

ASSOCIATION of

*S. G. A. P. Fern Study Group*



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**SUBSCRIPTIONS DUE FOR 2003.** Please complete the attached form and return it together with your five dollars annual fee to the treasurer A.S.A.P.

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**GET TO KNOW OUR MEMBERS**

Ron Wilkins suggested that with members of the Fern Study Group widely distributed throughout Australia, many frequently see names quoted in newsletter items, books, etc. but don't really know who people like Peter Hind, Peter Bostock, Kerry Rathie, Calder Chaffey, Steve Celemesha, etc. are. This Newsletter we will commence a series of bio's. This month we will focus on the Fern study Group leader and a benefactor of the group.

**WHO IS PETER HIND ?**

**Contributed by Ron Wilkins**

Well, as everyone knows, he is the leader of the Fern Study Group of the ASGAP. But how much more do you know about him?

Peter is a Technical Officer with the NSW Royal Botanic Gardens / Herbarium. He was born in 1947 in Derbyshire, where as a boy he became interested in wild plants and hedgerows. He migrated with his parents to Australia in the early 60's and continued his education in Sydney at the Ryde Horticultural College. After graduation, he worked for 8-10 years in the NSW Botanic Gardens both outdoors, and in the glasshouses where he helped to maintain the orchid collection. It was in this period that Peter began his long-term interest in ferns.

After this initiation, he was appointed as The Botanical Assistant, in which position his major task was managing the seed list collection. The list contained mainly species that were scientifically interesting or horticulturally attractive. This work expanded to include the collecting of wild provenance seed, mainly from NSW and Queensland, and distribution of the seed to scientific institutions throughout the world. During this period he was associated with fern specialists Dr Mary Tindale and Prof. Carrick Chambers.

Peter has collaborated with many workers by collecting materials for systematic studies. For example in pursuit of specimens for Jim Armstrong's monograph of the genus Zieria, Peter visited nearly every mountain top in Queensland. He also collected many of the spore fixations for Dr S. K. Roy's cytological studies of Australian ferns. His many contributions to the scientific study of Australian plants are recognized by three native plant species being named after him. Anyone who has been on a field excursion with Peter will have been amazed at his taxonomic and horticultural knowledge which seems to extend to everything living and green. It was for this reason that he was invited to become leader of the study group, a position he

accepted provided he did not have to do any administration. This may explain a certain reputation for tardiness he has acquired.

As you might expect, Peter has a large private fern collection, all meticulously labelled with locality of collection and taxonomic details. The collection is available to researchers, and labels indicate where samples have been taken for use in specialist studies. It might also be mentioned that Peter collected many of the ferns you can see in the NSW Botanic Gardens fern house. His own garden also contains many palms and cycads, Peter being one of the early members of the Palm and Cycad Society of Australia.

Currently Peter's duties at the NSW Botanic Gardens include assisting with plant identifications for the Department of Land and Water for the Western Division of NSW; data entry particularly for the fern collection; monitoring the plantnet section of the NSW Herbarium web site and keeping it consistent with the National Parks and Wildlife Services of NSW threatened plants list. He can also sometimes be seen fielding counter enquiries at the Herbarium where you may care to test him with particularly curly questions.

Peter seems to have lead a particularly sober and virtuous life, but I did ask him if by chance he had ever been in a fight at a country pub, or won any rodeo prizes, or lost prodigious sums at the races. He has of course been hampered in such activities by a poorly functioning hip, but now that has been replaced, I expect he will be making up for lost time.

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## **GROWING FERNS FROM SPORES USING READILY AVAILABLE NURSERY MATERIALS**

Kerry Rathie sent the following article by Mike Young who is semi retired from the Mt. Lofty Botanic Gardens S.A. Kerry says that "I can vouch that it works. Lots of books contain general methods of growing from spore, but Mike's one is of interest, I feel, due to it's mass of detail."

### **Method.**

Preferably use new, or at least very clean, plastic standard pots of 4" [10 cm] or 5" [12.5 cm] diameter, of a colour which can be written on externally after sowing. As the pots are stood in individual saucers of water and/or fungicide, the pot height is important - shallow pots become too wet, tall pots become too dry. Pots are sealed by using plastic food wrap tied off with grafting tape; do not use rubber bands as these perish before the culture matures.

In the bottom of the pot place a layer [1 -2 cm deep] of inert material such as either vermiculite, perlite, or isolite, or a mixture of all three. Avoid peatmoss as it promotes algal growth in the water. This base "filter" prevents the "filler" from running through the drainage holes during pasteurisation. Fill  $\frac{3}{4}$  of the pot with sharp quarry sand, preferably with a pH from 7 to 6.5. The type of sand which can be used is same as a base for cutting mixtures. Fill with  $\frac{1}{2}$  to 1 c.m. of the germinating medium. I use grey color, acid sandy loam (often called 'silver sand' in English horticultural literature). The pH is about 6, and it is the top layer of soil taken from heathland areas, being fine in texture. The grey color is derived from fine, decayed humus. This sand is passed, when dry, through a fly-wire screen to remove large debris, before being used to form the top layer in the spore pot. Tamp the mixture down lightly before pasteurisation. No attempt is made to achieve total sterility as the biological vacuum created causes problems. I pasteurise pots by pouring vigorously boiling water through a perforated tin [to act as a rose], filling the pot to slightly flood over the edges. Immediately cover the pot with a piece of plastic food seal e.g. Gladwrap® before the pot drains. In cooling, the low pressure created in the pot will often pull the plastic down - that is normal.

When cool [6 to 8 hours later] introduce the fern spores to the surface of the medium in such a way as to reduce the number of contaminating fungi, algae, mosses and other species of fern spores entering.

This is achieved by sowing in a room with no air movement [Windows and doors should be closed], and by preparing the spores on a piece of paper before actually lifting the plastic from the pot. Prepare the spore for sowing by pacing it on a piece of clean paper and then holding the sheet at an angle and tapping the inclined paper in such a way that sporangia fragments and rubbish slide off the edge, leaving the fine spores behind. Experiment with spore handling beforehand on a piece of paper to avoid clumsiness at this stage. The objective is to unseal the pot, tap the paper a couple of times over the pot until a barely detectable waft of spore has been seen to drift over the medium, then re-seal the pot immediately before contamination can occur. Tie down the seal with grafting tape and label the outside of pot. Do not use labels internally within the seal. Stand the pot in a saucer of rain-water.

If a pot is sown too thickly, a dense mat of prothallia develops which restricts the development of archegonia, and therefore the sexual stage of growth [fronding]. The culture is slowed down and pathogens frequently develop. It is nearly impossible to sow too thinly provided true and viable spores are present on the paper, and the waft of "smoke" has drifted over the pot.

Place pots in a position receiving the light intensity in which you would expect to grow maiden-hair ferns satisfactorily. Then black out the pots with either a sheet of thin black plastic or several sheets of newspaper for 21 days. Mark the "unblackening" date on the outside of the covered block of pots. This seems to help in getting an even germination, and seems to allow the prothallia to dominate over any algal spores which may have entered.

4 to 8 weeks after removing the plastic/paper, sometimes this may be longer depending on species, a green tinge [prothallia] should be seen in some of the pots. Do not remove the clear seal as this will allow the entry, of pathogens. Once the prothallia have formed, it is necessary to inspect the cultures through the plastic covers for signs of damp-off fungus. A mixture [at spray strength] of Previcure® and Benlate® can be used in the saucer to inhibit pathogens. An alternative treatment is to use a crystal or two, of potassium permanganate in the saucer.

If a black spot, indicating decay is detected in a culture, then it is necessary to, lift the plastic cover and spray the surface of the culture with a fungicide. A Previcure® and Benlate® mixture can be used or, alternatively, use Fongarid® occasionally .

Once the first fronds are detected, and can be seen covering about 10% of the culture, pricking out can proceed.

Pricking out in small wads of prothallia, with at least one frond showing in each wad, into plastic flats which can be covered with a sheet of glass. Space the wads at about 1 cm apart in rows. Prothallia wads can be pricked out onto a standard fern mix, pre-moistened. After pricking out, water in by spraying with a fungicide. A second spraying may be necessary about 1 week later.

Constant surveillance is needed to detect the start of any damping-off pathogens early: spraying should be carried out immediately. The wads should be kept sealed under glass until fronding is complete. When the tussocks are large enough, air is admitted by lifting the glass on to either a match or similar sized object for a few days. This will harden-off the young plants before transplanting in to a tube. At this stage tree-ferns can be separated into single plants. Most ground-ferns are best left as a wad to allow the strongest plants to dominate. Remove contaminating species at tubing stage, and note if the bulk of the culture appears to be the desired species.

Some cultures sometimes take over a year to frond – be prepared to wait for species slow to develop.

When possible, sow more than one pot of a species, as sometimes a pathogen will wipe out one pot but the other will survive. **Points to watch are;**

- ❖ ensure that true spores are being sown - not just sporangia fragments
- ❖ learn to note the difference on a sheet of paper by collecting and allowing sporangia to dehisce.
- ❖ have the light intensity equivalent to the light at a south facing window [Southern Hemisphere] or a north facing window in the Northern hemisphere i.e. about 600 f/c. Too much light promotes algae and mosses: Too little light produces large, weak prothallia which are reluctant to frond.
- ❖ When collecting spore to sow aim at material which has begun to dehisce, but still carries a high volume of spore for a small amount of frond. By minimising the amount of fern tissue collected, a higher ratio of spores of the desired species to contaminated spores is achieved.
- ❖ watch for signs of pathogens in the cultures and treat immediately if a patch of infection is noticed. Watch for *Botrytis* when fronded ferns are first tubed, and spray with Rovral® if necessary.
- ❖ add lime to the tubing mixture for those species requiring lime. Limestone loving ferns germinate and frond on an acid sand mixture, but require lime as the sporophyte develops.
- ❖ Learn to recognise the desired species, particularly the epiphytic species, so that they can be distinguished from the contaminating species at the pricking out stage. To reduce contamination when sowing a batch of fern species, always sow the epiphytes and slower growing species first and then the most vigorous species.

Printed with the permission of Mike Young.

# A Field Guide To Australian Ferns

## Volume I

Including all Australian Ferns South of the Tropic of  
Capricorn

By Calder Chaffey.

This guide is arranged as a leaf key. Leaves are grouped according to their complexity such as simple or divided once, twice, etc. Every fern is illustrated by at least one illustration and a map of distribution. Certain features are underlined and these may be enough in some ferns to identify the species. There is a very comprehensive glossary in which every technical term used is defined.

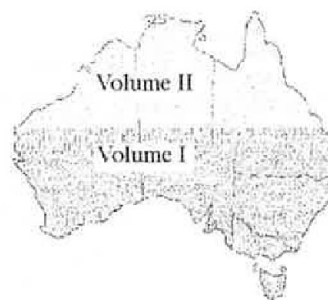
Published by Southern Cross University.

Recommended price \$26.95.

Available at the university bookshop, Big Scrub Environment Centre,  
or

Natureview Publishing, PO Box 130 Bangalow, 2479.

Phone 02 6620 3635



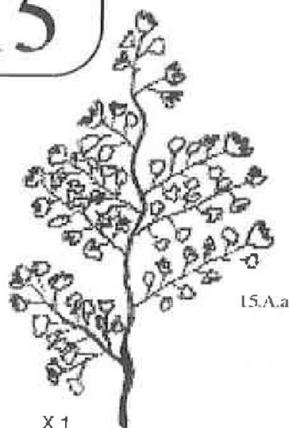
Volume II including all Australian ferns north of the Tropic of  
Capricorn will be released early next year.

Sample of part of page 64

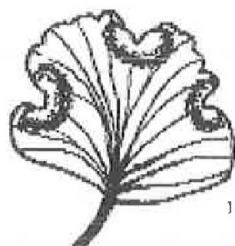
GROUP

15

**Ultimate segments flabellate to diamond-shaped; sori on distal margin  
of ultimate segment.**



X 1



15.A.a.J X 3

**A. 1-5- pinnate, sori on soral flap on lobes at distal margin  
of the ultimate segment, never a true indusium.**

**Veins dichotomously forking.**

Maidenhair Ferns, *Adiantum*, ADIANTACEAE.

**a. Lamina decompose, ovate, elliptic, triangular**

**1. *Adiantum diaphanum* Blume. ADIANTACEAE**

**Filmy Maidenhair Fern**

Terrestrial or lithophytic. Rhizome short-creeping; scales brown margins  
entire. Roots bearing small brown proliferous tubers.

Stipes thin, dark brown to black. Fronds tufted pendulous.

Lamina triangular to pedate, 10-30 cm long, 5-20 cm wide,  
1-pinnate, often 2-pinnate at the base.

Pinnules bearing scattered black setae, membranous, oblique-  
ly oblong to flabellate, shallowly lobed at distal margin.

Sori 2-8 at distal margin, usually 1 per lobe.

Soral flaps reniform to round.

Occurs from E Qld to Vic beside streams and on wet rock  
faces in rainforests.



## WHO IS CALDER CHAFFEY?

Dr. Calder H. Chaffey practised medicine for forty years. During this time he devoted much of his spare time to the study of botany. Uppermost in his botanical interest was the taxonomy of ferns.

Since his retirement this has been an almost full time study and has included travelling to most parts of Australia to find, describe and photograph ferns in their natural state. Dr Chaffey is a member of the *Society for Growing Australian Plants (SGAP)*, *Far North Coast Group* NSW and holds life membership with the *SGAP Fern Study Group*. He has written two books on ferns (with a third on the way) and has been most generous in donating royalties from his first book *Australian Ferns: Growing them Successfully* to the Fern Study Group and from his most recent field guide to Southern Cross University, Lismore NSW. He says that he just loves his subject which has been a lifelong passion.



### **Dr. Chaffey's most recent publication is *A Field Guide to Australian Ferns Vol. 1***

Full details follow as does The Foreword by Peter Bostock.

"Field Guides are something of a tradition in Australia, providing generations of Australians with the means to identify without having to resort to highly technical, but sometimes relatively lightly illustrated, taxonomic treatises. The appeal of books such as N. C. Beadle's *Students Flora of North-eastern New South Wales, part 1* and J. B. Williams & P. Woodland's *A Field Guide to the Ferns and Fern Allies of New South Wales*, lies in their simplified structure and their ability to facilitate identification by combining simple descriptions and illustrations.

It seems a natural progression that Calder Chaffey would follow his recent book, *Australian Ferns: Growing Them Successfully*, with a series of field -guides to the Australian ferns. This series combines the best features of the earlier guides with the latest in taxonomic thinking, and is a worthy complement to volume 48 of the *Flora of Australia* dealing with the ferns and fern allies. Calder's focus on identification by illustration, and his use of side-by-side diagnostic drawings, simplified descriptions and distribution maps will make this first volume, covering the ferns south of the Tropic of Capricorn, a pleasure to use for students and amateur and professional botanists alike, and I eagerly anticipate the second volume."

Peter Bostock, Senior Botanist  
Environmental Agency, Queensland.

**Editors Note.** Having been privileged to be able to obtain a copy of this work I feel that it is a necessary volume to fill a space in between highly technical and very basic publications. In its paperback format it will be easily carried on field excursions and of great assistance to those who wish for a simple fern identification manual. I particularly found the site maps of where plants are located in Australia helpful.

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## NOTES FROM STH. EAST QLD. FERN STUDY

Compiled by Irene Cullen

**VALE GEOFF SIMMONS** - Since writing the last Sth East Qld Notes, we have learned of the passing of one of our earliest members - Geoff Simmons of Beerwah. Geoff joined Fern Study in 1977 and over the years had contributed many articles to the Newsletters. He was particularly interested in the growing and propagation of Platyceriums. He was a member of the Sth East Qld, Branch and while he lived at Durack was an active participant. As a microbiologist he passed on much valuable information. Technical Fern Books were not as available as they are today.

**SEPTEMBER FLOWER SHOW** - Our display of ferns at the September Flower Show was very creditable. I must thank those members who set it up, as they were all heavily involved in other facets of the Show. The painting of the frame was a great improvement

**THE OCTOBER EXCURSION TO THE MAROOCHYDORE BURLAND BOTANIC GARDENS** was most enjoyable. It was a cool Oasis after the heat and drought of the rest of the countryside, Our hosts The Friends Of the Gardens treated us royally. A morning tea and a fabulous picnic lunch was provided for us, as well as guided tours of the gardens. The Fern Gully has really progressed since our last

visit. There are still exotic ferns there, however we were assured that eventually it will be all Australian natives.

**NOVEMBER MEETING "FERNS IN TRANSIT"** - Fifteen members gathered at Rathies home for our November meeting. The chosen topic had to be changed to Kerry's choice. For his convenience he chose "Ferns in transit". Only two days before he had received a box of ferns from Sth. Australia. He had had no time to pot them all immediately so he showed us how they had been packed and despite the fact they had been in transit nearly a week, they were in good condition. They had been sent with the roots still in potting mix, wrapped in paper and packed quite tightly in bundles in freezer bags. These bundles of ferns were again wrapped in paper and plastic before placing in the mailing carton. He then took us to his shade houses and showed us the ones already potted.



### **Greetings to all Fern Study Members from Queensland Group**



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### **Sydney Excursion - FERNS ON BALL'S HEAD, SYDNEY HARBOUR 16 Oct. 2002.**

contributed by Joan Moore

Balls Head is one of the sandstone headlands on the north side of the Harbour. It is quite high and has steep sides to the water. It was named after Lieutenant Ball commander of H.M.S. Supply the first ship of the First Fleet to enter Port Jackson. In 1825 it was part of a land grant to Wollstonecraft, was later inherited by the Berry brothers, all of whom left it alone.

When it became government property again at the end of the century no one would buy it because it is inaccessible from the water. During the Depression in the 1930's homeless people lived on it - and chopped all the trees down. Later, after the War, enthusiastic people replanted it with Australian natives -not all local! It was then taken over by North Sydney Council which still looks after it.

It is a bushland reserve, with possums, blue tongues, geckos and of course bats. The top is a very pleasant Picnic spot with Great views Of the Harbour and the city. Along the western side of the promontory there is a narrow path about 15 feet from the top and it is along this track, mostly above it on the steep slope. that the ferns grow. They are all native to the area: there may be other species present in the more inaccessible places.

#### **FERNS SEEN (recorded by Ron Wilkins)**

Asplenium flabellifolium  
Calochlaena dubia  
Cyathea australis  
Gleichenia dicarpa  
Gleichenia microphylla  
Histiopteris incisa

Hypolepis muelleri  
Pteris tremula  
Pteris vittata(on building  
adjacent to the park  
Pteridium esculentum  
Todea barbara

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### **NEWS FROM THE SYDNEY GROUP.**

Peter invited some of us to a meeting at his home in October to put together a programme for the new year as things had got a little disorganised due to his operation. We found him recovering very well from it, in fact with some aid from his stick he showed us around his ferns - dozens and dozens of them in the ground and in pots in his shadehouses. Regretfully we soon had to leave them and get down to the business of the meeting.

**BRISBANE BOTANIC GARDEN'S NEW FERN HOUSE** opened earlier this year. More than 200 ferns representing 80 species are displayed. Not the largest public collection, but each plant in it tells part of the evolutionary story of the life of ferns. There are terrestrial, epiphytic, lithophytic, aquatic, Australian and Queensland native, some exotic ferns together with a number of rare and endangered species housed in nine outdoor rooms. This was a joint project by the Queensland Council of Garden Clubs and the botanic gardens. It is a hit with students in the 'Lessons in the Gardens' program and the 11,000 adult visitors each week.

**FORTH COMING EVENTS**  
**PROGRAMME FOR SYDNEY MEETINGS 2003 JANUARY TO APRIL**

**JANUARY:** No meeting.

**FEBRUARY: Saturday 15th: Visit to Mt-Wilson.** Meet at the Waterfall Creek picnic area at 10 a.m. Drive through Mt. Wilson settlement to the T junction, turn right to the picnic area. Peter says work has been done on the track along the creek and it is now more comfortable.

**MARCH: Sunday- 16th:** Meet at Kyril Taylor's home. 16 Elizabeth Crescent, Yagoona 2199, at 11 a.m. We will discuss Adiantum guided by Peter.

**APRIL: Saturday, 26th:** Meet at Rose Bach's home at 4 Woodville St., Glenbrook. We will continue with the Adiantum discussion and if completed we will proceed to Polystichum.

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**ASGAP Fern study Sth East Qld Group.**

**Sunday 1st Dec** Meet 9.30 a.m. at Rod Patterson's Fern Garden Miles Platting Road – Rochdale for end of year Breakup and Fern Swap.

**Sunday 2nd February 2003.** Meet Lorna Murray's home 18 Pantheon Street, Jindalee. Subject to be Presented by Peter Bostock.

**Sunday 2nd March, 2003** Excursion to Browns Creek Road. Meet 9.30a.m. at Wanga Park Yandina. Leader Rod Patterson will then direct us to Browns creek..

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**SPORE BANK**

**ORDERING SPORE:** Spore is available free of charge from Barry White, 24 Ruby St., West Essendon. Vic. 3040 **When ordering please include a stamped self-addressed envelope.**

All types of spore are welcome including fresher samples of ones already on the list. There is no necessity to separate the sporangia from the spore. The whole, or part, frond may also be sent in, all is acceptable. Please include date of collection and, if collected in the bush, the area. In the list, the month and year of collection is shown. The letter B indicates collected in the bush. The area of collection is available on request.

**CURRENT SPORE LIST 11/11/02**

		<b>Contributed by Barry White</b>
Acrostichum speciosum 12/01	Diplazium australe 6/00	Platyserium bifurc. cv Roberts 9/01
Arachniodes aristata 5/00	Doodia aspera 1/02	Platyserium bifurc. cv. Hilo /99
Asplenium australasicum 2/02	Doodia australis 12/99	Platyserium bifurc. cv. HulaHands /99
Blechnum articulatum 1/02	Histiopteris incisa 5/02	Platyserium bifurc. Mt. Lewis 9/01
Blechnum camfieldii 9/02	Hypolepis glandulifera 1/02	Platyserium bifurc. ssp. veitchii 9/01
Blechnum cartilagineum 2/02	Hypolepis rugosula 5/02	Platyserium bifurc. cv Willinckii Scofield /99
Blechnum chambersii 2/99	Lastreopsis acuminata 10/02	Platyserium bifurcatum 5/02
Blechnum fluviatile 2/00	Lastreopsis decomposita 12/00	Platyserium hillii /99
Blechnum minus 5/02	Lastreopsis hispida 2/00	Platyserium superbum 5/02
Blechnum patersonii 8/99	Lastreopsis microsora 12/00	Platyserium superbum (Cairns) /99
Blechnum wattsi 5/02	Lastreopsis rufescens 12/00	Polystichum australiense 12/99
Cyathea celebica 3/99	Lastreopsis tenera 12/00	Polystichum fallax 4/02
Cyathea cooperi 5/02	Macrothelypteris polypodioides 4/01	Polystichum formosum 6/99
Cyathea cooperi var. cinnamonia /99	Microsorium pustulatum 1/02	
Cyathea leichhardtiana 11/00	Ophioglossum pendulum 2/00	
Cyclosorus interruptus 3/99	Pellaea falcata 11/01	
Cystopteris filix-fragilis /00	Platyserium bifurc. cv German Hybrid 9/01	
Deparia petersenii 6/00	Platyserium bifurc. cv Lemoinei 9/01	
Dicksonia antarctica 5/02		
Dicksonia youngiae 1/99		

Pronephrum asperum 3/99  
Psilotum nudum 8/99  
Pteris comans 10/00

Pteris tremula 2/01  
Pteris umbrosa 1/02  
Pteris vittata 4/02

Sticherus urceolatus 5/02

Thanks to Claire Shackel for the spore donations

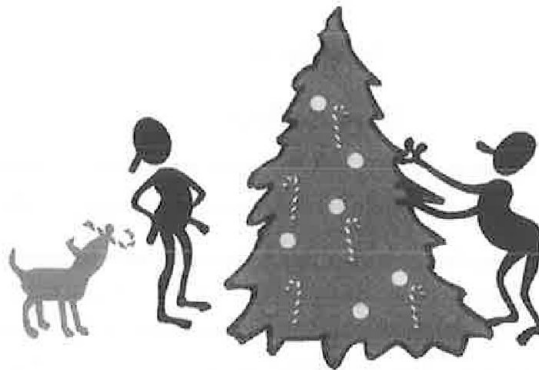
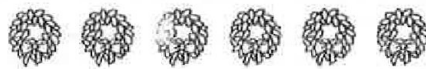
All the best  
Barry

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**NEWSLETTER CONTRIBUTIONS SOUGHT** – Thanks to those who sent articles this quarter. However, I would still like to appeal to individuals or groups to send articles, questions on their favourite plant, an interesting spot they may have visited, a tip on how to grow, or propagate plants, or problems you might be experiencing with growing. Questions have generated a deal of interest in the past.

**DEADLINE FOR COPY:**

**Closing date for the March 2003 Newsletter is Feb. 15<sup>th</sup>, 2003.**



***Wishing all members a Merry Christmas & Happy New Year  
And successful fern growing for 2003.***

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