especially as the medium in which they are sown will deteriorate by evaporation during the summer. These Mediterranean species start to make their first tuber in late winter and by mid spring it is fully formed, but will continue to grow as long as the plant remains green and in growth. Once the plant starts to die back from lack of water the tuber seals itself off - a vital process that would repay some detailed

physiological study, as it is important in weaning the plants out of flask - and becomes dormant until the following autumn.

In growing any orchid from seed it is vital to follow their natural rhythms. Omitting to do this was the main reason for failure in early experiments with growing most species of Cypipedium; now many of them are considered to be relatively easy orchids to grow from seed, simply because their seedling life cycles have been understood and followed. Successful orchid culture, whether of seedlings or mature plants, is largely a matter of observing how the plants grow and working out what are their requirements in nature, in terms of light, water, climate and soil.

So what of the future? We have by no means solved all the problems of growing native orchids from seed. Most people involved in this agree that the best way to grow the plants is to use a compatible fungus which will both help/coerce/force the seed to germinate, and the get the seedlings growing through to the first dormancy. Once a good fungus is found it is both easier, quicker and safer to grow the plants this way - and the medium is much cheaper to make too! Sowing and growing using an asymbiotic nutrient medium is a poor second to this method. Unfortunately we still lack reliable fungi for the Orchis militaris group (which includes such gorgeous species as O.simia, O.italica, O.purpurea, O.puntulata, and several other attractive species, plus, of course the potential for some stunning hybrids as well) and Ophrys, which will probably need 2 or even 3 different fungal clones to make a 'set' capable of growing all the species. We are close to some of these but have not yet arrived.

I hope in this series I have covered the main points of current knowledge in producing baby orchids from seed. There are still a few species that refuse to perform and there are perhaps some that we will never master. However, we must keep trying because only by learning how to maintain and breed these fragile plants in culture will we stand a chance of safeguarding many wild stocks from eventual extinction

Cultivation of Cypripediums part 3

Peter J. White

Editors note - This is the third part of Peter's series of articles on Cypripediums. With the other parts it was presented for publication in the newsletter during June 1997.

After the general description of cultivation of Cypripedium, some specie by specie recommendations will not go amiss. Although I have discussed the growing of SPECIES throughout this article, all recommendations and advice would equally apply to all hybrids as well and these would be best grown as per the mother plant.

After grateful advice from other growers of Cypripediums in the past and of purely 'trial and error', where error has perhaps been the operative word, the following accounts are by no means infallible, but at least will give grounds to a good starting point. Very few Cypripediums are lost by me these days through cultural errors, as they were a few years ago, so I must be doing something right! Any losses I find usually occur soon after purchase and the majority of these faults can be placed firmly at the feet of either the exporter or the importer or, in some cases, both.

With the exception of one or two species, all those mentioned below have been grown by me at one time or another, mostly in the UK, but not all - a few were grown whilst working in the Far East.

Cypripedium acaule — Pink Lady's Slipper

A problem plant from North America. Although reputed to be one of the first 'slipper' orchids to be grown in Britain it has never-the-less proved to be the most difficult to maintain under glasshouse conditions. Problems are usually associated with the scarcity or even lack of the mycorrhiza, but there are other reasons which may well attribute to the shortage of success with this specie in pots. The reason I say this is because the same problems do not seem to arise when Cyp. acaule is grown in the garden. The following points are certainly worth considering;

1) overwatering is usually a common shortcoming and will account for the loss of many plants - the treatment given for Cyp.cordigerum and Asian species in general will also accommodate Cyp. acaule very nicely, with some modification of the top layer;

2) requirements for a cool root system - elevated root tier temperatures may be another factor for it's decline in pots - see Cyp. arietinum for a possible remedy for this;

3) acidic conditions are a must for this species, so the pH must always be below 7.0, oak leafmould, pine duff or sphagnum moss peat may all help in this respect as will "Liquid Humus" which is discussed under Cyp. californicum.

Cypripedium arietinum — Ram's-head Lady's Slipper

In nature the flowers of Cyp. arietanum are very short lived, normally lasting only a day or two. In cultivation in a greenhouse under moderate heat they can be kept in perfect condition for up to a week (or even longer if kept cool and well shaded once in bloom). One important factor with this species is that the root system must always be kept cool. This can often be a problem if kept in pots in a greenhouse, so all

efforts must be made to protect the roots from overheating. It will help if pots are placed at the rear of the bench and protected by larger pots in front. Clay pots will also assist in this endeavour as cooling of the compost will be enhanced due to the evaporation of moisture through the sides of the pot. One drawback is that clay pots will require extra attention to the watering regime as they will dry out much quicker than plastic pots.

Another way to overcome this problem would be to sit the pots in moist coarse sand, peat, coir or other similar material. This method would not only keep the roots cool but will also help enormously to stabilise the moisture content within the pots. BUT beware - the benching will need to be very strong as the extra weight with this system can be considerable and collapse of the benching could be inevitable - with disastrous results.

Compost must always be kept moist, but with perfect drainage and good aeration. It can be peat-based but plenty of coarse grit or similar material is needed to ensure that good drainage is available at all times.

Added limestone chips and an annual top-up of lime will be appreciated so the same procedures as Cyp.calceolus will also suit this species.

Cypripedium calceolus — Eurasian Yellow Lady's Slipper

Fairly easy to accommodate and will soon make large clumps if conditions are to its liking. Well grown plants with 15 or more shoots are possible with good cultivation. Shaded or semi-shaded conditions are preferred, although early morning or late evening sun would be useful. I have grown this species in full sun throughout the day but have had die-back of the leaf tips which I attributed to this treatment, so they are now protected by 50% shading.

This species does not like peat in the compost, but has a preference for a more limey type soil, so another material has to be found that is more alkaline. Extra lime will be required for this species - limestone chips in the compost will add a limey background and additional lime will need to be added annually. This is best done by adding it to sand and/or leafmould as a topping. 20gms per litre of leafmould is perfect. Organic fertilisers such as Hoof & Horn and Fish Meal etc. can also be added to this mixture with good advantage. If this is done late in the year it will have plenty of time to break down and become available to the plants during the ensuing season.

Cypripedium californicum — Californian Lady's Slipper

A unique feature of this fairly rare species is the creation of the small yellow and white flowers from the leaf bracts. The flowers are small but this is compensated for by the 10 - 15 blooms along the stem which can be anything up to a metre in height.

Normally found in open woodland and coniferous forests, also usually close to water suggesting light shade and moist conditions suit it best. As with the last species, Cyp. californicum is quite hardy in this country and will clump up very quickly if conditions are to it's liking. More acidic conditions are preferred so the main ingredients of the compost can be peat and leafmould, with a good helping of grit to ensure adequate drainage and aeration. An annual topping of pine duff and/or oak leafmould will be appreciated. A product called "Liquid Humus" by Chempak, is very useful for this species and others that prefer an acid backdrop to their compost. It is not a fertiliser but can be mixed with fertilisers and it is said by the manufacturers to make them more available to the plant and so enhance growing conditions. Being organic in nature, it contains organic and humic acids plus trace elements. I mix this in will feeds for ALL Cypripediums and other terrestrials, making adjustments to ths pH as necessary.

Cypripedium candidum — Small White Lady's Slipper

A prairie Orchid of North America, which does enjoy plenty of sun, certainly for the early part of the growing season after which shadier conditions should be introduced to avoid possible scorching of the leaves. It does require very moist conditions at all times and particularly so during the period of growth. Peat-based compost is suitable but coarse grit or similar is a requirement as good aeration and perfect drainage is essential. Extra lime is another requirement as the pH should always be above 7.0 - the same cultural aspects as Cyp. arietinum and calceolus will suit this species very well in this respect.

As with all species in this genus the stature of the plant is somewhat controlled by the available light. Plants that receive copious amounts of light are usually smaller than those that receive much less light. It is also apparent that the amount and quality of the light has a lot of bearing on the pigmentation of the flowers. Also if light is not sufficient, flowering will not occur and the plant will eventually succumb if this situation is allowed to continue unchecked.

Cypripedium cordigerum

A problem plant - although the problems are not insurmountable, as they are mostly water related and can be overcome relatively easily. This species does dot appreciate over-damp conditions, in fact on the contrary - it prefers very light moisture during the growing period and all efforts should be made to ensure a long, cold, dry winter dormancy.

This does not imply that water should be withheld completely, on the contrary, the two-tier or zone system as described earlier in this series under "Care of Asian Species" (HOS newsletter No 7 page 15-17) would suit this species perfectly. To recap briefly - the bottom tier can be of organic origin with sufficient coarse grit for aeration and drainage, on top of this is placed the rhizome with only the roots buried into this layer, the remainder of the pot is then filled with a totally inorganic material, such as coarse grit, to ensure that the underground stems are not subjected to excessive amounts of moisture. This is particularly important during the winter dormancy when moisture around the bud must be almost nil, or bud rot may certainly be encouraged.

Pots (of clay) can be buried in the garden for the winter and covered with glass, plastic or similar to protect from winter rains. Moisture will remain in the pot and will be kept damp by being drawn in from the surrounding soil. This method will also satisfy the constant 'cold' requirement which is a must for continued success with this species. In colder climes than the South West a heavy coating of leafmould would protect against excess freezing which could result in the loss of the plant.

Because the natural habitat is the cool montane region of India it is imperative that it is kept cool and shaded during the summer months. As with Cyp. arietinum, this species will benefit from a cool root system, particularly if kept in a greenhouse where this can be difficult to achieve. If cultural conditions are to it's liking it will quickly form a large clump with many stems, perhaps to a dozen or more.

Extra lime will be required for Cyp. cordigerum. Limestone chips in both layers of the compost will add a limey background and an additional annual sprinkling of lime will be beneficial. This is best done by adding it to coarse sand or gently raking it into the top of the compost.

Cypripedium debile

A charming species of miniature proportions that is best grown in the greenhouse where it can be seen to advantage. Also it does tend to be a little bit delicate and not fully hardy. Stem rot can often be another problem with this species so perfect drainage is a definite requirement. I have found that a compost

mix of 1:1:2 of Perlite, coarse grit and beech leafmould seems to suit Cyp. debile very well.

This series of articles will be continued in the next newsletter.

Cultivation of Mediterranean Orchids

Richard Manuel

Introduction

During the past two years of HOS Newsletters a number of articles on orchid culture have appeared, covering garden orchids, Cypripediums and others. But little has been said about what I regard as the finest group of European orchids: those from the Mediterranean area - the many Ophrys and Orchis species, the weird Serapias and other smaller, but no less fascinating genera. Many of these are not, of course, limited just to the close confines of the Mediterranean Sea itself, but extend through most of southern and lowland central Europe from southern England in the north, Portugal in the south, and east to Turkey, the "Near East", and some bits of north Africa.

This is the first of a trio of articles exploring the growing of these plants, which I regard as the easiest and most rewarding type of orchids to grow. This last may surprise some, but they are in many ways similar to alpines and only require (and surely deserve) the same sort of love and attention that is bestowed by their fans on those mountain plants. Further, the true plantsperson will find something of interest throughout almost the whole year in managing and growing them; what other plants will give something to fuss over and potter around over the winter? But a holiday will be possible while they are dormant in the summer!

Apart from their fascinating shapes and often vivid colours, these are very rewarding plants to grow as they take well to pot culture and, being generally of compact size, a lot can be crowded into quite a small space. They are best grown in a well ventilated greenhouse or coldframe (for my first ten years of growing them I used a south facing windowshelf in a porch) because whilst they would probably survive in the open garden they are easily lost (i.e. mislaid) or overgrown by more vigorous plants, and our wet summers do not suit them well. Why subject such precious plants to the risks of becoming lunch for insects, molluscs or mice? I am fairly sure that most Mediterranean species are frost hardy to a reasonable degree. Don't forget that many of them come from quite high altitudes and even in the Med. there are frosts and snow in winter. Some will undoubtedly sustain leaf damage in severe frosts and one or two species are probably not hardy - Orchis sancta springs

to mind because in only grows at low altitudes in the warmer eastern end of the Med. But anyway, why risk it? The minimal protection afforded by an unheated glasshouse or frame is quite adequate. I have to admit that I keep my greenhouse just frost free because I want to keep growth going throughout the whole winter, and the heating equipment is already installed in the greenhouse due to its former incarnation as a tropical orchid house.

These Mediterranean orchids nearly all follow a similar growth cycle. The tuber is dormant during the summer and early autumn, although at the latter time a growth bud slowly forms at the apex. Some time in October or November - occasionally as early as September or later than November - growth starts, probably triggered by the colder nights and perhaps, in nature, by the autumn rains (remember the summers are dry in the Med.). The shoot elongates and soon a rosette of leaves is formed on the surface. Simultaneously the roots appear from the base of the shoot, just above the tuber, and grow rapidly, though not necessarily to a great length. Once formed, the rosette slows its growth during the colder times of December to February. Not all growth is slowed. This is the time that the new tuber begins to form at the tip of a long, thicker, vertical root called a dropper or tuber-root. At the centre of the rosette a small conical sheath is formed from a new leaf shoot which guards the developing flower spike. When its time comes the spike starts growing rapidly and the leaves expand to their fullest extent - this usually co-incides with the increase in temperature of early spring. Then eventually the glorious time comes when the first flowers unfold, sparkling and glowing in the welcome spring sunshine, the best time of year. During or after flowering the leaves start to yellow and wither - a signal to cease watering - and gradually the plant goes to sleep for the summer, leaving only the dry leaves and spike to betray the dormant tuber safe underground.

The next articles will deal with composts and management of the plants.

An Australian Journey in search of Orchids

Richard Laurence

Editors note: This account of Richards visit to Australia was initially presented at the Autumn HOS meeting, at Pershore, where it was supported by some superb slides.
The line drawings are by Carol Dash - adapted from "Native Orchids of Australia" by David L. Jones.

My own explorations for orchids which started in 1980 were, until September 1996 restricted entirely to the British Isles. After contributing an article about our own orchids to an

Australian orchid magazine in 1994, I expressed to my contact over there an interest in their own orchids. Following on from this I was advised to visit the country in 1996 as the Third Australasian Native Orchid Conference was being staged in Adelaide in September of that year. The following article is an account of the trip which subsequently came about.

My interest in the Australian orchids began some years ago principally because of being curious at what might be growing on the other side of the world. The lack of literature in this country at this time only increased the intrigue. In the intervening years many excellent publications have become available and anyone interested in the terrestrial species is now well catered for with some first class books covering Western Australia, South Australia, Victoria and New South Wales.

Although Australia is not so orchid rich as the tropical countries to the north, it nevertheless can boast anything between 600 to 900 species, depending on which source of information you are looking at. The terrestrial species are restricted largely to the south and in particular the south-western corner is very rich with over 300 species. Roughly three quarters of the Australian orchids are terrestrial, the remainder being epiphytic. The epiphytes are largely restricted to the east where they do in fact populate the whole length of the country from Cape York to Tasmania. In Western Australia for instance there are only 2 species of epiphyte.

A few years ago I obtained the 2nd edition of "Orchids of South West Australia" by Noel Hoffman and Andrew Brown, an excellent book with superb photographs of nearly every species and this proved invaluable in identifying some of the orchids. The idea of the trip to Australia was to spend a fortnight in the West and then a fortnight in South Australia. I went with my sister and the whole trip had a combination of purposes, which were sightseeing, attending the Orchid Conference and for myself to see a few of the native orchids.

The flight to Australia is a long haul but we did not find it at all daunting. The time passes by inexorably and after a change at Singapore we landed at Perth some 20 hours after leaving Heathrow. The priority then was to get a good nights sleep. The following day was spent in some local exploration. The hotel in Perth where we were staying was near Kings Park. This is a delightful combination of botanic gardens and areas of natural vegetation. In the natural vegetation you do not have to walk very far before finding orchids and the first one I saw in Australia was Caladenia flava, the Cowslip Orchid, a beautiful yellow flower with contrasting red markings to a greater or lesser degree on the dorsal sepal. This one was to crop up many times in Western Australia where it is endemic. It tends to be clump-forming and to see a large clump is a sight not to be missed by any orchid enthusiast. Invariably, where I

saw C.flava it was growing in sand and I wondered how it could thrive in such an environment. The answer I was told by the local experts was that the roots can go down 18 inches into the ground which is rather amazing when you see what little is above ground.

Caladenia flava

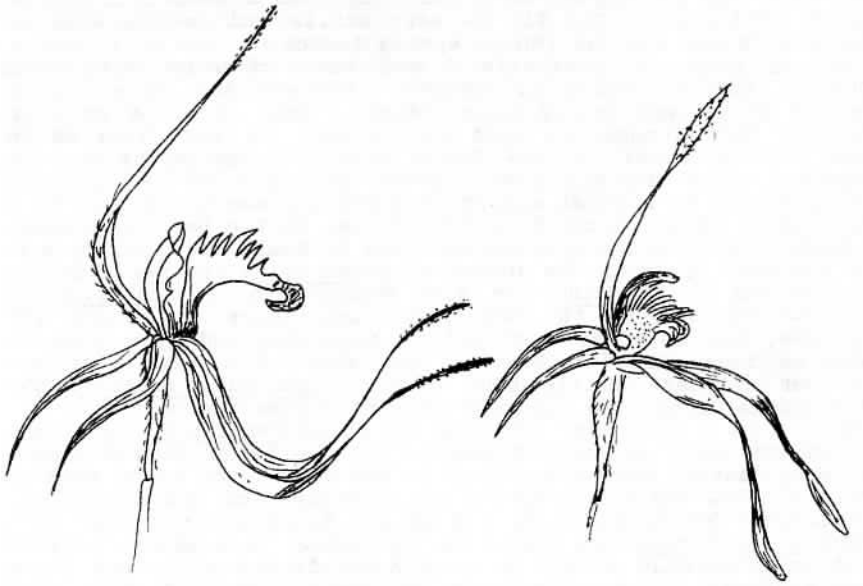
The next one found was Caladenia pectinata, the King Spider Orchid. The Caladenias are known as the Spider orchids, and there are approximately 160 species, most of them endemic to Australia. The majority of them do take on a very spidery appearance. C. pectinata is no exception to this. It is variable in colour, the specimens that I saw were suffused with a light red.

The next orchid I saw in Kings Park was Caladenia latifolia, the Pink Fairies. In structure this is not unlike the Cowslip Orchid and they do hybridise, resulting in some very attractive colour forms.

Another orchid seen here was Diuris corymbosa, the Common Donkey Orchid. There are about 50 species of Diuris, all except one being found only in Australia. The name Diuris, meaning double tail, refers to the lateral sepals which hang below the flower. They are, however, more commonly known as Donkey orchids because of the large ear like petals. Most of them are a basic yellow colour with red brown or purple markings. Although they have no scent or nectar they are thought to attract pollinating insects by the shape of the flower, the central section of the Diuris flower resembling a pea flower and these do contain nectar.

We hired a car and drove to the extreme south of Western Australia at Albany, a journey of 255 miles. We stopped at various places to look for orchids. The first stop was at a scrubby area with a thinly spread tree canopy. There were some Donkey Orchids and some of the delicate little blue Cyanicula serices, the Silky Blue Orchid. Whilst looking for orchids one cannot help notice the many different types of pea flowered plants, some with beautiful colour combinations - scarlet crimson and yellow in one instance.

Further down the Albany Highway at our lunch stop, I had another foray into the bush and found more of the Cowslip Orchids and a different type of Spider Orchid - Caladenia falcata, the Fringed Mantis Orchid, with upturned sepals rather than pendant ones.



Caladenia falcata

Caladenia pectinata

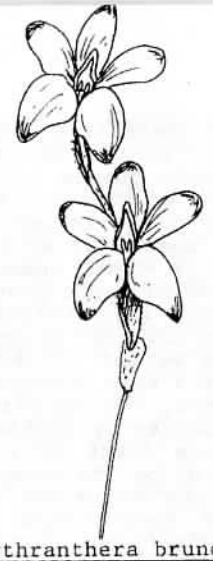
After spending a night in Albany we set out the next day for the Stirling Range, a small mountain range to the north of Albany. Although the peaks are not very high (3600 feet), the whole range is quite impressive as it rises sharply from the surrounding flat landscape and the higher peaks are the only part of Western Australia which can have a light snow covering, although this does not last very long. As well as finding some of the previously mentioned orchids, one new little beauty here was Caladenia hirta, the Sugar Candy Orchid, an overall white colour with rows of pink calli on the lips and brown tips to the sepals and petals.

The return journey from Albany to Perth was by a more roundabout route, sticking to the coast and staying overnight at Pemberton and Busselton. The journey from Albany to Pemberton takes you through the giant karri forests. The karri is a type of Eucalyptus which can grow up to a height of 280 feet and is confined to a relatively small area of the south west which has a higher rainfall. There are over 500 different types of Eucalyptus in Australia.

Many orchid sites were probably missed along the way but there was not enough time to keep stopping. Near Busselton I was looking around in a scrubby area and was almost ready to give up, when my eyes fell upon a most beautiful Spider orchid - Caladenia rhomboidiformis, the Diamond Spider Orchid. The basic colour is a light green with broad red stripes down the sepals. The wide lip is adorned with calli and has a beautiful maroon patch on the end. The lip is very mobile and in the wind it bounces up and down as though spring loaded.

Before going to Australia I had been in touch with Noel Clarke, the Secretary of WANOSCG (Western Australia Native Orchid Study and Conservation Group). Upon arriving back in Perth I had arranged to meet him so that he could take me to some orchid sites in the Perth area. We had trips on two separate days and there were great benefits to me in being shown around by a local expert. The species started coming in a lot faster than I could have found them. In the Darling Ranges, a long line of hills stretching north to south and passing just to the east of Perth, he showed me Pterostylis recurva, the Jug Orchid and P. barbata, the Bird Orchid. The Pterostylis are generally known as the Greenhoods and there are about 120 species, the majority confined to Australia and more than 40 species found only in Western Australia. Also seen here was another delicate little blue orchid, Cyanicula gemmata, the Blue China Orchid. We also saw some more Donkey orchids.

Moving to a different location we found Pyrorchis nigricans, Elephants Ears, so called because of the large fleshy ground hugging leaves. Very often that is the only thing to be seen of this orchid. Whether a flower spike emerges or not is largely influenced by fire and in the spring following a summer bush fire P. nigricans can flower in profusion. This aspect of fire induced flowering occurs in many Australian orchids and there are accounts of many thousands of plants appearing after bush fires, although I never saw this myself.



Elythranthera brunonis

Leaving the Darling Ranges and going to the lower ground to the south of Perth, Noel took me to another scrubby looking area and here we saw the beautiful Elythranthera brunonis, the Purple Enamel Orchid, one of a genus of only 2 species and endemic to Western Australia. The petals and sepals exhibiting a marked glistening effect. Also seen here were Drakaea glyptodon, King-in-his-carriage, one of the bizarre Hammer Orchids of which there are 9 species all endemic to Western Australia. Leptoceras menziesii, the Rabbit Orchid, a monotypic genus with its 2 thin erect petals and Caladenia huegellii, the Grand Spider Orchid were also found here.

On the second day with Noel we went much further to the east of Perth along the Brookton Highway and off onto dirt roads. On many of these dirt roads in Australia very good progress can be made as the surface is generally quite good, but the one we went along deteriorated very badly and required great care to get to our destination, many miles from the sealed road. It was a beautiful day but very windy. Some of the orchids seen in the clearings amongst the trees were Caladenia varians subsp varians, the Common Spider Orchid; C. longicauda subsp eminens, the Stark White Spider Orchid; C. longiclavata the Clubbed Spider Orchid; C. discoidea the Dancing Spider Orchid; Thelymitra antennifera the Lemon Scented Sun Orchid and T. villosa the Custard Orchid. The Thelymitras are known as the Sun Orchids as most of them only open in bright warm weather. There are more than 50 species, most of them endemic to Australia. Many of them are that most uncommon colour amongst orchids accurring as various shades of blue. Others of the genus however range through quite a wide spectrum of colours, being of various shades of red, pink, yellow and white. There is even one of a metallic grey colour in South Australia and further east. To finish off at this site we saw Caladenia macrostylis the Leaping Spider Orchid, whose lip is heavily adorned with blackish beadlike calli, and C. falcata, the Fringed Mantis Orchid.

The next part of our Australian travels entailed a journey by train from Perth to Adelaide, a distance of 1700 miles involving spending two nights on the train. The early part of the journey is spent climbing out of Perth through the green hills of the Avon valley and eventually coming out on to the wide open landscape of The Wheatbelt. After travelling for more than 370 miles we arrived at Kalgoorlie in The Goldfields at 11.00 pm. The train stopped here briefly and then continued on through the night. We awoke to a brilliant sunny morning and

found ourselves travelling across the featureless Nullarbor Plain. It was not entirely devoid of vegetation, as there were low salt bushes dotted about the landscape. Apparently about 6 inches of rain falls here annually. Crossing the Nullarbor took us onto the longest stretch of straight railway in the world, just under 300 miles long. Later in the morning we stopped at Cook, a small community on the Nullarbor, which services the trains on their journeys across Australia. I looked around here in this barren landscape and managed to find some attractive white flowered Mesembryanthemums. After the second night on the train we got up early to prepare for our arrival at Adelaide. It is a well planned city with the central area built on a grid pattern, having very wide streets and the whole central area surrounded by parklands and the Botanic Gardens. In the Botanic Gardens there is an avenue with many bromeliads and orchids growing on the trees.

On the day after our arrival we went to the opening of The Third Australasian Native Orchid Conference at the Flinders University and it was fascinating to see a huge variety of both terrestrial and epiphytic orchids. To encourage the Thelymitras to open, they were mounted in light boxes, but this was only partially succesful.

During the conference two field trips had been arranged. The first one was to the Belair National Park just outside the city in the Adelaide Hills. Here we saw Glossodia major, the Large Waxlip Orchid. This occurred abundantly, the colour varying from a blueish to a pinkish purple and there was even a white one present. Glossodia is a small genus of only two species and is related to Caladenia. Also seen was a large stand of Diuris corymbosa and some Pterostylis.

The second field trip at the end of the conference travelled further, to the south of Adelaide to the Onkaparinga Nature Reserve. Unfortunately it was accompanied by the worst weather we experienced in Australia as it rained all day. Somebody on the coach said to us that we shouldn't complain as it must be like English weather! However, the effect of all the rain was to make the Adelaide Hills all green and we were told that we were lucky to see them like this. There were orchids to be seen but photography was out of the question. Glossodia major was frequent. We also found Diuris corymbosa; Caladenia tentaculata, the Green-Comb Spider Orchid; Caladenia leptochila, the Narrow Lipped Spider Orchid and some Thelymitras. These, of course, would not open, which was a pity as there were some nice spikes of T. rubra present. Returning here two days later in a hire car it was still dull so we had to give up on seeing the Thelymitras open.

The final part of our Australian tour was a trip from Adelaide to the Flinders Ranges, a mountain chain starting north of Adelaide and stretching up into the dry interior of South Australia. Our destination was Wilpena Pound, a notable geological feature some 280 miles north of Adelaide. The journey started amongst the green surroundings of Adelaide but it was noticeable how, the further north we progressed, the more arid the landscape became. Also noticeable was the

complete lack of traffic. The trip was more sightseeing than orchid orientated, but nevertheless I did keep an eye open when the opportunity arose.

Wilpena Pound is a natural rock amphitheatre roughly oval in shape, about 11 miles long by 5 miles wide and it contains St. Mary Peak, which at just over 3,800 feet is the highest point in The Flinders. The outside walls are steep and rugged but the inside slopes gently into the interior which has a flat floor. On the first morning here we walked through The Gap, the only easy way into The Pound throughout its whole circumference. On the way in we noticed two blue flower spikes which turned out to be Thelymitra nuda, th Scented Sun Orchid and although it was a bright warm day the flowers were not fully open. In the interior of The Pound I did notice some very small Prasophyllums, Leek Orchids, but could not identify the species. This genus is remarkable for the contrasting statures of the plants, some being only a few inches high and one rising to more than six feet.

One abiding memory of The Flinders was the sight of seeing whole hillsides covered blue with Salvation Jane, Echium plantagineum, a relative of our own Vipers Bugloss.

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Letters

With reference to Peter White's article in the January 1998 Newsletter. Kath Fairhurst pointed out that Agar purchased from a health food shop would need to be made at a minimum strength of 5g/l (or 8g/l for seed germination) rather than the 4g/l mentioned in the article (page 11) and wonders if PJW is referring to Sigmas High Strength Agar? or perhaps to Phytogel?

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From the editor : will someone please give me a definition of "mesic"??

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From Bill Temple:

In these days of the Internet, perhaps members could pass on to other members of the society the addresses of Orchid websites via the Newsletter. To start the ball rolling I have listed a few that I know about -

http://www.uni-goettingen.de/FB/Bio/BotGarten/AHO Site of the AHO plus links.
http://perso.wanadoo.fr/pm.blais/ Orchids of Provence with photos and distribution maps
http://wwwperso.hol.fr/-orchid/ Orchids of France and Europe (replacing the above and a particularly good site)
http://www.rbg.kew.org.uk/herbarium/orchid/ Kew Orchid Review
http://www.rbg.kew.org.uk/ksheets/sainsbury2.html The Sainsbury Conservation Project
http://www.beyond.fr/flora/indexf.html The Orchids "beyond

the Riviera"
http://www.unimo.it/ortobot/START.HTM Details of Orchids in the Mediterranean Region
http://astripi.difi.unipi.it/Orchids/ Orchids in Italy
http://www.orchidmall.com/ Lots of links mainly for epiphytes and cyps.
http://www.cuci.nl/rbi/orchids/index.html Site in Holland plus links.
http://www.netsys.it/orchidee Orchids in Italy
http://rareplants.co.uk/ Paul Christian - Rare Plants
http://www.gardenweb.com/forums/orchids/ Garden Forum-Orchids
http://www.botana.com/seedbank.html Seedbank including orchid seed
http:www.biol.ucl.ac.be/cgi-bin/sibw.plantes2.pl Orchids in Belgium & Luxembourg
http://www.univ-lille1.fr/orchid/mnu_html.fr/ Orchids in France
http://www.uj.edu.pl/B/CRONPOL/list.html Orchids of Poland
www.pollinia.com Pollinia!

The following are NOT worth visiting:-

http://www.orchidee.com nothing to do with orchids - a suburb of Troyes

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All contributions (preferably typed) for the newsletter should be sent to the Newsletter secretary at the address printed at the front of the newsletter by the 1st of the month prior to the publication month. The newsletter is published quarterly in January, April, July and October.
Any drawings or illustrations for the newsletter would also be appreciated - though we have not yet progressed to colour I am afraid so line drawings are most applicable. Please note that articles and letters may be shortened for publication and that views expressed in this newsletter do not necessarily reflect the views of the Hardy Orchid Society.

Back copies of the Newsletter can be purchased from the Newsletter secretary for £2.50 per issue or £8.00 for 4 issues, cheques should be made payable to the Hardy Orchid Society. An index for back issues will be published in the next Newsletter.

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Full page (7"x10"approx)	£12.50	£37.50

Please send a cheque (made payable to the Hardy Orchid Society) with the advert to the Newsletter secretary indicating the size and format required.

Orchids of Cyprus

by Gisela & Karlheinz Morschek

This book is a pocket sized bilingual book of 189 pages with 108 colour illustrations, recently published in Germany. It received a very favourable review in the September/October 1997 edition of The Orchid Review. Opposite a photograph of each orchid is a German text alongside an English translation. There is also a full bilingual introduction to the island's geology, soil conditions and orchid habitats. The book (14.8 x 21cm) has "a photograph of every orchid known to grow on the island" and in nearly every case these occupy a full page.
Copies of the book can be obtained from the translator Mr D. Mahen, 23 Gores Lane, Freshfield, Formby, Merseyside, L37 3NT Tel. 01704 873962. The price is £13.99 + £1.50 p&p. This will be of use to anyone hoping to visit the island in Spring 1998.

GROWING MEDIA AND OTHER PRODUCTS FOR ORCHIDS

PUMICE, HORTIFIBRE, HUMATE, VIRESCO, CARBO-AID, LIQUID CALCIUM AND LAPONITE

Pumice - Pumice is available in various grades including powder, 1-2mm, 2-3mm, 3-5mm, 5-10mm, 10-15mm and larger. This lava rock has been used for growing orchids over many years. Recently, discussion has taken place about composts for cypripedium growing for which pumice has been recommended - see "The Genus Cypripedium" by Phillip Cribb.

Hortifibre - Hortifibre is a sterile fibrous growing medium made from pinewood.

Humate, containing humic acid, is a root growth enhancer in liquid and granular form. Used sparingly, Humate gives better nutrient uptake, more massive roots, improved soil structure, healthier more stress resistant plants, better moisture retention and reduced fertilising.

Viresco - The Viresco products contain micro-organisms along with various support materials for the micro-orgamisms. Viresco suppresses diseases and makes plants grow more healthy. Leaf colour moves more to the blue end of green, causing leaf pests to disappear. Viresco contains no mycorrhizal (symbiotic) fungi but increases in number those that are naturally present.

Carbo-Aid - Carbo-Aid is a new product in our range and should be available by the end of March 1998. It a carbohydrate based microbial food supplement containing complex natural sugars, proteins, kelp and Humate. It is primarily aimed at the golf club market but may have a place in the symbiotic culture of hardy orchid seedlings.

Liquid Calcium - Liquid Calcium is a fully organically chelated calcium compound. It is an 8% calcium trihydroxyglutarate. Research evidence has show that leaf tip burn in orchids and other plants can be caused by a deficiency of calcium. Our liquid calcium can be applied as a foliar or to soils where relevant.

Laponite - Laponite is mineral gel which can be used as an alternative to agar.

Send s.a.e for mail order list of growing media and other products. Collections can be made with prior notice.

John McLauchlan Horticulture (Dept Q) 50a Market Place Thirsk Nth Yorks YO7 1LH
Tel: 01845 525585 Fax: 01845 523133