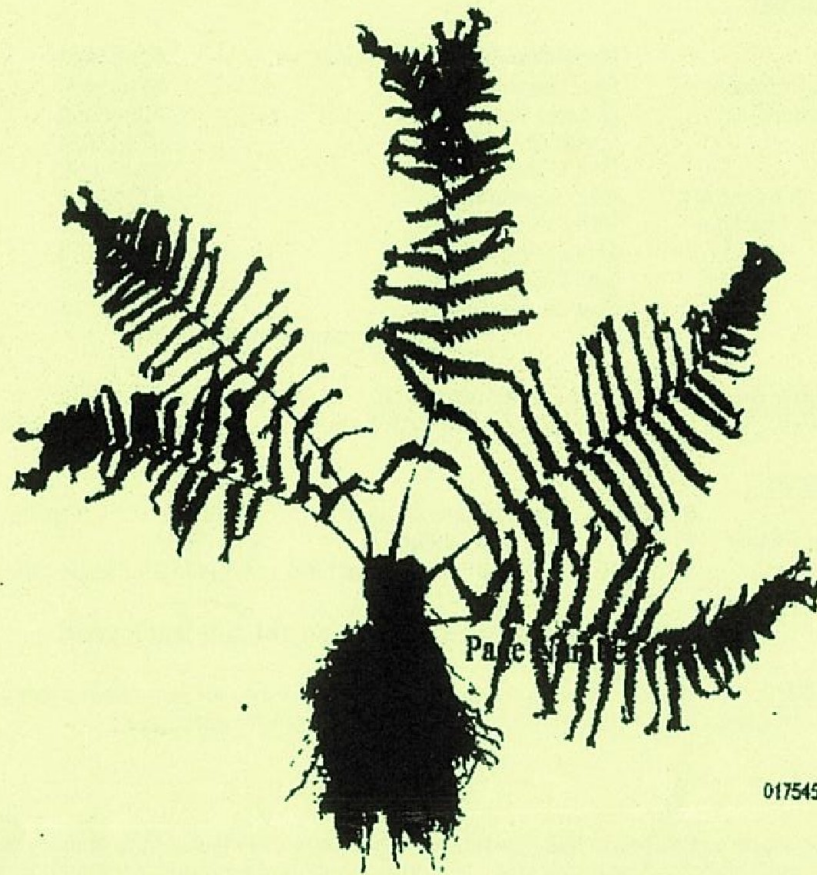


ABN 85 086 216 704

NEWSLETTER

THE JOURNAL OF THE
SOCIETY OF
HOBBYISTS OF
THE
COUNTRY



017545

Dryopteris filix-mas cv. *Cristata*

VOL. 27, NUMBER 4
JULY/ AUGUST 2005

FERN SOCIETY OF VICTORIA Inc.

POSTAL ADDRESS: P.O. Box 45, Heidelberg West, Victoria, 3081
E-mail: http://gardenbed.com/clubs/clubs_vicferns.cfm
Web: <http://home.vicnet.net.au/~fernsvic/>

Our Society's Objectives.

The objectives of the Society are:

- *to bring together persons interested in ferns and allied plants*
- *to promote the gathering and dissemination of information about ferns*
- *to stimulate public interest in ferns and*
- *to promote the conservation of ferns and their habitats.*

OFFICE BEARERS:

President:	Barry Stagoll	Phone/Fax	98441558
Imm. Past President	Rex Gresham		57962466
Vice-President	George Start		59625059
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Norma Hodges 9878 9584. Brenda Girdlestone 9390 7073 and Mirini Lang 9886 6109.

SUBSCRIPTIONS:

*Single	\$15.00	*Pensioner/student	\$12.00	*Family	\$17.00
*Pensioner Family	\$14.00	*Organisation	\$17.00		
*Overseas	\$22.00 (Payment by international bank cheque in \$A please. Sent by Airmail.)				

***Subscriptions fall due on 1st July each year.**

MEETING VENUES: The Kevin Heinze Garden Centre at 39 Wetherby Road, Doncaster (Melway 47; H1).
Other meetings at members' gardens or as advertised on the following page.

Opinions expressed in this newsletter are the personal views of the authors and are not necessarily endorsed by the Society, nor does mention of a product constitute its endorsement.

Timetable for evening general meetings:

7.30	Pre-meeting activities - sale of ferns. Spore, books, merchandise and special effort tickets. Also library loans and lots of conversation.
8.00	General meeting
8.15	Workshops and demonstrations.
9.15	Fern identification and pathology, special effort draw.
9.45	Supper and another good yarn.
10.00	Close.

CALENDAR OF EVENTS FOR 2005

JULY MEETING:

Thursday the 21st, July, at the Kevin Heinze Centre, at 8.00pm

Topic:

Ferns of Papua New Guinea and Bougainville

Once again we will have the pleasure of our founding member Chris Goudey to entertain and explain this topic to us and no doubt there will be photos. These nights are always a not to be missed experience with something for everyone.

Competition fern: 'pteris'

AUGUST MEETING

Thursday the 18th, August at the Kevin Heinze Centre, at 8.00pm

Topic:

Collecting and propagating from spore.

Our night will be a work shop on collecting and propagating from spore, conducted by our own very competent spore bank manager Barry White.

Competition category: "Fern with fertile frond"

SEPTEMBER MEETING

Thursday the 15TH, September at the Kevin Heinze Centre, at 8.00pm

Topic:

Panel discussion on fern problems and problem ferns.

PRESIDENTIAL PERORATION

In my note in the last Newsletter I mentioned that a tutorial on growing indigenous ferns from spore had been arranged for staff and volunteer helpers at the Warrandyte State Park. I'm pleased to report that this was received very well (I've provided a fuller report in a separate article). I feel that our expertise in this area could earn us new friends amongst other groups with similar objectives to WSP. Providing leads for suitable avenues where we could offer such help would be a valuable service that you as a member could contribute to our efforts as a Society.

We could perhaps be accused at times of being somewhat blasé about the marvellous profusion of fern species in Australia (although my problem more often is trying to remember the names of a good many of them - and there are more than a few that I'll admit to probably having never seen "in-the-flesh"). This comes into focus from time to time when you hear enthusiasts overseas talking, or read such things as the wistful comments made by the former President of the British Pteridological Society Alastair Wardlaw in his retiring address last year (Bulletin of the BPS Vol. 6 No. 3 2004). Mr. Wardlaw commented that ... 'although ferns are common in the British countryside, the number of different species is quite small ... only about 53 native species ... very modest when compared for example with Japan's 600+ species ...' Now we, of course, have more species in Victoria than has Britain, and in the whole of Australia a number not too far short of that for Japan (although the two nations' geographic spread is far different, there are many relatively small localities in Australia where a large number of species can be found).

Possibly, in particular, we take the many beautiful tree-ferns of Australia and nearby islands a little for granted. We don't always realise their "celebrity" status elsewhere. One of my clearest memories of meeting fern enthusiasts in Britain years ago was the enthusiasm for growing our *Dicksonia antartica*, and the disappointments of those who had not yet been successful with this fern. Again, Mr. Wardlaw made the case for *Dicksonia*'s star status when he commented ... 'I cannot end without saying something about tree-ferns, especially as *Dicksonia antartica* is now a naturalised alien and represented in my garden.' How fortunate are we that many of us have these to enjoy in our home gardens, and only have to make a short trip from home to visit whole hillsides or gullies hosting giant tree ferns of venerable age.

Barry Stagoll

NEWS FLASH:

With many thanks to Barry White, we now have a web site which you will find at
<http://home.vicnet.net.au/~fernsvic/>

There are useful links to other societies and information galore to be found. Check out this site when next you're on the internet and be sure to pay a regular visit as it will be up date from time to time.

If there is something you think should be included in the site please drop Barry a line and let him know you suggestion.

Thank you Barry for your dedication of keeping this site updated.

FERN SHOW 2005

The Combined Fern And Vireya Rhododendron Show for 2005, was held on the 16th - 17th April, at the Mt Waverley Community Centre. Although the weather was fine on both days the attendance on the Saturday was a little disappointing. This adversely affected the financial result.

In the days leading up to the Show we were concerned about how many ferns we would have for the display/ competition because of illness/ absence of a number of our usual contributors. We were delighted that this concern was unfounded as many members produced excellent ferns for both display and competition.

Our display was of excellent standard with our feature display containing a good representation of Ferns Of Queensland. Our two specialist displays were again provided by Chris and Lorraine Goudey of Austral Ferns and Eddie and Robyn Sabljak of Fern Acres Nursery and were excellent. Mary Kenealy provided a display of her beautiful collection of fern memorabilia and we thank her for displaying it.

The Fern Sales Area was again very well stocked with a great range of ferns. Sales were good but the volume was down on last year reflecting the lower attendance this year.

The committee wishes to thank all those members who rose to the challenge of this show and provided great ferns for the competition and display. Our thanks also go to those who assisted with the running of the Show, helping with the setting up, and with the packing and cleaning up after the Show. It was done in record time and greatly appreciated.

Thanks goes to Mary Frost who again judged the Fern Competition and to Multicrop (Aust) Pty. Ltd. who once again sponsored our fern competition. We value their support of our society. Special thanks to George Start who made his utility available and transported all our props.

Don Fuller

Chairperson Fern Show Committee



IMPORTANT NOTICE MEMBERSHIP RENEWALS ARE NOW DUE

Your membership renewal fee for the year 2005/6 is now due (our financial year commences on the 1st July). We would appreciate prompt payment of the fee using the enclosed renewal form.

There are a small number of members who for various reasons have already paid their membership for 2005/6 (these include those who have just recently joined the society). These are identified by a yellow dot on the address label. If your newsletter label has one of these yellow dots please ignore any renewal form that may be included.

Don Fuller
Treasurer

Excursion

TO

Badger Weir Park Visit, Healesville Saturday 30 April

Barry Stagoll

We had 16 members join the visit to Badger Weir Park, together with 3 visitors and 5 youngsters. The day was fine and the Park vegetation was in pretty good condition, despite the dry conditions of the past several years. However, two of the more important tracks for gaining access to the ferns which prefer wetter ground were damaged by washaways in the heavy rain of early February. As a result it took somewhat longer than it would otherwise have done to cover the territory of interest, as we had to cover the same sections of track in two directions rather than making a single round trip. Nevertheless, we found examples of almost all of the ferns recorded on the last FSV visit in 1996 when 28 distinct indigenous species were noted (see the list below). The only species on this list we were unable to locate this time was *Blechnum fluviatile* - we trust this does not mean that none now remain in the area, as only a limited distance of streamside is accessible from the walkways

For those who missed the excursion but may wish to consider making a private visit, most of the species in the Park can be found along the mostly-elevated vehicle track leading to the upper end of the Slip Track (see the maps displayed in the Park picnic grounds). The greater proportion of the remaining species oc-

cur along the Slip Track, whilst a few (for instance *Adiantum aethiopicum*) appear to be confined to the Stringy bark Track and the walk alongside the Coranderk aqueduct to the Weir (many fine examples of *Diplazium australe* occur here). The species represented on the 1996 list were -

Tree ferns

3 types - *Dicksonia antarctica* (Soft Tree-fern),
Cyathea australis (Rough Tree-fern) & *Cunninghamii* (Slender Tree-fern)

Continue next page

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Continues from previous page

Ground ferns

18 types which usually grow terrestrially - *Adiantum aethiopicum* (Common Maidenhair), *Asplenium bulbiferum ssp gracillimum* (Mother Spleenwort), *Blechnum cartilagineum** (Gristle Fern), *B chambersii* (Lance Water-fern), *B fluviatile* (Ray Water-fern), *B nudum** (Fishbone Water-fern), *B minus** (Soft Water-fern), *B patersonii* (Strap Water-fern), *B watsii* (Hard Water-fern), *Calochlaena dubia* (False Bracken), *Diplazium australe** (Austral Lady-fern), *Histiopteris incisa* (Bat's Wing Fern), *Hypolepis muelleri* (Harsh Ground-fern), *H rugosula* (Ruddy Ground-fern), *Lastreopsis acuminata* (Shiny Shield-fern), *Polystichum proliferum* (Mother Shield-fern), *Pteridium esculentum* (Common Bracken), *Todea barbara** (Austral King-fern)

* these develop a caudex (trunk) as they become older and are therefore alternatively described as (smaller) tree ferns.

Epiphytic ferns

- 7 types which grow exclusively or typically on other plants, especially frequenting tree fern trunks - *Grammitis billiardieri* (Finger fern), *Hymenophyllum australe* (Austral Filmy-fern), *H flabellatum* (Shiny Filmy-fern), *Microsorium pustulatum ssp pustulatum* (Kangaroo Fern), *Polyphlebium venosum* (Veined Bristle-fern), *Rumohra adiantiformis* (Leathery Shield-Fern), *Tmesipteris billiardieri* (Long Fork-fern)

Observation of these ferns demonstrates that some have very specific micro-climatic requirements if they are to thrive. For instance Filmy-ferns cannot survive without constant relatively high humidity and limited exposure to high light levels. The other epiphytic types also prefer humid situations, and some *Blechnum* species (in particular *B chambersii*, *fluviatile* and *patersonii*) and *Cyathea cunninghamii* require continuously damp situations. So all these, and the Dicksonias which are the preferred hosts for epiphytic ferns along with many other plants, are found close to watercourses.

Though many of the ground ferns can successfully colonise slopes well away from the immediate vicinity of watercourses by producing offspring from spores germinating in wet periods, some have alternative mechanisms for doing so. A few produce juvenile plantlets which then root directly into the ground (examples being *Polystichum proliferum* and *Asplenium bulbiferum*). Others spread by extending stolons through the soil which bear new fronds (examples being *Adiantum aethiopicum*, *Blechnum cartilagineum*, *B minus*, *B nudum*, *Calochlaena*, *Histiopteris*, *Hypolepis* and *Pteridium*).

The Park is a very good, relatively compact, and (in normal circumstances) fairly easily negotiated place to see a large number of the 70 or so species of ferns native to Victoria - many of these growing in abundance.

Hand Magnifier Lens - a very useful tool

No, not to magnify your hand! It's a hand-held lens by which you can get a much closer look at small features on ferns, such as sporangia not to mention small pests inhabiting ferns if you're unfortunate enough to acquire some of these occasionally.

We've tracked down a neat 10x magnification hand lens, which folds into a protective metal cover with provision for hanging from a neck-strap, which is not too expensive although the quality is good. Normal retail price from the outlet is \$27.50, but a 10% discount has been agreed if we order 6 or more. Let **Gay or Barry Stagoll** know if you'd like one - **phone 98441558**.

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LADYBIRD BEETLE

As reported in the Melbourne Herald Sun on 10th June, 2005.

Beetles on a mission

KILLER ladybirds sounds like a sci-fi movie gone wrong. But this little hero fits the bill.

And a team of the cute beetles is set to save the day for the Royal Botanical Gardens nursery.

Ladybirds are one of the world's best insect killers. Some of them were let loose yesterday to battle problem mealy bugs.

Mealy bugs suck the sap of plants and are difficult to kill with pesticides.'

The ladybird solution will protect several rare and threatened species in the nursery.

It should be a quick showdown as ladybirds disperse rapidly through the nursery, laying their eggs in mealy bug -infested areas.

The larvae feed upon plant-lice and small insects.

yellow.

A female adult will lay from fifty to three hundred eggs in her lifetime.

Adults emerge in seven to ten days. There may be five to six generations per year. In the autumn, adults hibernate, sometimes in large numbers, in plant refuse and crevices.

One larva will eat about 400 medium-size aphids during its development to the pupal stage. An adult will eat about 300 medium-size aphids before it lays eggs. About three to ten aphids are eaten for each egg the beetle lays. More than 5,000 aphids may be eaten by a single adult in its lifetime. The lady beetle's huge appetite and reproductive capacity often allow it to rapidly clean out its prey.

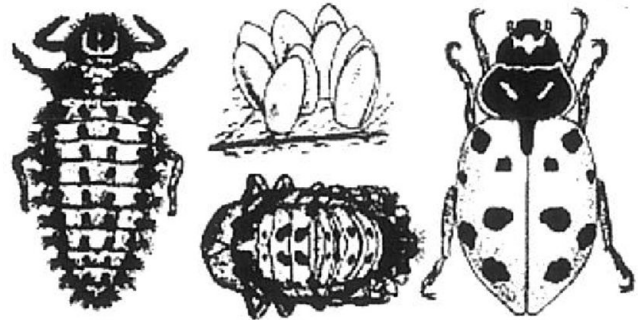
Larvae are eaten by lacewing larvae. Birds attempt to eat adults but because of their "bad taste" the beetles are not ingested. As a defence, ladybug adults will fall to the ground and "play dead." They also can secrete an amber bad tasting fluid from the joints in their legs. Larval stage consumes large numbers of aphids. Adults also eat aphids.

MORE FACTS

Lady beetles, often called Ladybugs or coccinellids, are the most commonly known of all beneficial insects. Both adults and larvae feed on many different soft-bodied insects with aphids being their main food source but also scale, mealy bugs and mites are on their diets.

The length of the life cycle varies depending upon temperature, humidity, and food supply. Usually the life cycle from egg to adult requires about three to four weeks, or up to six weeks during cooler spring months. The adult females find a good food source, aphid colonies before laying their eggs. Eggs are yellow and laid in small clusters often stuck to leaves. The eggs hatch after one week. The larvae have six legs and are very mobile, but do not have wings. They are black with small orange or white markings. The larvae molt three times before pupating. Attached to leaves, stems or rocks, the pupa is orange and black. Before the wings harden, the newly emerged adult is

References from Ohio State University And University of Arizona.



It was unfortunate that there were problems with the report in the last issue on Keith Hutchison's talk on *Ground Ferns in Australia* - no fault of Keith's. It included some wrong spellings of fern names, and also a number of ferns were incorrectly referred to as "hypolepis" as the result of inadvertent substitution of this species name for the correct species names in the text.

To remedy this, we've decided to run a corrected version of the article in this issue.

GROUND FERNS IN AUSTRALIA

By Keith Hutchinson

Dennstaedtiaceae family

Genera included in this family are *Dennstaedtia*, *Hypolepis*, *Histiopteris*, *Pteridium*, and *Microlepia*. *Calochlaena* which in the past has been included in the same family has now been put into its own family *Culcitaceae* in Volume 48 of the "Flora of Australia"

Dennstaedtia:

Forty five species are found worldwide with one which is endemic in Australia.

Dennstaedtia davallioides - Lacy ground fern

This fern is found in Eastern Australia and the Otway Ranges. It grows extensively in rich cultivated soils along streams in these areas. A handsome fern growing to one metre tall, but in a fernery will spread rapidly and become a pest. It can be attacked by a minute caterpillars but pyrethrum spray will protect it.

Hypolepis:

Fifty species are found world wide with seven in Australia, of which two are endemic and one is endemic in New Zealand

These wide spread ferns are extremely versatile, growing in the tropics to the southern areas of New Zealand . The earliest discovery of the fern in about 1820 was called *Polypodium rugosulum*. I have found many revisions of the species with no clear cut decisions. *Hypolepis rugosula* and *H. muelleri* are the two endemic species.

The two main species are *H. rugosula* which is extremely common in Victoria and Tasmania, and *H. amaurachis*.

Hypolepis rugosula - ruddy ground fern

This fern grows 40 to 150cm with a long creeping, much branched rhizome. Stipes are deep red clothed with red hairs. This fern favours mountain regions and colonises in gullies. It can become a real nuisance in bush houses or ferneries. Found on Eastern Coastline of Australia, South and West Australia, Tasmania and New Zealand.

Hypolepis amaurachis - austral ground fern.

This fern is often mistaken for *rugosula* but is much shorter and regarded as the best of the species.

H. amaurachis was previously known as *H. australis* with the common name austral ground fern.

This fern grows 30 to 75cm an attractive fern easily grown in shade but spreads quite rapidly. It is not a common fern, found in Tasmania, Eastern Victoria and South East NSW.

Hypolepis muelleri - harsh ground fern

This fern grows 50 to 130cm is a fast spreading fern growing in swampy moist soils even in full sun. Found along East Coastal areas of Australia, South Australia and Western Australia in moist areas

continued next page

Hypolepis glandulifera – Downy ground fern (previously known as *H. punctata*)

This fern grows 300cm., a giant of a fern growing throughout the Pacific region spreading rapidly. Thick yel-lowish stipes densely clothed with sticky hairs. Tends to die back in cold winters but new fronds emerge rap-idly at this point and a good tidy up is necessary

Hypolepis distans - scrambly ground fern

This fern grows to 60cm. The smallest of the species was thought to be endemic to New Zealand but has been found in North East King Island. The stipe is dark shining red brown with pinnae well separated and almost perpendicular. It grows on tree stumps and rotting logs, and will also scramble through elks and stags. As this is the only one of the species with virtually no perispore projections (smooth spore) it is possible that it may have arrived on King Island from New Zealand

Hypolepis tenuifolia occurs in Queensland, Norfolk Island and Pacific Islands

Hypolepis dicksonioides is common on Norfolk Island but is not found in Australia.

Hypolepis elegans occurs on Lord Howe Island, Queensland, NSW, and on Wilson's Prom. in Victoria

Calochlaena (previously known as *Culcita*)

Five species found world wide with two in Australia

Calochlaena dubia - rainbow fern or common ground fern

This fern is endemic to Australia, and grows 50 to 200cm in eucalyptus forests and open woodland throughout Eastern Australia. It will tolerate full sun where in the dry season the fronds arch over for the tip to touch the ground hence the common name rainbow fern. It is easily reproduced from spore or by division and grows well in a pot for a season or two. As it is often mistaken for the bracken as it spreads by means of a tough woody rhizome. This fern needs plenty of room to grow.

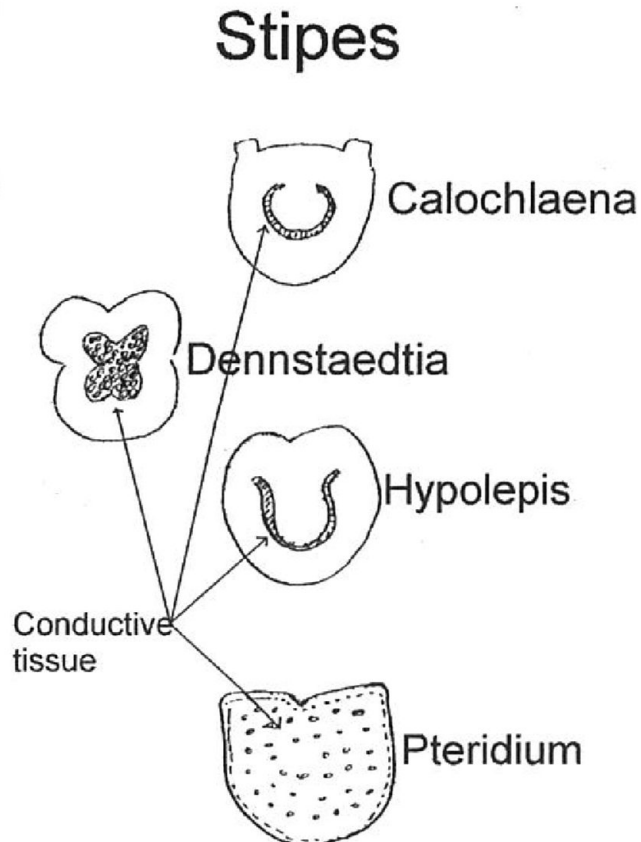
Calochlaena villosa occurs in N.E. Queensland and PNG.

Histiopteris

One species found worldwide.

Histiopteris incisa - bats wing or oak leaf fern.

This fern is widespread in Eastern Australia and Northern Territory. It prefers cool moist gul-lies where it forms extensive clumps over two meters tall. Sporelings develop very quickly and enjoy growing in a tub. I saw an extensive planting growing two metres tall in full sun in Devon England in 1994. An inter-esting fern but it must have moisture to survive. It is deciduous in cold climates.



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Pteridium

Several species are found world wide with two in Australia

Pteridium esculentum - common bracken fern.

The most common fern throughout Australia, New Zealand and South Pacific Islands. It is poisonous to animals in large quantities. The stiff erect fronds can grow to over 2 metres tall. Difficult to cultivate.

Pteridium revolutum grows in North Queensland.

Hybrids occur where the two species overlap.

Microlepia

Forty five species found world wide with one in Australia

Microlepia speluncae Very similar to Dennstaedtia but slightly taller and found on rain forests edges.

It is pan tropic and only found in the Northern parts of Australia. Quite frost tender in the South.

I have not included Leptolepia or Paesia as nei-ther occurs in Australia.

The editor wishes to apologies for any miss representation the may have been cause to Keith with the previous publication.

SHARING OUR EXPERTISE (AND ENTHUSIASM) FOR FERN PROPAGATION

Barry Stagoll

Barry White and I (ably supported by Barry's wife Judy) had a most interested audience at the Warrandyte State Park Nursery on Thursday 26 May as we explained fern reproduction and propagation methods to staff and volunteers, and Barry delivered his well-practiced spore-growing demonstration.

The WSP Nursery (run by local staff of Parks Victoria) propagates large numbers of endemic flowering plants for rehabilitation of the Park itself, as well as supplying plants for other revegetation activities and sale to local property owners and others interested in planting local species of the region. Being acquainted with the fact that the Nursery was not propagating ferns, and also aware that the Park today has only very small remnant occurrences of ferns, I offered our services to get the volunteers trained in fern propagation. The offer was enthusiastically taken up by Nursery Manager Josh Revell, and our audience on the day was equally enthusiastic. We were "mobbed" with questions, both during and after the talk and demo, and of course we didn't mind at all.

We'll keep in touch to be able to provide continuing support, and may be called on to sup-

ply some spore (although, where possible, because of its "mission" the Nursery will prefer to use spore of local provenance - just as it does with the seed or cuttings of flowering plants). It seems likely that special efforts might be made to reintroduce *Cyathea australis* and *Todea barbara* into the Park - I have commented from my earliest contacts with Josh how these (and almost certainly pretty much all of the ferns still seen in the Kinglake area and the Black's Spur Range today) would have been common in Warrandyte prior to European settlement.

Continued on page 61

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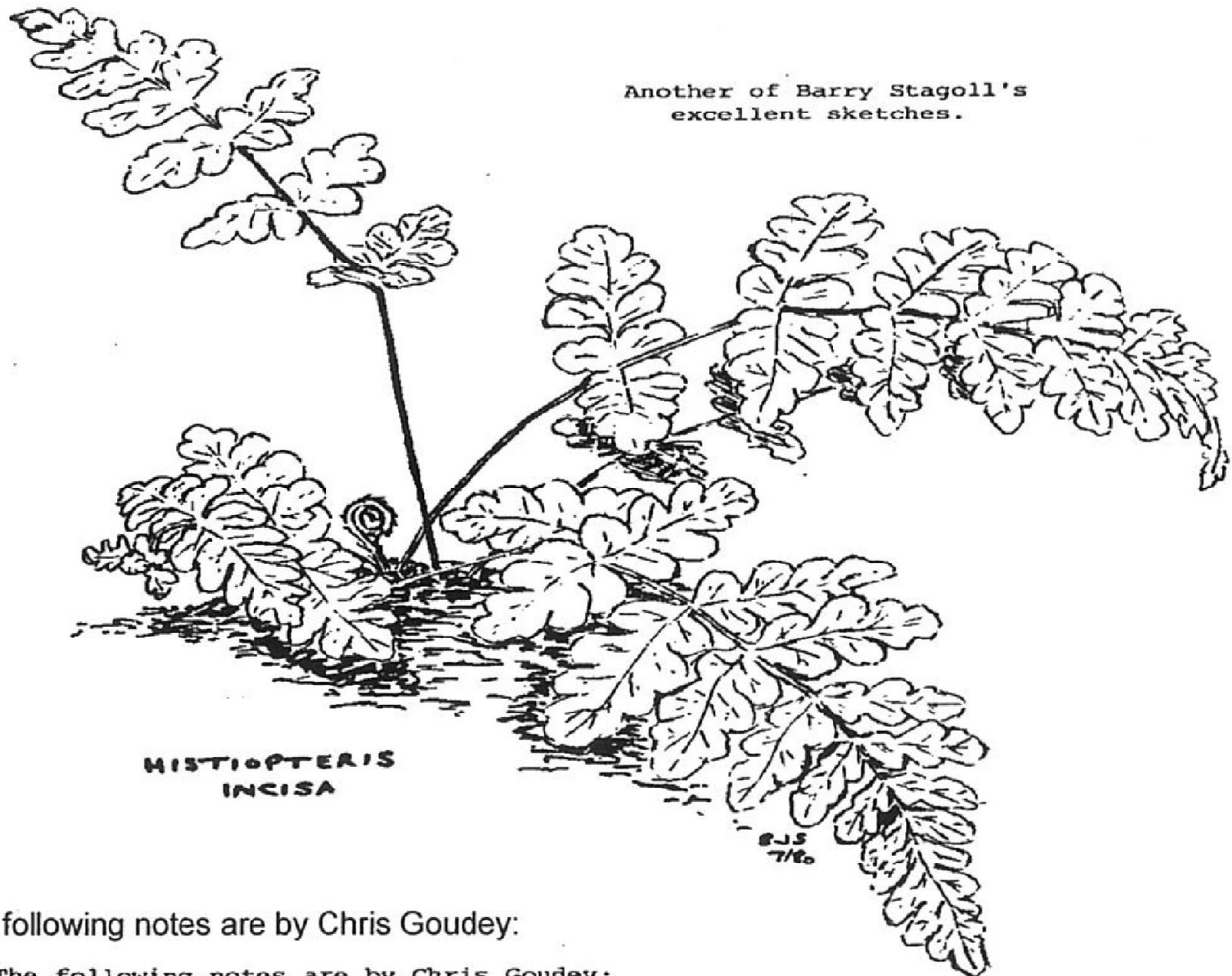
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Histiopteris incisa

Reprinted from newsletter October, 1980.

Drawing by Barry Stagoll.

Comments by Chris Goudey



The following notes are by Chris Goudey:

The following notes are by Chris Goudey:

The Bat's-wing Fern, *Histiopteris Incisa* is widely spread, mainly in tropical regions. The genus is mostly terrestrial and consists of about eight species, with one only in Australia. *Histiopteris incisa* is a strong growing fern with a creeping rhizome, it usually forms thickets in open rain forest, i.e. along road sides and water courses.

There have been records of this fern in Fiji with fronds up to twenty three feet in length.

The Bat's-wing Fern is an invasive fern in cultivation; it always comes up in new tree fern baskets, on fern slabs, and in potting soil which contain tree fern fibre.

If you have a plant of it in your collection, you will find it continually coming up in your spore pots no matter what precautions you take, as the sporelings germinate very rapidly.

Young plants look most attractive with their delicate blue green stripes and fronds, but the plant gets quite lanky and untidy as it matures. It resents disturbance and is therefore quite difficult to transplant.

It seems that only one *Cyathea* has been seen in recent times (growing below ground level in one of the old vertical mine shafts) and the only two *Todeas* known in recent times have seemingly been lost.

FOOTNOTE

After lunch, Gay joined us as we all went on a walk in an area of the Park renowned for its fungi occurrences. The walk (part of a regular programme run as part of the monitoring of the Park which also assists in educating volunteers and visitors about its ecology and the significance of its botany and fauna) was led by Bruce Fuhrer - who amazed us with his knowledge and photographs of fungi at a FSV meeting last year. Unfortunately, as another effect of our drought conditions, fungi were hard to find (in a relatively compact location where Bruce has found and identified over 500 species to date). Undeterred, we all found plenty to look at anyway - including a small but varied selection of fungi. However, the only ferns to be seen were *adiantum aethiopicum* and *Pteridium* - just enough to underline the scarcity of surviving fern species.

POTTING MIXTURES

By DAVID BEARDSSELL & DAVID NICHOLS
Horticultural Research Institute, Knoxfield

A potting mixture, if it is going to allow good plant growth, must have the following properties:

1. It must have adequate aeration and drainage.
2. It must be able to hold sufficient water to satisfy the plant's needs between irrigations.
3. It must be able to hold essential nutrients in an available form.
4. It must be able to provide suitable support and anchorage for the plant.

Aeration:

Plant roots require oxygen for respiration, and this is provided from the air spaces in a potting mixture. Only potting mixtures which contain large pores drain adequately enough to provide sufficient air space. Potting mixtures made of fine materials such as sandy loam contain only small pores, which do not drain well, and this can lead to water-logging.

Coarse materials such as washed river sand drain rapidly, and as a consequence have adequate air space. Organic materials like peat moss, pine bark and sawdust, because they are porous, also have good aeration.

Water-holding capacity:

The water-holding capacity of a potting material is the amount of water held after drainage has taken place. Not all of this water is available to plants, some being held so strongly that plants cannot extract it from the medium.

Brown coal, for instance, holds a third of its water in a form that is unavailable to plants, while peat moss and coarse sand have very little unavailable water. The difference between the amount of water held at the wilting point and the amount held at saturation is the actual amount of water that is available to plants. The best way to assess this is to measure the time it takes for plants to wilt in the medium. Pine bark has an excellent water-holding capacity, while that of coarse sand is poor. Brown coal and mountain soil are intermediate.

Water Penetration and Rewettability:

Water should penetrate rapidly and easily throughout a potting mixture. Organic materials such as peat moss and pinebark actually repel water when they are dry. In order to improve water penetration, they should be combined with easy-to-wet materials such as coarse sand or scoria.

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AUSTRALIAN GARDEN SUPPLY

continue page 63

Botany Bens

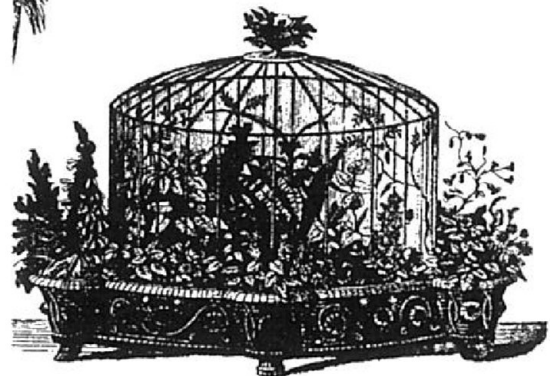
From "Ferns" by Roger Grounds, Readers Union 1975

In Victorian times the fad for ferns was ubiquitous. Every household had its fernery or terrarium or Wardian case in which ferns were grown. Indeed, the Wardian fern case was as essential a piece of decorative furniture as were the waxed fruits under glass domes, the stuffed birds in glass cases, the bouquets of dried grasses and peacock feathers, the velvet-hung mantelshelf and the occasional tables bearing a bounty of bijouteries (jewellery, trinkets). Many of these items are also making a return to fashion, along with bottle gardens and fern cases. The cabinet makers and factories of Victorian times specialised in producing fern cases to suit all homes, rich and poor, and they produced these cases in a vast variety of designs, varying from quite small pieces suitable for keeping on a table to huge pieces the size of small glass-houses. Some were of simple design, while others were extremely ornate. People filled these case with ferns, and itinerant plant sellers, called 'Botany Bens', scoured the countryside for ferns and went from door to door, a basket of ferns over their arm, hawking the ferns. Breeders and selectors spent a great deal of time collecting and breeding plumose, cristate, tasselled and foliose forms of common ferns.



Over 1,800 different varieties of British native ferns has been recorded, and one species, the lady fern *Athyrium filix-femina*, is recorded as having almost three hundred different cultivars,

Ferns were of course the ideal plant for the terraria of Victorian parlours; under conditions of hermetic cultivation they are as indifferent to neglect as it is possible for a plant to be, as they were as tolerant of gloom as troglodytes. Yet there was one undesirable side-effect of the fern fad. The Botany Bens appear to have collected British native ferns with such enthusiasm that they seem to have brought about a depletion of stocks, from which it is doubtful whether the ferns have yet recovered. There is reason to believe that such ferns as the rusty-back *Asplenium ceterach*, and the true maidenhair, *Adiantum capillus-veneris*, were much more common before Victorian times than they are now. It would be a sad thing if a new craze for ferns were to bring about a similar depletion of natural stocks.



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Other physical properties:

A potting material should mix and bind well with other ingredients of the mixture.

It should not break down too easily or become compacted. Other factors which affect the quality of a potting material are abrasiveness and dirtiness.

Nutrient-holding capacity:

Nutrients are held in potting mixes in two forms:

- (1) as salts dissolved in the water and
- (2) as ions attached to the solid particles.

Nutrients dissolved in the water are readily leached from the pot, and thus the nutrients held onto the solid particles of the medium are very important to plants. A proportion of nutrients are held in a potting mix in a form that is unavailable to plants.

It is important for a potting mixture to have a high available nutrient-holding capacity. Brown coal and some soils such as mountain loam are excellent in this regard.

pH:

The pH (relative acidity or alkalinity) of a potting mixture for most plants should be between 5.5 and 6.5. However, some plants prefer a pH outside of this range, e.g., Azaleas prefer an acid potting mix (pH5 or less).

Toxicity:

A potting mixture should not contain substances which are toxic to plants, e.g. excess salt or plant toxins such as the phenols found in fresh pinebark.

Preparation of potting mixtures:

If a potting mixture is to satisfy the above requirements, it must be made up of several ingredients.

Firstly, a coarse material to allow drainage and aeration, secondly, a material which has a good water-holding capacity and thirdly, a material which can hold nutrients available to the plant.

Since peat moss has become too expensive and mountain loam has generally deteriorated in quality, the ornamental research group at Knoxfield has developed several soil-less potting mixes based on pinebark, brown coal and coarse sand, which satisfy most of the requirements of a good potting mixture.

The following basic potting mix has been used to produce excellent growth on a range of plant species including indoor plants:

- 2-4 parts pinebark* (depending on grade):
1 part brown coal:
1 part coarse sand.

The following substitutions can be made:

1. Good quality mountain loam or sandy loam for brown coal.
2. Scoria for coarse sand.
3. Fully composted sawdust for pinebark (this is, however, not recommended because of the variability in composted sawdusts).

Note:

If pots are likely to dry out and re-wetting is a problem, then add more coarse sand.

All of these potting mixtures can be fertilised by standard treatments such as liquid feeding, controlled release fertilizers (e.g. Osmocote or Nutri-cote), organic fertilizers (blood and bone, hoof and horn) or inorganic quick release fertilizers.

* Hammermilled, screened (to less than 6 mm size) and aged moist for eight weeks.

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FROST DAMAGE:

Frost is a common killer of sensitive ferns. Frost causes damage by freezing plant tissue, although most problems occur during thawing. As the tissue in fern cells freezes, it contracts and expels water into the spaces between the cells. This water freezes to form ice crystals. When thawing begins, the ice melts and the water is absorbed back into the cells by osmosis. If thawing occurs quickly, there is little damage to the leaves, but if the ice melts slowly, the cells collapse and the surface frond tissue desiccates. This effect is aggravated because the atmosphere on a frosty night is dry, due to all the moisture being frozen.

Frost damage is more severe on young soft growth than on mature hardened growth. Frost can damage hardy ferns, but in these species the setback is temporary and the plants grow again in spring. Sensitive species, such as those from the tropics, may collapse dramatically and usually rot away to nothing."

From Encyclopedia of ferns by David L Jones, timber press, 1987

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