Fern Society of Victoria Inc.

NEWSLETTER

ABN 85 086 216 704

Vol. 25, Number 5.
September/October 2003

FERN SOCIETY OF VICTORIA Inc.

POSTAL ADDRESS: P.O. Box 45, Heidelberg West, Victoria, 3081
E-mail: http://gardenbed.com/clubs/clubs_vicferns.cfm

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:	Rex Gresham	Phone/Fax (03)	5796 2466
"Kilpara", Selectors Road, Mangalore, Vic, 3663. e-mail <lynrex@optusnet.com.au>.			
Imm. Past President	Ian Broughton		
Vice-President	George Start	"	5962 5059
Secretary	Barry White	"	9740 2724
Treasurer	Don Fuller	"	9306 5570
Membership Secretary	Rex Gresham	"	5796 2466
Spore Bank Manager	Barry White	"	9337 9793
Librarian	Mirini Lang	"	9598 8398
Book Sales	Ivan Traverso	"	9836 4658
Editor	Lyn Gresham	Ph/Fax	5796 2466

COMMITTEE MEMBERS: Jean Boucher 9707 1592, Jack Barrett 9375 3670, Gay Stagoll 9844 1558, Norma Hodges 9878 9584. Brenda Girdlestone 9390 7073 and Mirini Lang 9886 6109.

SILVER ANNIVERSARY SUB-COMMITTEE MEMBERS: Keith Hutchinson 9457 2997, Norma Hodges 9878 9584, Mirini Lang 9886 6109, Brian Nicholls 9836 6507, and Bernadette Thomson 9399 1587.

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.

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.

2003 Calendar of Monthly Events

8.00 p.m. Thursday night, September 18th at Kevin Heinze Garden Centre

Annual General Meeting

Followed by

Part 2 of Dr. Terry Turney's Illustrated Talk on

Islands of Ferns

Some of the more familiar of these are listed on page 75.
You will find our speaker very interesting even if you missed part 1!!
Competition; a fern of Lord Howe Island.

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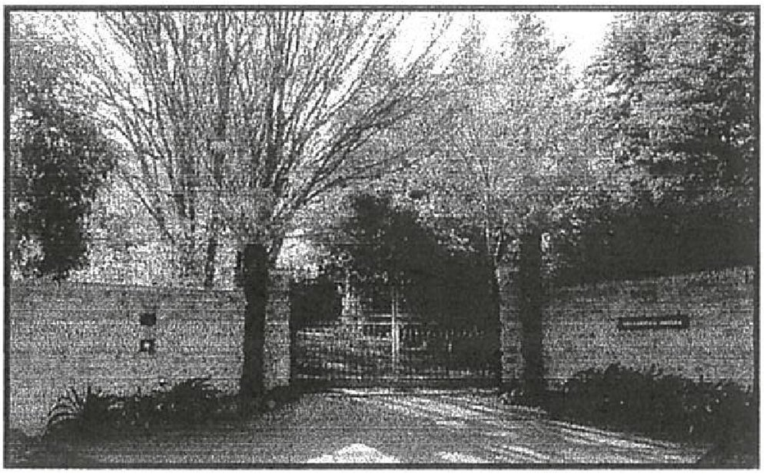
11.30 a.m. Saturday October 18th

A Visit to Terry Turney's mountain garden

"Sherbrooke Maples",
11 Sherbrooke Rd, Sherbrooke
(Melway map 75 G2).



Terry suggests you could make it an all-day event - park in his place, spend the morning exploring Sherbrooke Forest across the road and then be back at their place by about 11.30 for a sausage sizzle lunch.
Barbecued sausages on bread with sauce and a hot drink will be supplied. You will need to take your own cutlery, plate and mug, perhaps a folding chair and anything else you want to eat. If you prefer to take your own choice of meat, you can cook it on Terry's barbecue.
Come and enjoy the two acres of mature garden. Terry says the rhododendrons should be at their best for our visit.
We will need a rough idea of numbers at the next meeting (the A.G.M.) for catering purposes, please.

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Committee members are reminded that there is a committee meeting at the home of Norma Hodges on October 17th at 7.30p.m.

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Thursday 21st November

Chris Goudey

Maidenhair Ferns

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Forward Notice #1:

This year's End-of-year party will be at Kevin Heinze Garden Centre on Sunday 7th December from 11.30 a.m. It will be catered. Don't forget the auction.

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Forward Notice #2:

We now have confirmation that the 2004 Fern and Vireya Rhododendron Show will be at the Mount Waverley Community Centre on April 17th and 18th.

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PRESIDENTIAL PERORATION

Please don't forget that we have the AGM this week, followed by part 2 of Dr Terry Turney's talk on Islands of Ferns. Terry will be flying back from Canberra that day to speak to us so let's make him welcome with a large turn up. Don't let the thought of the AGM cause you to miss out on this treat (which according to the Botanic Gardens would be worth $17 per listener.....and we hear him for nothing)!!

On the subject of Terry, we have our visit to his home "Sherbrooke Maples", see the note on page 3 of this magazine. This should be a great day looking over two acres of mature garden; one I am looking forward to. As the Turneys have generously offered to 'put on a sausage sizzle' for us, we do need approximate numbers at this month's meeting for catering purposes.

Our November meeting will also be a highlight, as we will be having Chris Goudey talking on Adiantums. Chris is the undisputed authority in Australia, if not further afield. It will be great to hear Chris speak to us again.

Our last couple of meetings have been tremendous, with Barry White in July opening up a new world to me with his well illustrated exposé of the distinguishing features of various fern genera. This was followed in August with Don Fuller talking on Nephrolepis, showing that the much maligned Fishbone fern has some wonderful relatives.

Back to our AGM; please consider your involvement in the Society, and consider doing more. Lyn is resigning as the Editor of the magazine, as she has been doing it for long enough, and needs a break. She has heavier commitments elsewhere now and what was great fun for the first five years has become too much of a chore for her now, and is souring her enjoyment of the Society. If you think you may be able to do the job, talk it over with her. I am sure you will get as much help as you need. The job does need access to a computer, but no great knowledge of ferns is required. Lyn will tell you that you learn a tremendous amount about ferns by taking on this task. The position of President is also open, as I still think we would be better served by someone in that position who actually grows ferns!

On to more pleasant things, the End-of-year party will be at the Kevin Heinze Garden Centre on Sunday 7th December from 11.30 a.m. This will be catered, so numbers will be needed later. Don't forget to start winkling out items ready for the auction.

Make a note in your diaries that the date has been set for next year's show—April 17 & 18.

We have heard from Ian Broughton. He and his family are settling in well to their new home, finding the weather rather different to Victoria's Dandenong Ranges and delighting in such things as discovering even better views of surrounding hills/mountains than they expected.

REX

REMINDER:
We now have **Green Jacket** (equal to 12—14 month "Osmocote") low phosphorous, slow release granules for sale to members at $6.00 per kilo. Don Fuller is the man to see to obtain your spring supply.
This is an extraordinary chance to buy at this price and is only possible thanks to our past president, Ian Broughton. We will not be able to repeat this offer once the present stock has gone.

HAVE YOU RENEWED YOUR MEMBERSHIP?

Don't forget to do it...your society needs YOU.

Send your subscription to our secretary, Don Fuller.

Details are on page 66. In case you lost your sub. form, all we need is your name, address, phone/fax/email and the type of membership you want to take out.
Don's address is 21 Summit Ave., Oak Park or to the Society's postal box.

FERN COMPETITION and RAFFLE RESULTS

July Competition
Pteris

1st *Pteris* (Nepal)
Dick Kissane

2nd *P. hendersonii*
Don Fuller

3rd *P. quadriaurita*
Barry White

Exhibitors' Draw won by Barry White
Raffle: Olive Busby, Dick Kissane, Jack Barrett, Ken Hall and Mavis Potter.

Congratulations

August Competition
Nephrolepis

1st *Nephrolepis* 'Chantilly Gold' (Full name; *Nephrolepis exaltata* 'Bostoniensis' 'Chantilly Gold')
Brenda Girdlestone

2nd *N. exaltata* 'Bostoniensis' cv.
Brenda Girdlestone

3rd *N. garrettii*
Barry White

Exhibitors' Draw won by Jack Barrett
Raffle: Ken Hall, Mavis Potter, Barry White, Noel Cleak, Edna Shaw.

to all winners!!!

Vale Rod and Lyn Hill

It was with sadness we note the passing of Rod and Lyn Hill in early June. They were both very enthusiastic members of our society in the early years, Lyn helping with the suppers and Rod taking the important job of Spore Bank Manager. In February 1981 he had 20 varieties of spore available. He advanced this to over 120 by December and continued for the next five years.

Being a school teacher Rod was an excellent speaker. His talks on spore collecting and growing were very popular and a highlight were his photos of fern spores magnified 10,000 times under an electron microscope.

Lyn and Rod shared many of their family excursions with us. We particularly enjoyed the Blue Mountains (N.S.W.) and Southern Queensland trips. We were very fortunate to have had their enthusiastic partcipation in the formative years of our society.

Rod had been ill for some time but is now at peace.

Keith Hutchinson

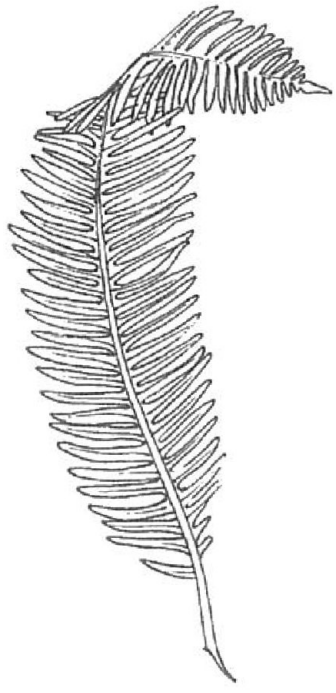
*I apologise to family members and friends of Rod and Lyn that this tribute did not make it into the last newsletter. Keith sent it in time but Australia Post mislaid the original and I never did receive it.
Thank you, Keith for answering my request - twice. Lyn.

AFS Fiddlehead Forum January - February 2003

One Hundred Ways to Enjoy Ferns Ten Times Over

Toshiyuki Nakaike
Chiba Natural History Museum, Japan

1. Obtain a fern flora (a book that list and describes the ferns in a given area) and list the ferns in your
2. particular area.
3. Prepare good pressed dried specimens for your records.
3. Update your fern books by the addition of new findings or corrections. (New localities, new hybrids, the discovery of the parents of a hybrids, are some of the common updates that can be made.)
4. Provide complete, accurate information on labels of collected ferns.
5. Compare the same plant part(s) of different species. (For instance compare and note the differences in the tissue pattern of petioles as seen in cross-section.)
6. Observe how new growth emerges (as its pattern of unfurling, the time needed to fully expand, etc.).
7. Observe how a fern varies through the seasons.
8. Write the Japanese style poem of 31 syllables (*waka*). (The form originated in ancient times and the syllables in each successive line are 5, 7, 5, 7, 7).
9. Make a distribution map of a particular fern or group.
10. Observe the shape and structures of ferns; speculate on their function or meaning.
11. Occasionally read about DNA and ferns.
12. For ferns of interest, look up the type locality (this refers to the place where the fern was first collected).
13. Organize an amateur fern club.
14. Make a botanical key to a group of ferns.
15. Design and make a field-collecting bag.
16. Plan your walks to enjoy both the walk and ferns.
17. Learn something in depth about your favorite group of ferns.
18. Observe the veins on ferns, note their similarities and differences.
19. Observe fern spores and sow them.
20. Visit botanical gardens.
21. Visit foreign countries and learn about their ferns.
22. Look up the parentage of hybrids.
23. Go out even if it rains. (Ferns go along with rain!)
24. Read an essay about ferns.
25. Use the libraries of universities or museums to study ferns.
26. Keep a log, memorandum, or file on a fern or fern events of interest.
27. Participate in fern workshops and lectures.
28. Keep a record of the countries where scientific names of ferns originate.
29. Make a list of fern books dealing with each prefecture (state).
30. Reflect on what nature would be like without ferns.
31. Become a volunteer at a museum.
32. Unidentified species? Contact a fern specialist at museums, or colleges.
33. Note the various shades of green in ferns.
34. Make line drawings of ferns.
35. Collect fern articles or artifacts.
36. Look for ways ferns are used in foods. As young fronds of bracken (*Pteridium aquilinum*) are eaten as greens or pickled; a cake (warabi mochi) is also made using the starch from the rhizome and rice. (*Apply this idea WITH CAUTION!!*)
37. Contribute your observations, poems, and discoveries to fern bulletins or newsletters. (*Yes. yes, YES!! Lyn*)
38. Look for ferns in your neighborhood.
39. Record changes in ferns or fern populations in the same location over a period of time.
40. Compose a song about ferns by changing the original words in an existing song.
41. Investigate the meanings of scientific names.
42. Take pictures of ferns showing something different, such as dew drops on the leaves.
43. Test yourself on the correct naming of ferns.
44. Once in a while, read the rules in the International Botanical Nomenclature.
45. Make greeting cards or post cards with fern photographs or designs.
46. Join a plant or fern club.
47. Devise ways to better preserve fern specimens.
48. Keep a record of fern observations through the year(s).



49. Keep all your fern illustrations in a notebook or file.
50. Learn how ferns are utilized in our lives. *Gleichenia japonica* fronds are used as packing material for mushrooms and as decorations for the New Year's Day celebration. The annual growth on the frond is well marked and therefore symbolic of a year.
51. Design playing cards (or other items) with fern designs
52. Collect fern designs as found on book covers, wrapping paper, etc.
53. Send a letter to a friend describing a fern.

54. Draw the shapes of ferns.
55. Describe the natural history of a particular fern or group.
56. On long train rides, look out the window for ferns and try to identify them.
57. Read and study the description of ferns.
58. Learn the local common names of ferns.
59. Learn botanical words and their abbreviations.
60. Reflect on the relationship between ferns and animals.
61. Notice the kinds of ferns that grow in your neighborhood or other settled areas.
62. Study topography maps of fern rich areas.
63. Obtain a fern check list or flora for a particular area to be visited.
64. Use a hand lens, compass, GPS, binocular, camera, and altimeter on fern trips.
65. Carry a notebook to record daily observations on ferns.
66. Have rice balls (onigiri) as part of the fern hunting experience in mountainous areas.
67. Carefully select suitable fern fronds for herbarium sheets.
68. Reflect on philosophy and ferns. (Descartes' philosophy; I think, therefore I am, i.e. focus your thinking on ferns, you will began to learn more and see more by this concentration)
69. Arranging your own dried fern specimens according to your system of classification.
70. Make it a point to include rhizomes with your dried fern specimens.
71. Make it a point to include fiddieheads with dried fern specimens.
72. Make attractive and scientifically usable dried fern specimens at the site of collection (especially for fast wilting ferns).
73. Learn how to identify the specimens.
74. Make dried fern specimens from cultivated plants.
75. Make duplicate dried fern specimens (for trade or to be sent off for identification).

76. Spend time to care for preserved specimens.
77. Enjoy friendships by taking fern-liking friends with you on fern forays.
78. Use your five senses in observing ferns.
79. To obtain a fresh perspective, walk through seldom traveled areas to observe ferns.
80. To become completely absorbed with observing and looking for ferns, do it in solitude!
81. Keep yourself in good physical condition for fern forays.
82. Use the fern herbariums at museums and universities.
83. Try tasting ferns.
84. Try making hybrids of ferns.
85. Make your own botanical garden.
86. Exchange dried fern specimens with each other, especially with foreign countries.
87. Make up riddles about ferns.
88. Smell ferns, they often smell different (Describe the smell).
89. Make handicrafts and toys using ferns.
90. Enjoy relaxing in or near a bed of ferns.
91. Look for fern poems in haiku (a 17 syllable poem) poem.
92. Look for unusual leaf variations on ferns. Grow the fern, it might be a new cultivar.
93. Savor the delight of seeing a fern species new to you.
94. Learn the names of the different parts of a fern.
95. "Ichigo ichie." Though we may have many chances to observe ferns, treat each opportunity with care and respect, act as though we have but one opportunity. The phrase *ichigo* (life time) *ichie* (one chance) is an expression or attitude usually associated with serving the guest during the tea ceremony.
96. Organize and rearrange ones fern literature.
97. Talk to your ferns.
98. Open the fern home page on the internet or look for other fern web sites.
99. Publish a book on ferns.
100. Keep our body and minds healthy by pursuing an interest, such as with ferns!

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"The Polypodies"

by John Banasiewicz

Genera: Aglaomorpha, Anarthropteris, Belvisia, Campyloneurum, Colysis, Crypsinus, Dictymia, Drynaria, Goniophlebium, Lecanopteris, Lemmaphyllum, Loxogramme, Merinthosorus, Microgramma, Microsorum, Niphidium, Phlebodium, Phymatosorus, Platycerium, Pleopeltis, Polypodium, Pseudodrynaria, Pyrrosia and Selliguea.

The Polypodies are a large family of ferns, many of which are readily available commercially. However, we in the temperate climatic zone are unlikely to come across some species, as their requirements are too tropical for satisfactory cultivation elsewhere.

Polypodies occupy a big range of habitats, from regions with pronounced dry seasons to equatorial forests. Most grow on trees or rocks, but some are terrestrial. With few exceptions they prefer brightly lit situations.

In cultivation, polypodies require a coarse epiphytic mixture, whether they are grown in baskets, pots or in the ground. Drainage must be excellent. They enjoy plenty of water in the growing period, but prefer to be a little on the dry side during cold spells. They respond to manures and fertilisers, especially in the growing season. Slow-release or liquid fertiliser will be beneficial. In selecting a growing site it should be borne in mind that most polypodies prefer bright light and are cold sensitive.

Fern scale probably is the only major pest problem to affect polypodies in WA though slugs and snails will attack Polypodium species if given the opportunity to do so.

Most of the following polypodies are easily propagated either by spore or by division:

Dictymia brownii (Strap Fern). An epiphytic species native to Australia, which bears slender, stiff, leathery, dark green fronds. Excellent for pots or baskets, it prefers to be under-potted and is slow-growing. It requires a coarse mix, shade, humidity and air movement for successful cultivation.

Goniophlebium subauriculatum. This epiphytic or terrestrial fern from North India, China, Malaysia, Niugini and Australia has very long fronds which make it an excellent basket specimen. It can also be grown in the ground, requiring humid conditions and air movement.

Goniophlebium verrucosum. An epiphyte from Malaysia, Niugini, Indonesia and Australia, it has long-wearing dark green fronds. It requires a coarse mixture and warmth.

Goniophlebium persuccum. Another epiphytic species which is ideal for basket or pot cultivation. It requires

some protection in winter.

Microsorum pappei is an epiphyte from Africa with tall, dark green, slender fronds on long stipes. It is usually grown in pots or baskets containing a coarse mixture and is one of the species which prefers shade rather than bright light.

Microsorum punctatum. This epiphyte from Africa, Asia, China, Malaysia, Niugini, Australia and Polynesia is a coarse fern with large, leathery, simple fronds which usually are pale yellowish green in colour. It is easily grown, normally in baskets or large containers, and requires a coarse, free-draining mixture, bright light, warmth and humidity.

Microsorum grossum From north east Queensland, the Northern Territory, northern Western Australia, New Caledonia and Polynesia, is a fairly hardy fern but is frost sensitive. It makes a good basket or container plant.

Microsorum fallax. We have almost no information on this species, other than that it is a recent arrival in WA. It is an attractive fern, resembling a large parsley plant, with scalloped and crested fronds. It is deciduous during the cooler months.

Microsorum pustulatum (Kangaroo fern) is from south east Queensland, Victoria, Tasmania, Norfolk Island and New Zealand. It is mostly epiphytic, occasionally terrestrial, and is a hardy fern for ground or basket planting. Specimens in the ground tend to climb up tree trunks if allowed. It prefers bright light and will take some sun.

Microsorum scandens (Fragrant fern). An epiphytic or terrestrial species from Australia, New Zealand and Norfolk Island, it is a vigorous climbing fern which forms clumps on trees. It will also grow well as a terrestrial plant, and as such is excellent either in the garden or in a basket or pot. It requires a coarse mixture and shade.

Polypodium angustifolium (Central American Strap Fern). An epiphytic species from Mexico, Central and South America, it is an excellent basket fern, with pendulous, dark green, leathery fronds. It is slow-growing, and requires a coarse, open mixture in humid, shady conditions.

Microsorum scolopendria is an epiphytic or terrestrial species from tropical Africa, Asia, Malaysia, Niugini, Australia and Polynesia. Common and easily grown, it looks great in a basket or in the ground. It will tolerate some sunlight and prefers an open mixture.

Polypodium crassifolium is an epiphyte from Mexico, Central and South America. It has broad strap-like fronds which are distinctly and heavily veined. It is ideal for pots or hanging baskets in a coarse mixture, preferring humidity and air movement. It spores freely in shade houses.

Polypodium aureum, now known as *Phlebodium aureum* (Rabbit Foot fern, or Golden Polypody). This is an epiphytic or terrestrial species from Florida, Mexico, Central and South America, and the West Indies. A popular fern, it is very variable in form, some forms appearing to bear little relationship to others. It can be grown in the ground, in pots or baskets, but it requires a very coarse mixture. It spores freely.

Polypodium vulgare cv 'Ramosom' (Common Polypody). From Europe, North America, Japan, China and Africa. It has forked fronds and is deciduous during cool months.

Polypodium australe (Southern Polypody). From Europe and Atlantic Islands, it is terrestrial and epiphytic;.a deciduous species which prefers a humus rich loam in a shady situation in a pot or basket.

Polypodium formosanum (Grub Fern or Caterpillar Fern). An epiphyte from Japan, Taiwan and southern China. A beautiful fern with drooping lime green fronds and long, creeping lime green to white rhizomes. It makes an excellent basket plant in a coarse mixture. It will become deciduous, and, once planted, does not like to be disturbed.

Polypodium loriceum. This epiphyte from Mexico, Central and South America and the West Indies is Similar to *P. formosanum* but has larger, more erect fronds and smaller sori set close to the midrib. It makes an excellent basket fern and requires shade.

Polypodium rothmales. No information other than that it is a deciduous fern with lime green fronds and that it appreciates a small dose of lime occasionally.

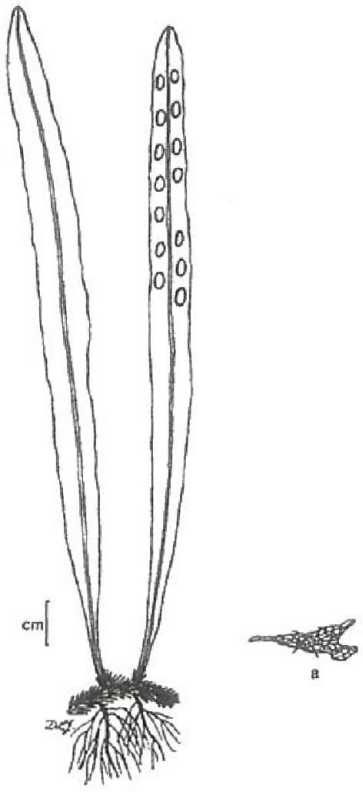
Selliquea feei Is an epiphyte from India and Indonesia. It is a harsh-textured but attractive fern with glossy bright green fronds and wandering rhizomes. Excellent for pots or baskets, and very easy to grow in a coarse mixture.

The above described ferns and some of their cultivars were at the meeting at which John spoke.

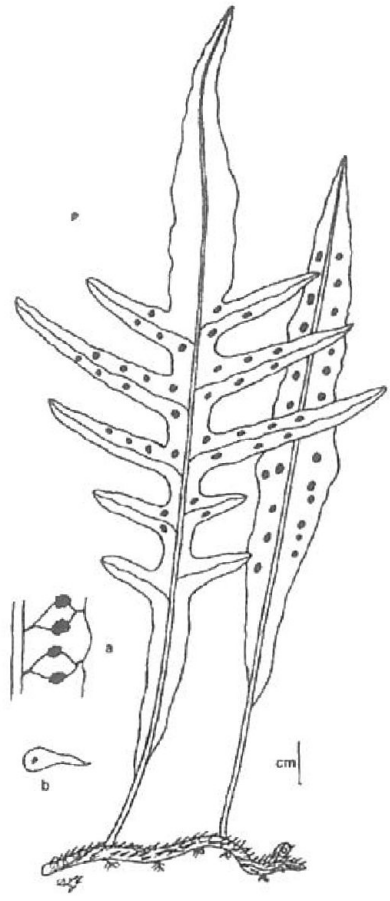
Foot Note (with apologies for the pun!)
This article appeared in The West Australian on 6 May, the day after our talk on Polypodies. It was written by Perth medical herbalist Dennis Vander Kraats:

"A fern plant from rainforest in Central America has given new hope for sufferers of auto-immune diseases such as psoriasis, vitiligo, rheumatoid arthritis and

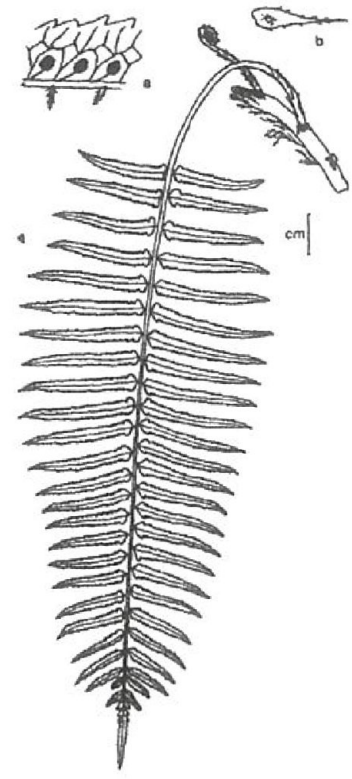
"The Polypodies"



DICTYMIA BROWNII



MICROSORUM SCANDENS
a) Section of fertile frond
b) Scale



SCHELLOLEPIS SUBAURICULATA
a) Section of pinna
b) Scale

Crohn's disease.

Botanically named Polypodium leucotomos, and commonly referred to as polypodium, this plant has been used for hundreds of years.

Its earliest recorded use was by the ancient Mayans in their daily diet and they attributed healing properties to it. Polypodium has been used in Europe as a herbal medicine for more than 10 years to treat immune system related disorders.

Polypodium's family of ferns contains more than 6000 species of plants, mostly in the tropics of both hemispheres. There are 75 species in the Polypodium, genus, many of which have been used medicinally for centuries. The name is derived from poly, meaning "many", and podus, meaning "foot" because of the many foot-like divisions of the root or rhizome.

Like most ferns, polypodium has a large creeping and dividing root or rhizome system, and it is the rhizome which is most useful medicinally.

In the Amazon rainforest a maceration of rhizome is used for fever, while the root is grated fresh or made into a tea for whooping cough and kidney complaints.

The indigenous Boras people in the Peruvian Amazon prepare the leaves in a drink for coughs. Other Peruvian tribes use the rhizome to treat problems of the pancreas. In Guyana's rainforest, the Creole use a decoction of the rhizome in ritual baths for infants.

Latin American indigenous groups call the plant Calaguala and use the rhizome as a remedy for illnesses including cancer and psoriasis.

While promoted as a panacea by many traditional cultures, polypodium has been found to have a sound physiological basis for its health-promoting properties.

Numerous potentially biodynamic compounds have been found in this family of plants and polypodium has been found to have a powerful immune-regulating effect.

In an eight-week double-blind study involving patients with severe psoriasis, 28 out of 31 responded positively to polypodium. Of these, 22 showed good to excellent response, three had a moderate response and three experienced only a slight benefit".

HH

Short List of Ferns from Lord Howe Island.

Psilotum nudum (Skeleton Fork Fern),
Lycopodium myrtifolium (Long Clubmoss),
Botrychium australe (Austral Moonwart),
Histiopteris incisa (Bat's-wing Fern or Oak Fern),
Adiantum aethiopicum (Common Maidenhair),
A.hispidulum (Rough Maidenhair),
Pteris tremula (Tender Brake),
Cheilanthes distans (Bristly Cloak Fern),
Pellaea falcata (Sickle Fern),
Grammitis diminuta, G. wattsii (Finger Ferns),
Platycerium bifurcatum (Elkhorn Fern),
Microsorum scandens (Fragrant Fern),
Pyrrosia confluens (Robber Fern),
Nephrolepis cordifolia (Fishbone Fern),
Asplenium australasicum (Bird's-nest Fern),
Blechnum patersonii (Strap Water Fern),
Doodia caudata (Small Rasp Fern),
Christella dentata (Binung).

Bits and Pieces

C-Fern

Eddie Watkins (ewatkins@ufl.edu)
Department of Botany, University of Florida,
Gainesville, FL 32604

I recently gave a lecture on fern reproduction to a group of students at the University of Florida. Teaching students who aren't majoring in biology about the fascinating world of fern sex is... well, difficult at best. The intriguing sex determination system in ferns is one of the most fascinating biological phenomenon left out of most college biology textbooks! How can we teach the world to better understand our spore-bearing friends? Let technology do the "walking" at: http://cfern.bio.utk.edu/index.html

Many of you are familiar with the fern, Ceratopteris thalictroides, commonly referred to as the "C-Fern." But, did you know that the C-Fern is rapidly becoming one of out most studied and popular ferns for teaching and research? This, thanks mainly to the efforts of Thomas R. Warne and Leslie G. Hickok who have developed the C-Fern website. Here you can get an unlimited amount of information on cultivating and using C-Ferns. At this website you will find links to a web manual on the history and cultivation of the species, a list of scientists using the C-fern in their research programs and sites where you can purchase spores (wild-type and mutant). In addition, there are several links where students (high school and college) can learn about potential projects using C-Ferns, frequently asked questions on several aspects of the species biology, and much more. You can even purchase a C-Fern t-shirt! I may say this every issue, but if you only see one website this year, make it: "C-Fern Sex In A Dish!"

Fiddlehead Forum * March-April 2002

FERNS ON BALL'S HEAD, SYDNEY HARBOUR

Joan Moore
16 Oct. 2002.

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 1930s 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	Hypolepis muelleri
Calochlaena dubia	Pteris tremula
Cyathea australis	Gleichenia dicarpa
Pteris vittata on building adjacent to the park	
Gleichenia microphylla	Pteridium esculentum
Histiopteris incisa	Todea barbara

SGAP Fern Study Group Newsletter Dec. 2002

The following article is reproduced in acknowledgement of Rod Hill's great contribution to the Society and in memory of him. It was originally published as an instructional paper to encourage growers old and new to experience the growing of ferns from spore for themselves.

PROPAGATION OF FERNS FROM SPORE.

Rod Hill

1. Collection of Fern Spore:

Fern spore usually develops on the backs of fern fronds in special structures called sori. Each sorus is made up of a cluster of roughly spherical sporangia, each sporangium containing a large number of spores (64 in most species). Sometimes the sorus is protected by a mambrane called the indusium. The shape of the sorus and indusium varies considerably for different ferns.

It is most important when collecting fern spore to be able to judge when the spore is ripe, and this may usually be accomplished by careful observation. The sporangia are initially light green and slowly ripen, often to dark brown or black, at which time they appear swollen and shiny. As the sporangia then burst and release the ripe spore, the sorus takes on a rather tatty or furry appearance.

Often you will be able to see all stages of this development on a single plant, if not on a single frond, and you should collect sections of frond in the region where the spore is ripest, just before the tatty area, where the spore has been shed.

In cases where the sorus is covered by an indusium, this may lift or shrivel as the spore ripens (e.g., Lastreopsis, Rumohra, Polystichum etc.) but if not (as with some Adiantums and Aspleniums) you may need to peel back the indusium and examine beneath it with a small hand lens (×10 magnification) to check for ripe sporangia.

Some spores ripen to yellow (e.g., Dicksonia, Gleichenia, Sticherus, Microsorium). Most members of the Osmunda family (e.g., Todea and Leptopteris) ripen to dark green, the empty sporangia being yellowish to brown.

The sections of frond collected should be loosely arranged, with sori facing down, on sheets of clean paper. These should be kept in a warm, dry spot, away from any draughts, and allowed to dry out for a day or two. If the spore is ripe, very fine powder should start to collect on the paper within a couple of hours. If you are not sure whether the spore is ripe or not, a very small piece of frond may be tried first.

When the frond are dry, gentle tapping will dislodge any trapped spore. As well as the very fine spore, you may also collect a quantity of the coarser sporangia husks. These may be separated fairly simply by holding the sheet of paper on an incline and repeatedly tapping the paper sharply. With practice, you should be able to make the husks slide away down the paper, leaving the spore behind.

The spore may then be swept with a soft brush, or tapped down a fold in the paper, into a small paper envelope (ensure the corners are sealed with tape) for storage. Packets of spore should be labelled with the name of the fern and date of collection, and kept in a cool, dry place until needed. Although it is generally recommended that spore be sown fairly fresh, in many cases spore kept in an airtight container with a packet of silica gel should retain its viability for several years.

2. Preparing a Suitable medium

Any fairly coarse, porous material seems to be suitable. Very old, well decomposed, shredded Soft Treefern fibre gives excellent results if available. Peatmoss (unsieved), crushed terra-cotta pots, charcoal or Elkhorn fibre (or combinations of these) have also been used successfully. Another alternative is a mixture of equal parts coarse sand and treefern fibre (or peatmoss) and I have even seen a good crop of healthy ferns growing on an ordinary kitchen sponge.

I have found 5 or 6 cm square pots quite sufficient to grow a fairly large number of ferns, enabling a few different species to be raised in a relatively small space. The pots may be filled with the chosen medium or a 2-3 cm layer may be added on top of your normal potting mix. This may be sterilized by carefully pouring hot water (see below) through the mix then standing the pots in hot water, up to the rim, in a closed container for an hour or so. The pots should then be removed, hot water poured through the mix for a second time, and then allowed to cool, again in the closed container. If the mix contains no organic material, then boiling water may be used. However if organic materials are present the water should be boiled, then left to stand for 5-10 minutes before it is used. Boiling water often releases toxic chemicals from organic materials, resulting in poor germination and growth.

If a finer medium is used, sterilization with boiling water may prove rather messy. In this case, the mix may be placed in a tray, covered with foil to retain the moisture and baked in the oven at 250°F for about an hour and a half.

Sterilization is necessary to kill off any moss or fungus spore, or unwanted fern spore, which might be present in the mix.

PROPAGATION OF FERNS FROM SPORE...

3. Sowing the Spore

Probably most failures will come from sowing the spore too thickly. One way of sowing spore thinly is by covering the end 1 cm of a small, clean penknife blade (or very small chemical spatula) with the spore and then gently tapping off the excess to leave only a thin, single layer of spore adhering to the blade. This is quite sufficient to sow a 5-6 cm pot. To sow the spore, hold the blade 6-7 cm above the pot and give it a sharp tap with a pencil to dislodge the spore. This must be done in a perfectly still room, completely free from any draughts or breezes.

Spore packaged in gelatine capsules may be emptied onto a clean piece of white paper prior to sowing. By carefully standing the inverted capsule and lid on the paper and sharply tapping both, most of the spore may be recovered. Spore may then be sown as above, or a fine mist of spore may be swept or tapped off the edge of the paper onto the pot.

An alternative method is to tip most of the spore into the lid of the capsule, leaving a very thin layer on the inside of the other section. As before, hold the inverted capsule over the pot and dislodge the spore with a sharp tap. If the spore is reluctant to be tapped out (e. g., some Lastreopsis species, Sticherus), the spore may be wiped out with a clean, dry cotton bud and this in turn tapped over the pot.

Another suitable technique for sowing spore from gelatine capsules, especially if only very small quantities of spore are present, involves partly filling the capsule with fine, dry, sterilized sand (or possibly treefern fibre, peatmoss etc.). After gently shaking the capsule, a thin layer of sand and spore may then be evenly sprinkled onto the top of the pot.

4. Conditions for Germination

For spore to germinate, it must be kept moist at all times. This is simply achieved by placing sown pots in a closed container (e.g., plastic ice-cream container, food crisper or glass aquarium covered with a sheet of glass). Provided there is reasonably close contact between the top of the container and the glass cover, the pots should remain moist almost indefinitely. The pots should be sufficiently moist from the sterilization process and do not need to be standing in water (although some growers advise it). Pots should not be watered from above in the early stages or the spore will be washed away.

Germination seems to occur most rapidly if the spore receives a fair amount of light. A north or east facing window generally provides a suitable aspect, providing that direct sunlight does not fall on the pots. A single thickness of white rubbish-bin liner is often sufficient to diffuse sunlight.

Germination is usually apparent within 3-4 weeks as a fine green film across the surface of the pot. Each tiny green speck slowly develops into a flat, heart-shaped prothallus (the first stage in the life cycle of a fern), usually 2-5 mm across. The prothalli may begin to produce true fronds from the notch of the heart at almost any time from 2-3 months in some very rapid species to several years in other cases. Once prothalli are a reasonable size, any growth of fungus or mould can be gently checked by watering pots with half strength Benlate solution.

5. Pricking out and potting on.

The tiny sporelings may be pricked out into tubes or trays with only one or two true fronds developed. Containers should be filled with a suitable potting mix and thoroughly moistened. A mixture of about 2 parts peat moss, 2 parts washed river sand and 1 part mountain soil, all ingredients having been sieved (or any standard potting mix) should prove satisfactory.

By carefully grasping a tiny frond between thumb and index finger, it should be possible to lift the fern off the pot with its prothallus still attached. At this stage, true roots will usually not be developed, and the prothallus can be gently pushed down onto the surface of the new pot or tray to support the tiny fern plant. This should be done fairly quickly and in a cool, draught-free location as the delicate sporelings will not survive for long out of the humid atmosphere they are used to. As soon as possible, transplanted sporelings should be gently watered and placed under glass again.

If the sporelings are allowed to grow too large and crowded before they are pricked out, they may be scooped out in clumps with a spoon, placed in a saucer of water and then gently separated and planted into tubes or trays. Again they should be placed under glass without delay.

The newly transplanted sporelings should be allowed to develop under glass until their fronds are about 5-10 cm high. At this stage they may be very gradually acclimatized by slowly raising the glass cover, a few millimetres at a time, over a period of 4-6 weeks. You will need to keep a close watch at this stage to ensure pots don't dry out and you may need to water some plants from time to time. Ferns in trays may be potted up into tubes or small pots either before or after this hardening off process.

If you wish to plant these ferns in an outdoor fernery, they are best grown on in a cold glasshouse until fronds reach about 20-30 cm and then planted out, preferably in mid-spring, when indoor and outdoor temperatures are very similar.

Using the technique outlined above, it is not unusual to grow one or two hundred ferns from each 5-6 cm pot sown with spore.

Good luck

Rod Hill.

Green Dreams

by John Banta

Green is certainly a favorite color of gardeners. It is only with a well-balanced fertilizer program that the full array of green hues enriches your garden. First, the basics. Nitrogen, phosphorus and potassium are all required for normal plant growth. Cheap fertilizer is all right during the dry season when you control the water. The more expensive fertilizer (with a low soluble nitrogen source) makes economic sense in the rainy season. Once the required amount of fertilizer is available to the plant other elements come into the picture.

Magnesium (like in Epsom salts) is the central atom in the chlorophyll molecule. The problem is that in order to move the magnesium atom where it's needed, an atom of manganese is required. Because the manganese atom is recycled in this enzymatic action, only one third as much manganese is needed compared to the amount of magnesium. So, the ratio of magnesium to manganese is 3 to 1.

Palm collectors are often faced with chlorosis problems in their collections. A trick used by some of them is to add a solution of (3 parts) magnesium sulphate (available in any good gardening shop) and (1 part) manganese sulphate to a solution of calcium nitrate. WOW! The clear solution turns white as milk. The calcium sulphate (plaster of Paris) settles to the bottom after some hours and the clear liquid is a super-charged greening solution. Taking into account molecular weights, water of crystallization and all that stuff you should mix 12 oz. of Epsom salts with 4 oz. of manganese sulfate into 2 1/2 gallons of water. Add this to 2 1/2 gallons of water containing 1 pound of calcium nitrate. Be certain that all of the salts are completely dissolved before mixing. This makes 5 gallons of a 1.8% solution which can be sprayed on plants for a fast acting green-up.

Tropical Fern & Exotic Plant Society Inc Newsletter, May 2002. *

Polystyrene in the growing mix

Q. I was chatting with an elderly lady with exceptional garden abilities and one of her comments got me thinking. She said she added polystyrene balls to her potting mix, because in the cold it keeps her plant roots warm!! I generally use perlite to loosen up the mix and assist in drainage, but perhaps it also has the same effect. Any thoughts?'
Keith Rogers

A. One of the most common and recognizable uses of perlite is in potting soils and nursery mixes. Normally the perlite is expanded about 6-8 times by heating where it expands or "pops" much like popcorn. A similar mineral, vermiculite, is also expanded for use in these mixes. The two expanded mineral products are mixed with peat and the mixture is bagged for shipment to garden specialty stores and nurseries. Perlite is particularly good in this application as it can retain up to 60% of its volume in water, thus providing moisture to plants. For root cuttings, 100% perlite as a matrix, is often used. The capability to hold moisture makes the potting mixture conserve and more effectively utilize water normally provided by conventional sprinkling or by irrigation.
Both Perlite and Styrofoam are also used in cryogenic insulations. When DRY, they are both outstanding thermal insulators.
Although both Perlite (expanded) and Styrofoam (expanded Polystyrene plastic) are great insulators, a point of physics needs to be made here. One feels warm in a down sleeping bag only because the down is a good insulator and therefore prevents your body heat from escaping. Sleeping bags, as well as all forms of thermal insulation (including Perlite and Styrofoam) do not "make" heat. Styrofoam balls can only retard heat loss, not maintain a certain heat level.
Here is a point for Styrofoam that Perlite cannot make: Perlite absorbs and retains water, but Styrofoam beads essentially do not. Since it is the entrapped air that is really the crummy heat conductor, a pot of wet Styrofoam beads will be a better thermal insulator than a pot of wet Perlite or regular potting soil, but none of them will keep a root ball warm in a Canadian winter.
Bob Needham USA
In Australia a slower rate of heat loss during the night might very well keep the roots sufficiently warm to prevent damage. This is assuming that in the mornings the temperature warms up.
I didn't notice it being mentioned, but a lower thermal conductivity might also be beneficial during hot afternoons. It might prevent or minimize damage to the roots during extremely hot afternoons. I prefer styrofoam pots because the sides of the pots do not get so hot and dehydrate the roots. Some use collars around pots which have the sun shine on their sides. *

SPORE LIST

ORDERING The following spore is free to members who donate spore; otherwise members 20 cents per sample, non-members 50 cents, plus $1.00 to cover postage and handling. Available at meetings or by mail from Barry White, 34 Noble Way Sunbury, Vic. 3429 Australia, Ph. (03) 9740 2724. There is no charge for overseas members however to cover postage two international coupons would be appreciated. Overseas non-members may purchase spore at three packets for one international reply coupon plus two coupons for postage and handling. There is a limit of 20 packets per order.

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