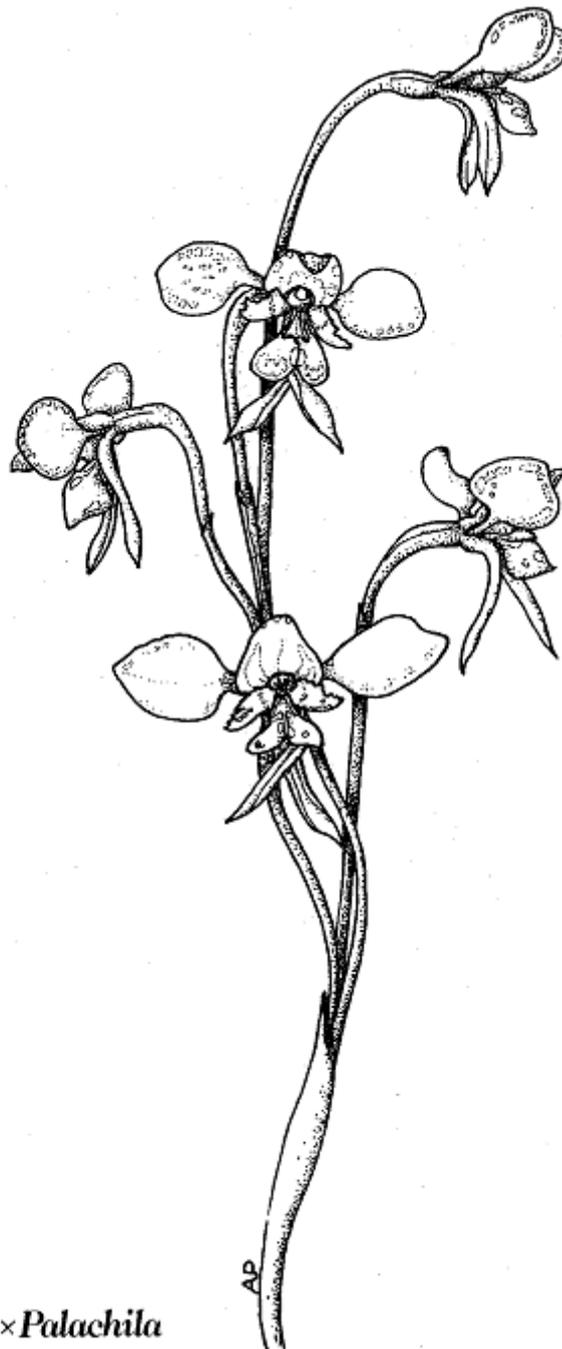
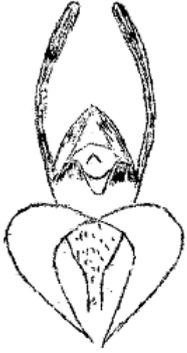


NATIVE ORCHID  
SOCIETY  
of  
SOUTH AUSTRALIA



*Diuris x Palachila*



NATIVE ORCHID SOCIETY OF SOUTH AUSTRALIA

JOURNAL

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PATRON:  
Mr T.R.N. Lothian

PRESIDENT:  
Mr G.J. Nieuwenhoven  
15 Robin Terrace  
HOPE VALLEY  
S.A. 5090  
Telephone 264 5825

SECRETARY:  
Mr E.R. Hargreaves  
1 Halmon Avenue  
EVERARD PARK  
SA 5035  
Telephone 293 2471  
297 3724

VICE-PRESIDENT:  
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NEXT MEETING

When: Tuesday, 23 August, 8.00 p.m.

Where: St. Matthews Hall, Bridge Street,  
Kensington.

Subject: This evening will be in the form of a slide show with taped commentary on native ferns compiled by Harold Goldsack. Harold has been growing ferns as long and as well as native orchids and I am sure will be showing us how to grow them to perfection.

NEW MEMBERS

These new members joined us last month. We hope their stay with us will be a long and happy one:

Mr M.R. Beckmann  
Mrs W. Rowley  
Mr B.A. Shields  
Dr J. Warcup

COMING FIELD TRIPS

Hahndorf - Mt Barker

Saturday, August 20.

Meet at the Strawberry Farm at the eastern (Mt Barker) end of Hahndorf's main street at 1.30. First stop - "Church Reserve" then on to Mt Barker Summit.

Belair Recreation Park  
Saturday, September 17.

Meet outside Woods and Forest Department Plant Nursery at 2.00 p.m. This trip is to see *Diuris* and *Pterostylis* hybrids.

## LAST MEETING

We were not disappointed last meeting when Ron Heberle from Western Australia spoke on the History of South Western Australia's Terrestrial Orchidaceae. His well researched commentary and some of the best orchid slides we have seen convinced us what a great love and knowledge this man has for his native state and the orchids that grow in it. He went through most of the botanists, explained about them and the orchids they discovered - in short, he is a wonderful guest and speaker who would be welcome to entertain us again should he pass our way in the future. Thank you Ron.

P.S. Ron has written a series of short articles on the above botanists which we will be publishing month by month. The first one appears on page 63.

## ON THE BENCH

The epiphytes were dominated by a huge *Dendrobium teretifolium* and a plant new to most of us in *D. atro-violaceum* from New Guinea with its most unusual olive and maroon bell-like flowers. Ron Robjohns told us how this species had been plundered from the jungles in thousands last century with most dying in the glasshouses of the rich in Europe.

The terrestrials showed more variations with the patriotic *Caladenias* on display in colours of red, white and blue. The red was provided by a mass of *C. reptans* from Western Australia, the white by *C. alba* from the east, and the blue by two large pots of *C. deformis* from South Australia.

The commentaries were given by Ron Robjohns (epiphytes) and George Nieuwenhoven (terrestrials) this month and by Bob Markwick and Jim Simmons last month.

Popular votes went to *D. atro-violaceum* grown by Reg Shooter and *C. alba* by Sharon Bates.

## Plants Benched

## Epiphytes:

<i>Dendrobium x grimesii</i>	<i>D. atro-violaceum</i>
<i>D. aemulum</i>	<i>D. "Ellen"</i>
<i>D. "Bardo Rose"</i>	<i>D. teretifolium</i>
<i>D. "Hilda Poxon"</i>	

## Terrestrials:

<i>Acianthus reniformis</i>	<i>Diuris palustris</i> (2)
<i>Caladenia alba</i> (2)	<i>Pterostylis concinna</i>
<i>C. deformis</i> (3, blue and white)	<i>Pt. curta</i>
<i>C. filamentosa</i>	<i>Pt. nana</i> (Victoria Desert)
(red, South Australia)	<i>Pt. longifolia</i>
<i>C. praecox</i>	<i>Pt. plumosa</i>
(a species with small white	<i>Pt. recurva</i>
flowers from Victoria which	<i>Pt. vittata</i>
was new to all present)	<i>Pt. x ingens</i>
<i>C. reptans</i>	<i>Pt. unnamed</i> affin <i>scabra</i>
<i>Corybas diemenicus</i>	<i>Pt. mutica</i>
<i>C. dilatatus</i>	

## Introduction

South Western Australia's botanical history was a saga of extraordinary endeavour where the first settlers, although mainly involved in the day to day survival, still found time to explore and collect the strange and different flora, ranging over hundreds of miles, north and south, into what was then a harsh and most inhospitable land.

It was largely from the efforts of these early settlers and visitors that the currently accepted nearly 8000 species of flora were collected, recorded and sent to English and European botanists.

With the spectacular progress of the State during the past 150 years, when agriculture, industry and population increase has put much of the flora under threat, it is appropriate to look back on the dedicated interest of our early inhabitants, to recognise and admire their contributions and to pay homage to these very few people "who paved the way forward",

R. Heberle  
Albany  
W.A.

## ARCHIBALD MENZIES, 1754-1842

## Surgeon and Naturalist - Vancouver Exhibition, 1791

George Vancouver discovered King Georges Sound on the way to North America in September 1791. Archibald Menzies was appointed to the expedition by Sir Joseph Banks on a salary of £80 per year to study the climate, report on soil fertility, to collect samples of seeds, plants and shrubs and to put the earth and rocks to his microscope. He made extensive collections of plants during the fortnight in September whilst the expedition remained. Most of these were lost before Vancouver returned to England four years later. Three orchids survived and were named by Robert Brown in *Prodromus* 1810. These were:

*Caladenia menziesii*

R. Brown 1810 *Prodromus* x Menzies K.G. Sound 1791

*Caladenia flava*

R. Brown 1810 *Prodromus* x Menzies K.G. Sound 1791

*Diuris longifolia*

R. Brown 1810 *Prodromus* x Menzies K.G. Sound 1791

As approximately 30 terrestrials flower in September around King Georges Sound, it can only be assumed that, if collected, these were among the lost specimens.

## References:

Nuytsia Bulletin of W.A. Herbarium, Vol 1, No 2, 1971: A Checklist of the Orchidaceae of W.A., A.S. George.

The Journals of the W.A. Historical Society.

University of W.A. Press 1978, W.A. Plant Names and their Meanings, a Glossary - F.A. Sharr.

Orchids of the West, Rica Erickson.

## Australasian Native Orchids - Competitive Section

To be staged on trestles in the hall separated from the rest of the orchid exhibits. All plants to be benched by 10.30 a.m. on Saturday, 17 September. Plants in displays also eligible but must be nominated by placing paper streamer around the plant as supplied.

Name of grower to be written on a small piece of paper to be placed under each exhibit. Correct name of plant to be written by exhibitor on label attached to exhibit.

Judging will take place between 10.30 a.m. and noon on Saturday 17th. Plants must have been grown by the exhibitor for at least six months before the show, A.O.C. judging standards will be used. NOSSA By-Laws will apply. Hybrids include natural hybrids.

Any applications for NOSSA awards will be judged by the Committee. No prize money will be awarded but class winners will be acknowledged in the Journal. Champions will receive a card.

The Society accepts no responsibility for any loss, damage or infection suffered by any plant exhibited at the Show. All possible precautions against these happenings are taken. Stewards may remove from the Hall plants suspected of carrying disease.

## Schedule

Class	Description
1	<i>Dendrobium kingianum</i>
2	<i>Dendrobium speciosum</i>
3	<i>Dendrobium</i> species other than class 1 or 2
4	Epiphytic species other than <i>Dendrobium</i>
5	<i>Dendrobium</i> hybrid having <i>D. kingianum</i> in parentage
6	<i>Dendrobium</i> hybrid other than class 5
7	Epiphytic hybrid other than <i>Dendrobium</i>
8	<i>Caladenia</i> species
9	<i>Diuris</i> species
10	<i>Glossodia</i> species
11	<i>Prasophyllum</i> species
12	<i>Pterostylis</i> species
13	Terrestrial species other than classes 8-12
14	Terrestrial hybrid

Champion Epiphyte (from classes 1-7)

Champion Terrestrial (from classes 8-14)

Champion South Australian Species (from classes 8-13)

Champion Australian Native Hybrid (from classes 5, 6, 7 and 14)

NOSSA's entry for Ira Butler Award -- New Guinea hybrids not eligible.

Champion Native Orchid of the Show (from previous four champions)

A.N.O.S. Silver Medal.

All orchids will remain on display to the public on Saturday, 17 September, and Sunday, 18 September.

Plants are to be removed at 5.00 p.m. on Sunday, 18 September.

Les Nesbitt - Registrar

## NOSSA SPRING SHOW 1983

The Society's second Spring Show will be held over two days -

17 and 18 September, 1983,

at the

Goodwood Orphanage Hall, Goodwood.

Entrance from Mitchell Street, plenty of car parking available.

All members are urged to bring along any plants they have in flower, either as competitive exhibits or for display only.

The hall will be open from 8.30 a.m. Saturday 17 for the benching of plants until 10.30 a.m. Members putting in displays can get access to the hall after 5.00 p.m. on Friday evening of the 16th to enable them to erect any structures or commence benching plants.

The show will be open to the public from noon to 8.00 p.m. on Saturday and noon to 5.00 p.m. on Sunday.

We can still do with more volunteers for such duties as ticket sellers, trading table helpers, etc. If you can help please contact one of the committee.

If any members have any epiphytic or terrestrial Australian native orchids for sale on the Trading Table bring them along on Saturday morning and the Society will try to sell them, taking the usual 25% commission.

POLLINATION OF *CALADENIA*: AN OVERVIEW R. Bates

A great deal of research has been done on the pollination of *Caladenia*, the "spider orchids", since O. Sargent (1907) noted that the labellum of *C. barbarossae* was apparently decorated with a copy of a female wasp. Standards of "morality" at the time probably prevented him from stating outright that the orchids used sexual attraction to entice their male wasp pollinators.

Edith Coleman who had been the first to seriously discuss the pollination of *Cryptostylis* by pseudo-copulating male wasps noted in 1930 that *C. barbarossae* and *C. dilatata* seemed to use sexual lures to attract male wasps. It now seems likely that many *Caladenias* are pollinated by male wasps which are lured by phero-hormones, those volatile chemicals used by female insects to attract their mates and copied by the orchids. Not all *Caladenias* use this method. The colourful *Caladenias* of the section *Encaladenia* are pollinated mainly by bees.

*Caladenia* have a very simple column structure without viscidium (no viscid disk or candle) and the rostellum is hardly developed. The pollinia are loosely held within the anther by moveable flaps which allow easy upward removal upon contact with a sticky surface such as the head or thorax of an insect which has previously brushed against the sticky stigma of the flower. The column is generally winged and these wings help to position the pollinating agent. There are two yellow glands at the base of the column in many spider orchids of the section *Calonema*. These probably produce the attractant chemicals (phero-hormone or otherwise) as they will attract male wasps when removed from the flower and crushed and are most pronounced in wasp-pollinated species. These two yellow glands may also act as pseudo-pollinia to lead pollen-eating insects away from the true pollinia.

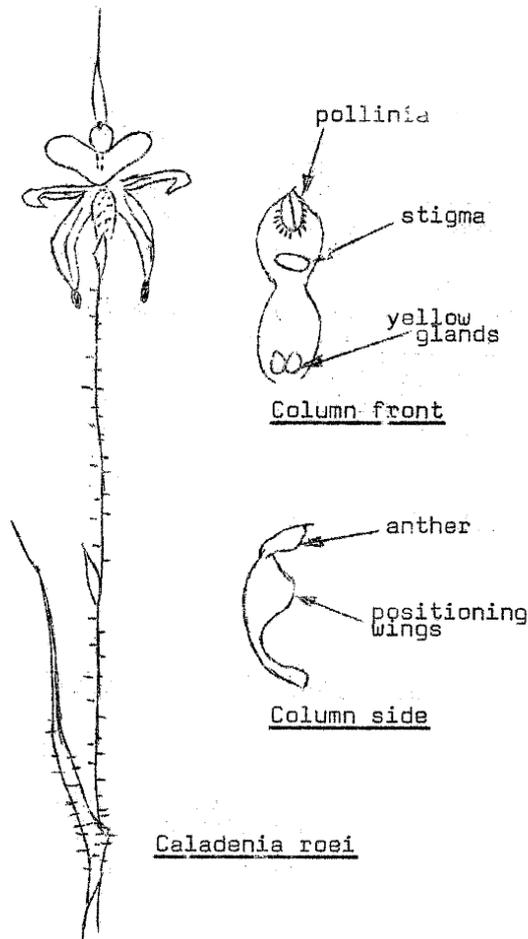
There are two basic types of pollinating syndrome in *Caladenia*. In the bee pollinated species the labellum has definite side lobes which form a tube with the column to ensure that the insects are correctly positioned to receive the pollinia. Rogers (1931) described the pollination of the blue *C. deformis* by a bee, *Halictus subinclinans*. (This was brought to his attention by Harold Goldsack, who has now spent over 50 years studying our South Australian orchids.) The dense mass of colli on the labellum of *C. deformis* was observed to afford a foothold to allow the bee to push into the space between column and labellum as it took some pressure to widen the "tube" enough to permit entry. The bee pollinated species are usually brightly coloured: blue in *C. caerulea*, pink in *C. catenata*, white in *C. alba* and yellow in *C. flava* for example. Some species in this group are fragrant in *C. gracilis*, *C. deformis* and *C. catenata* var *giganten* but no nectar is offered. Perhaps there is some degree of mimicry of other wild-flowers which offer nectar and pollen. However, all of the bees I have collected on *Encaladenia* flowers were male and in some cases, i.e. *C. congesta* were seen to clasp the labellum and either shake it vigorously or exhibit probing movements of the abdomen.

In the wasp pollinated species the labellum is on a hinged claw and moves backward and forward with the shift in weight provided by the visiting insect. Stoutamire (1975) described the pollination (pseudo-copulation by male thynnid wasps) of Western Australian species with hinged labella. Excellent photographs of this process in *C. cairnsiana*, *C. barbarossae* and *C. lobata* accompany his paper. Cady and Rotherham (1970, plate 50) illustrate the "common spider" *C. dilatata* and its thynnid wasp pollinator.

The labellum has many features to assist in positioning the pollen vectors in *Caladenias*: there are often veins and lines (*C. reticulata*, *C. cardiochila*) which guide the insect toward the column. Calli may imitate the body of a female wasp or at least that feature of her body which acts as a sexual stimulus to the male wasp. The rows of calli down the centre of the labellum ensure that the insect is centrally positioned to receive the pollinia correctly. Other species (*C. cairnsiana*) have a ridge of tissue near the tip of the labellum which gives the insect something to push against others have fringed side lobes which prevent the insect entering from any angle other than the front. Rica Erickson (1960) noted that the large sentinel calli of *C. flava* prevent insects which are too small from entering. The taller calli nearest the column also serve to lift the insect up to the correct height to contact stigma and pollinia. In areas where the local race of pollen vector has large males these calli may be short; where the wasps are small the calli may be large. Insects such as blowflies, which are too large, often become trapped when the labellum tilts

back against the column and without a favourable breeze to tilt it back they may die there. Finding dead flies in the flowers often gives the wrong impression that the orchids "eat" flies. An article by the author (1978) is misleading in that the word "insect" has been mischievously replaced throughout by the word "fly". I have observed flies successfully transfer pollinia in *C. patersonii* but this is an exception and not the rule. Uhlherr (1967) suggests the possibility of *C. alba* being pollinated by a fly. References to beetles pollinating *Caladenias* can probably be disregarded.

Perfume in *Caladenias* is produced by glands on the outer side of the sepals as in *C. gracilis* with its musky odour or in the glandular tips of the sepals and petals as in some forms of *C. patersonii* which has fragrances ranging from citronella through gardenia and to the spicy musk which is at its strongest in *C. gladiolata*. As mentioned previously colour is an attractant in bee-pollinated species but those *Caladenias* which attract wasps are generally not so brightly coloured and greens, maroon, pale yellows, brown and off white predominate with the same colour patterns quite often reported by not so closely related species (a topic on which I will later write in detail). Nectar is usually absent. Other attractants include vibration of the labellum as in *C. congesta* (Bates 1982).



Many species have self-pollinated forms (Bates 1980) and Hatch (1952) notes that *C. catenata* var *minor* is either autogamous or claistogamous in New Zealand. (The Australian-plants of this variety are also self-pollinated although the type variety is bee-pollinated.) Some forms of *C. bicalliata* are also cleistogamous, the flowers never opening,

The stems of most *Caladenias* are beset with long slender stiff hairs at right angles to the stem and these are thought to prevent ants reaching the flowers and damaging the stigma or pollinia.

Despite the continuing research very few *Caladenias* have had their pollination syndromes studied in detail and in South Australia only about 25% of species have had their pollen vector collected. There is much scope for the casual observer to contribute with notes on observations and or captured pollinators.

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- Uhlherr, P.J. (1967), Pollination of *Caladenia alba* - a note on". Orchadian. 2:94-95.

## METHODS AND MADNESS OF AN ORCHIDOLOGIST R.C. Nash

(Continued from NOSSA Journal, Vol. 7, No. 6, page 59.)

Colour variation (of *D. sulphurea*) is limited to the darker markings, mostly upon the labellum which only varies in size.

In this species there exists an opportunity for the breeder to improve the size of the flowers and to obtain a sturdier stem (as most of the species need). In hybridising we are offered a plant that has the possibility of size, shape and colour.

I know of no natural possible hybrids but expect there would be in New South Wales, where this genus becomes complex through natural crossings.

I have made only one successful crossing with this species and *D. brevifolia* which turned out to be most interesting (more on this later).

The last pure South Australian species I will discuss is *D. brevifolia*, a plant with flowers very similar to *D. sulphurea* but has strong affinities with two Western Australian species, *D. emarginata* and *D. setacea*. However, it is quite distinctively separate from these species. To separate this plant from *D. sulphurea*, even with no flowers, is quite easy - all one needs to do is compare the leaves of both. In *D. sulphurea* it will be seen that the cross-section of the leaf is very prominently "V"-shaped while *D. brevifolia* will be found to have the "U" cross-section. Both the Western Australian like species have the "U" cross-section.

For the plant breeder this plant too offers many possibilities and hopefully these will be taken up.

Wild hybrids are few, not because the plant cannot cross freely but the absence of natural hybrids are due to the later flowering of this species

## Methods and Madness of an Orchidologist (contd.)

compared to the others. I have seen only one wild hybrid which possibly had the other parent as *D. longifolia*.

In my own hybridising I have flowered crosses with this species and *D. sulphurea* and *D. pedunculata* which I will discuss later.

A plant that most growers of terrestrial orchids long to possess is any variety of the beautiful *Diuris punctata*. This plant was recorded as occurring in our south east, about Mt Gambier, it is now unfortunately extinct in this area. This species is still quite common in various parts of the eastern states.

One of the great attractions of this species lies in the purple colour and the long lateral sepals. However, all the varieties are not purple in colour, one, var *alba*, is white or almost so.

The species has many varieties which in turn are subdivided again into forms. In horticultural work the "forms" become important and the cultural forms are often developed from one or two plants that have some special feature that the breeder requires.

In the case of the native plants more is needed to be known about the conditions that develop variants. Some are caused by geographic isolation, others by gradual gene variation over time within the range of a species which may fold back and forth to give an overlap of variants, yet still remain more or less constant due to a slight incompatibility in the genes. This doesn't mean to say such variants cannot breed but that there may be tighter tolerances on the fertilisation of flowers than is the normal.

In the development of breeding better horticultural specimens much knowledge will be gained about the laws that govern the varieties and why they remain so. No doubt there are people about with the knowledge on how these matters should be arranged but there is little likelihood that their knowledge will be passed on to amateurs. So unless we have people amongst our community who have some of this know how, we are just going to have to work in the dark for a time until we start to see the glimmer of light at the end of the tunnel.

I have wandered away from the subject, yet I did warn that I may.

Where *D. punctata* is concerned I know of no hybrids between this plant and any other species. In this species lies a great challenge for the breeder and hybridiser.

Another species from the east which has great potential is *D. aurea*, a yellow-flowered plant which is one of the larger members of the genus with a nice amount of variation. This one, like *D. pedunculata*, has great possibilities in hybridising. In New South Wales it had probably hybridised freely to assist in the complexity of that state's *Diuris*.

In New South Wales there are quite a number of attractive *Diuris* species and like most people I have only seen them as pressed material, photographs or illustrations in books. In many of these plants there is plenty of material for the plant breeder and a great number of possibilities for hybridising, however, in that state there are a large number of natural hybrids which give the taxonomist much trouble.

(to be continued)

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*Dendrobium pugioniforme* (Dagger Orchid)

This is an epiphyte frequently growing into large pendulous masses on the branches or trunks of trees, mainly in the rain forest areas from Mt. Dromedary on the south coast of New South Wales northwards to the Bunyah Mountains in south eastern Queensland.

The stems are slender, wiry and branching, often quite long and usually tangled. Thin creeping roots develop freely from nodes at the branches.

The distinguishing feature of the numerous shiny, thick flat, ovate to lanceolate leaves is the sharply pointed tip.

The flowers are usually single but sometimes 2 or 3 per inflorescence and are 2 to 2½ cm in diameter. The petals and sepals are light green, the labellum pale with bright red or purple markings. The flowering season is September to November.

It is a reasonably hardy plant which will respond to cultivation on quite a variety of hosts. I have had success using *Melaleuca*, and find that it responds to a position having plenty of shade and moisture, particularly during our summer. Although in the wild it will tolerate cold conditions, (being found from near sea level to around 1300 metres), it will require shelter from our winter frosts

Most authorities designate it an epiphyte, however, in "The Orchadian" Vol. 4, No. 2, p. 24 (1972) D.L. Jones reports having found a bleached and tough looking plant growing on Alum Mountain with its roots amongst leaf litter in a crevice. Again in "The Orchadian" Vol. 7, No. 7, p. 164 (1983) G. Walsh describes 'inter alia' lithophytic forms of *D. pugioniforme* growing in the Illawarra District of New South Wales.

In view of this it could possibly be grown in a pot, but as it grows quite readily on a slab I have felt it pointless to possibly waste a plant just to grow it in a pot. Fertilise in the growing season with foliar fertiliser at half the recommended strength.

Two naturally occurring hybrids of *D. pugioniforme* have been recorded - *D. pugioniforme* x *D. tenuissimum* and *D. pugioniforme* x *D. beckleri* but they are relatively rare (Ford, "The Orchadian", Vol, 3, No. 7, p.88: Dockerill, Aust. Indig. Orch. Vol. 1, pp 370-371) and as yet it has not yet attracted the hybridists as there does not appear to be any registered crossings.

