Fern Society of Victoria Inc.

NEWSLETTER

ABN 85 086 216 704

Vol. 24, Number 4

July/August 2002

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:	Ian Broughton	Phone (03) 5964 6402
Imm. Past President	Chris Goudey	" 5282 3084
Vice-President	George Start	" 5962 5059
Secretary	Barry White	" 9337 9793
Treasurer	Don Fuller	" 9306 5570
Membership Secretary	Rex Gresham	" 5796 2466
Spore Bank Manager	Barry White	" 9337 9793
Librarian	David Radford	" 9598 8398
Editor	Lyn Gresham	" 5796 2466
"Kilpara", Selectors Road, Mangalore, Vic, 3663. E-mail <lynrex@mcmedia.com.au>.		
Book Sales	Ivan Traverso	" 9836 4658

COMMITTEE MEMBERS: Jean Boucher 9707 1592, Lyn Gresham 5796 2466, Brian Nicholls 9836 6507, Jack Barrett 9375 3670, Gay Stagoll 9844 1558, Norma Hodges 9878 9584.

SUBSCRIPTIONS:

Single -	$14.00	Pensioner/student $11.00
Family -	$16.00	Pensioner Family $13.00
Organisation	$16.00	
Overseas -	$21.00 - Payment by international bank cheque in $A please. Overseas sent by Airmail.	

Subscriptions fall due on 1st July each year.

Meeting times and venues will vary this year whilst we gather data on members' preferences. The Kevin Heinze Garden Centre is at 39 Weatherby Road, Doncaster (Melway 47; H1).

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.

2002 CALENDAR OF MONTHLY EVENTS

INCLUDING MEETINGS AND EXCURSIONS

SATURDAY 20th July at 1.30pm

VENUE: Kevin Heinze Garden Centre, 39 Weatherby Road, Doncaster. (Melway 47:H1)

Rod Noonan will demonstrate

MOUNTING ELK FERNS

Competition: Platyceriums

REMINDER to Committee Members; we will meet at 12.00pm this day.

****

Saturday August 17th at 1.30pm

VENUE: Kevin Heinze Garden Centre

Get a Little Dirt On Your Hands.

A general discussion on growing media, umpired by Keith Hutchinson

Competition: Art/craft item made from a pressed fern or pressed ferns.
Something other than a herbarium sheet.

****

Thursday September 19th at 8.00pm

VENUE: Kevin Heinze Garden Centre

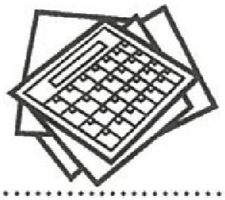
Annual General Meeting.

Also that night Barry White will give a talk on

NORFOLK ISLAND

COMPETITION: Any fern from Norfolk Island.

****



THE YEAR AT A GLANCE

Thursday	October 17th	8.00pm at Kevin Heinze Garden Centre
Saturday	November	Excursion
Sunday	December 1st	at Kevin Heinze Garden Centre

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.

Optimists are wrong as often as pessimists - but they have a much happier time.

THE PRESIDENT'S POUND

Our on-again-off-again weather continues. We seem to have belting rain for a week then almost none for weeks on end. Add to that howling gales more typical of October and I can only long for the day I'm finally out of the nursery industry. We had a week recently where a lot of stock blew over on a Thursday, was stood up Friday afternoon, blew over again that evening and stayed down until the following Friday.

We have come to the point where we can probably no longer sell our business as a going concern but will try to sell the property as a nursery site. So we intend selling off all our stock plants. I hope to get a list out to members, either through the newsletter or a separate mailing, in the next few months. We will also sell any of the plants in the ground that we can including many advanced tree ferns – eg 3 *Cyathea x marcescens,* 3 *C. smithii, C. woolsiana, C. celebica, C. dregei*, etc etc.

On the subject of the sale of our business and a possible move to Western Australia – some people seem to think that my wife and children have moved to WA already and are waiting my arrival after we sell! Not so – the way things are going that could be a permanent separation! If we move, we will do so as a family, and only after we have sold the business. Unless we win Tattslotto, which will be difficult as I have never bought a ticket and I wouldn't even know how to buy one.

This year's Show was a great success. A pleasant time was had by all and a number of new members joined at, or after the show. Much of the credit belongs to our Show Committee chairperson, Don "Supercharged" Fuller who once again put in a tremendous amount of time and work for a long period before and after the event.

Our garden tour in May was a great success. Many thanks to Gay and Brian for organising the day and to all of our hosts – Brian and Pat Nicholls, Arch and Olive Busby and Barry and Gay Stagoll. We would also like to express grateful thanks to Gay and Brian for arranging such delightful weather for the day.

It was really good to catch up with Chris Goudey again for our June meeting. His talk and display of fossils was fascinating. We could get Chris to give our talk every month so we see him more often!

For anyone interested in Calder Chaffey's book "Australian Ferns - Growing Them Successfully", it has recently been spotted at $30 and even $15 at Angus and Robertson bookshops.

In July and August we will be trialling Saturday afternoon meetings. These will be of the same format and at the same venue as our regular Thursday evening meetings, but we are trying Saturday afternoon to see if it's easier for members to attend. We will be commencing at 1.30 and finishing around 4.00.

This month Rod Noonan, from the Williamstown Garden Club, will be talking on mounting Elks and Stags. It will be interesting to get a different perspective on an old problem. The competition category will be Platyceriums of course.

In August we will hold a forum on potting media etc. so bring along your questions, suggestions or brilliant ideas to share with us all. The competition will be any item made with a pressed fern – so get pressing and mounting NOW!!

I hope that you and your ferns survive the chills and ills of Winter as we look forward to brighter days to come.

Ian Broughton

Turn your face to the sun and the shadows will fall behind you.

2002- 2003
SUBSCRIPTION RENEWALS DUE.

As you will appreciate, our society is a bit pointless without members and is impossible without member's subscriptions. Please send yours toot sweet!

Single memberships are $11 - $14, family memberships $13 - $16. More detailed subscription information can be found on page 50 and your renewal slip is enclosed in this magazine. **Please include your full details (phone, e-mail etc.)** for our records.

Recently new members are reminded that their membership is paid up until this time next year so this notice doesn't apply to you!

We greatly value your presence in the society.

NOTICE OF ANNUAL GENERAL MEETING.

The twenty third Annual General Meeting of the Fern Society of Victoria Inc. will be held at 8.00pm on Thursday the 19th of September 2002 at the Kevin Heinze Garden Centre, 39 Weatherby Road, Doncaster.

Business to be transacted will be:

1. To receive and deal with the President's Report on behalf of the Committee of Management.
2. To receive and deal with the Treasurer's Report.
3. The election of Office Bearers and Committee Members of the Committee of Management for 2002 - 2003.
4. General Business.

Nominations for Committee of Management

Nominations are now called for the positions of Office Bearers and Committee Members for the year September 2002 to September 2003. Nominations should be in writing, be signed by the proposer and seconder, and include the written consent of the nominee. They must be received by the 9th August (not less than seven days prior to the Annual General Meeting). Nominations may be called at the Annual General Meeting only if insufficient have been received previously to fill all vacancies.

General Business

Items to be discussed and voted on under General Business at the Annual General Meeting must be notified to the Secretary in writing not less than 21 days prior to the meeting.

Ian Broughton

President.

FROM OUR FERN SHOW

MARY FROST AND DON FULLER.

Show Judge

Congratulations on a lovely Fern Show again. It is an absolute delight to be able to judge the exhibits for you and congratulations must go to all exhibitors who staged the ferns. The number of entries in each section shows that the members are keen to show their plants.

Many congratulations to all the winners in each section and if your plant didn't win perhaps the following tips will help you for next year.

- The judge looks at everything and so should the exhibitor.
- Make sure your pot be it plastic, terracotta, wood, treefern is always clean—it only takes a few minutes to take a plant and repot it if the pot will not clean. Baby Oil cleans black plastic and also a coat of liquid boot polish is good.
- Now most important—the plant must be clean. Some Davallias had fallen maple leaves in them and dry fronds. Take all damaged fronds off the plant and it will thank you. The damage cannot be repaired and the fern will make a new frond anyway.
- I chatted to the winner in the Adiantum section (also considered for Champion). He was a little ticked off early in the season so he chopped the complete fern off - result; a glorious display of fronds in every stage. Your plant must show mature fronds, unfurled fronds and fronds just starting and be a good example of the type of fern you are displaying.
- Labels should be hand written/printed so that they are easily read by the viewing public and members alike so they then can purchase the plant from the well stocked stall.
- Start in January preparing your plants then every month clean fronds, removing damaged ones as it is very easy to miss a frond the night before or the morning of the show. The judge looks very hard—just ask the steward !!

Copngratulations and I look forward to seeing the difference in plants displayed next year.

Regards

Mary Frost

Show Committee

The 2002 Combined Fern and Vireya Rhododendron Show was held on the last weekend of April and was a successful activity for both societies. The weather this year was ideal and we had a good attendance on the Saturday but a little disappointing on Sunday.

Our fern display was excellent with a slightly larger display than in recent years. A pleasing feature was the increase in the number of members participating in the fern competition. **Congratulations** to Chris Goudey for winning the "Best Fern of the Show" sash.

Special feature displays which created considerable interest were a collection of **fern fossils** provided by Chris and Lorraine Goudey and a collection of **wood turnings from tree fern trunks** provided by George Start. Our thanks to these people for providing these interesting displays.

I would also like to thank the many members who brought in ferns and plants for the display and competition, and those who assisted with the conduct of the show, or helped with the setting up and the dismantling of the show. Your efforts in sharing the tasks was greatly appreciated. The society also wishes to express our thanks to **Maxicrop (Aust) Pty. Ltd.** who again supported our show by providing sponsorship of the fern competition. This support is greatly valued. Thanks also to Mary Frost who judged the fern competition.

Our fern sales area was again well stocked and patronized. This resulted in a reasonable profit to the society.

Next year will provide us with a considerable challenge to stage a Fern Show due to the difficulty with the only available date and the unlikely participation of our president in any show next year. However we have booked the venue for the weekend of April 26th and 27th (ie. The weekend immediately following ANZAC Day).

Don Fuller

Chairperson, Show Committee.

FROM OUR FERN SHOW

RAY HARRISON

The competition had 90 entries altogether which was very pleasing for organisers and there were 23 in "Any Other Fern". The number, quality and variety of ferns on display made quite a spectacle for visitors and it was great to hear many comments along the lines of, "I didn't know there were so MANY different ferns in existence, let alone being grown in Victoria!" The fact that people could often purchase one of those interesting ferns in our sales area just added to their experience. Well done, exhibitors and contributors, both amateur and professional, to the spectacular display.

Show Steward

Results of this years show competition are:

- **Adiantum**

1st John Hodges' *A. frostii*
2nd John Hodges' *A. formosanum*

- **Asplenium**

1st Chris Goudey's *A.* 'Austral Gem'
2nd Don Fuller's *A. aethiopicum*

- **Davallia**

1st Barry White's *Davallia* sp. (Tonga)
2nd Don Fuller's *D. tasmanii*

Nephrolepis

1st Don Fuller's *N. aureum* 'Chantilly Gold'
2nd Don Fuller's *N. exaltata* 'Fluffy Ruffles'

- **Polypodiaceae**

1st Chris Goudey's *Pyrrosia lingua* 'Oba'
2nd Barry White's *Pyrrosia confluens*

- **Fern in 1500mm Container**

1st Don Fuller's *Adiantum cordata*
2nd Jack Barrett's *Asplenium* × 'Austral Gem'

- **Any Other Fern**

1st Chris Goudey's *Huperzia* sp.
2nd Ron Robbins' *Platycerium bifurcatum*

- **Best Fern of the Show**

Chris Goudey's *Pyrrosia lingua* 'Oba'
Congratulations to all winners!!! Well done!!!

WINTER JOBS IN YOUR FERNERY

The colder weather drives many of us indoors and we spend less time with our ferns. Remember that ferns still need watering although less often during the winter months.

If you have deciduous ferns in pots do not give up on them as they will show themselves again as soon as spring arrives. Also try not to be tempted into tidying up by removing yellowing fronds. This might just stimulate new growth that could be damaged by the cold.

Fern pests such as slugs and caterpillars are still a problem so do not forget to continue with a pest control program.

Now is also a good time to collect as well as sow spore.

With the days shorter and the nights so much longer why not put pen to paper and write an article for the newsletter? I am sure other members would be interested and the editor would appreciate your effort.

From the May 2001 issue of "Pteridoforum". Used with thanks because they also apply to Victoria.

Ferns on the Internet

Barry Stagoll

Due to the unavailability of equipment needed to illustrate this talk at a recent meeting as planned, Barry was unable to preesent the talk. These are the notes he had prepared, which he has made available for publication. It makes very interesting reading - but I still would like to see it demonstrated sometime.

First -Some Background

Computers have had a large impact over the past few decades without most people using them in person, and very few used them at home until quite recently.

Now, as well as being common in workplaces, education, etc. the personal computer is widespread in households. However, in many households, until recently, a predominant use was to play computer games rather than PCs being widely used for more serious purposes.

The evolution of the internet has changed the picture dramatically - now over 50% of Australian households have a computer and around three-quarters of these have internet access at home. Note that we don't refer to the internet as the "Intemet" (capital "I"), any more than we would refer to the telephone as the "Telephone" or a computer as a "Computer" - all are now generic, everyday, components of modern life - all around us.

These days, a basic PC capable of accessing the internet can be purchased from around $ 1000, and the cheapest internet connections (up to 20 hours per month on-line) start around $220pa, plus local call cost (in metropolitan areas) for each dial-in to go on-line.

The CD-Rom

Before discussing the internet, it's worth noting the power of modern digital technology to store and retrieve large and sophisticated collections of information very cheaply - in particular to mention the **CD-Rom**, a compact, durable, virtually incorruptible medium for cheaply storing great quantities of data. It's the same technology used for music CDs, the information being written to the disk, and in turn read back from it, by laser. The CD-Rom is now ubiquitous as an information storage and retrieval device for use on PCs, for text, images and sound.

The actual disk is so cheap that the marginal cost of reproducing it is much the same as the cost of producing a single newspaper. (Of course, they're not usually sold for as little as this, with the price reflecting the value in the market to the buyer who wants to make use of it, rather than the production cost). There's a telling story of how the Encyclopedia Brittanica went from being a long-time profitable and successful business to a virtual basket-case when it resisted the idea of publishing on CD-Rom, and then saw its sales collapse when the Encarta encyclopedia was given away as a promotion item on a CD-Rom by marketers of PCs. The problem was that, although Britannica had a superior product, it was only available in printed form with a price tag in the order of $1,500. Obviously on CD-Rom the Brittanica product could have been sold very much more cheaply, but still at a considerable profit margin because of the low cost of reproduction.

With an efficiently-organised CD-Rom, we can find the particular information we want very simply, usually using an indexing system much like we're familiar with in a printed publication. Quite a quantity of horticultural information is available already on CD-Rom., such as encyclopedias of plants.

The Internet

What is the **internet?** We're all familiar with the "telephone network" - a network of interlinked telephone equipment. Well, the internet is a network made up of inter-linked computers, most of which (at the present time) in fact use the telephone network for their communication. However, an important difference is that, whereas typically a telephone voice call will only involve two parties being connected by a particular communication link established temporarily via the network, typically many internet users are connected simultaneously to particular "sites" (repositories or generators of "content", ie. information).

Most of us don't need to know much more about the technicalities of how this network operates- what's more important is to understand that for practical purposes (amongst other uses) the internet can be used as:

- a **communication medium** (electronic mail or **e-mail, and chat rooms),** which facilitates very fast messag-

ing at low cost, to one recipient or many simultaneously, and without the limitations of the phone (is the party there when you call?); time-zone hassles in making international calls; the extra work of making an accurate documentary record when this is needed, etc.) or the fax (the receiving machine doesn't even know that your text document is text, for all it knows it could be a photo of your cat - this limits the ways in which the communication can be used when it's received).

- a **directory,** like a phone book, or rather a whole series of directories like a worldwide phone book, and with a much wider range of indexing information listed than, say, the yellow pages
- a vast **series of libraries** which we can access on-line
- **catalogues** of products and services, and a medium for buying many of these
- a medium for **banking** and making or receiving payments

a medium for accessing **entertainment.**

Some internet "sites" fit one of these categories, and many others combine features of more than one of them.

Basically, the internet allows us an alternative way of setting out to do many of the sorts of things we can do by older means (eg. consult the yellow pages, visit libraries or bookshops). Although you'll hear it said that "WWW" doesn't stand for the 'World Wide Web", but rather for the "World Wide Wait", in fact (if the information we want has been made available on the internet) usually we can get a result much faster than by using older alternatives.

Some sites of interest

The easiest way to look up something on the internet is to know the particular address (known as a URL) for a particular site.

Some sites specific to ferns

• our own FSV site	www.gardenbed.com/clubs/clubs _ vicferns
• The Fern Society of South Australia	www users. chariot. net.au/~safern
• American Fern Society	www.amerfernsoc.org
• British Pteriodological Society	www.nhm.ac.uk/hosted sites/bps
• Ferns of the Canberra Region	www. home. aone. net. Au/byzantium/ferns
• Hardy Fern Foundation (USA)	www.hardyferns.org
• Los Angeles International Fern Society	www.smcdaniel.net/laifs
• Fern Research Hub (San Diego Fern Society)	www.sdfern.com

Most sites of this type have a **"Links" page,** which can lead you very conveniently to other sites of interest (in fact, by successfully accessing any of the above you will find that you can get to pretty well all the others just by using the "links."

There are also sites set up by many **Botanic Gardens** to communicate about themselves (and to facilitate contacts with them)

• Royal Botanic Gardens Melbourne - separate pages for Melbourne & Cranbourne Gardens	www.rbgmelb.org.au
• Royal Botanic Gardens Sydney	www.rbgsyd.gov.au
• Mount Annan Botanic Garden	www.bluemts.com.au/mounttomah/MountAnnan
• Mount Tomah Botanic Garden	www.bluemts.com.au/mounttomah/MountTomah
• Australian National Botanic Garden, including indigenous plants database (which is huge)	www.anbg.gov.au
and specific **fern content** at	www.anbg.gov.au/abrs/flora/webpubl/fernglos.htm and www.anbg.gov.au/projects/fern

- RBGKew www.kew.org.uk check out the "collections" page, etc.
- RGBEdinburgh www.rbge.org.uk again cheek out "collections" , "research"

Then, a huge number of sites **generally about horticulture** - some examples

- Aust Plants Society http: //home. vicnet. net. a u/-sg apvic also see
- www.trump.net.au/~joroco/sgaptas/-ferns for some SGAP pages specifically devoted to ferns (in this case of Tasmania)
- Melbourne International Flower Show www.melbflowershow.com.au
- RHS UK www.rhs.org.uk includes RHS Gardens information, etc.
- Yates Australia www.yates.com.au
- GardenWebAust www.au.gardenweb.com - see the "Directory"; "Events Calendar"
- Global Garden Web Magazine www.global-garden.com.au similar content pages
- www.gardenbed. com again similar design concept
- www.garden.com ditto

To try a direct search for information on ferns on a "horticultural" site 1 suggest: www.plantideas.com/link/ferns.

Finally, you can use a **web "search engine" to** do a general search for particular subject material of interest using a "top down". approach.

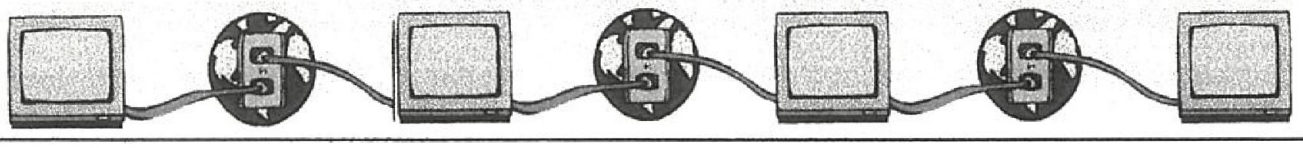
Try this using, say www.LookSmart.com.au (or)
www.yahoo.com.au

For instance, a search on "fern" or "ferns" (or almost any other important plant group) will produce a great quantity of references to websites which include some mention of the word. Most will be incidental references, though, of no particular interest to us, and many will be repeat references to separate pages appearing on particular sites. To avoid being inundated with largely useless information, we need to define what we're looking for by choosing a combination of terms which narrow the search. For instance, a search for "ferns" and "gardens" will produce more precise results. However, the simple one-term search can often give leads to sites which will help you get nearer to your desired information objective, provided you exercise a little patience in examining the first few pages of the search response listing sites found in the search. You can look in turn at a few which seem to have some prospective value, and then work on from them, particularly if they include some suggested "links" to other sites.

Unfortunately though, you will only find any search sites which the operators of the particular "search engine" service have catalogued, and it seems they have sometimes been a bit indifferent to sites which do not fit their view of what is relatively "mainstream" culture. Or you can use the "directory" function in a websearch site to look for information about sites of possible interest as catalogued by subject heading. For instance, access www.yahoo.com and then select "Science ... Biology .... Botany .... Plants .... etc." to narrow down the desired information, in much the same way as you would use the Yellow Pages, or a library catalogue. This is similar to the way in which the specific Plant Ideas site mentioned earlier is used, but provides a great deal more scope for your search. Specialist nurseries which have websites can also be located by working through the -business directory" facilities provided by search services such as Yahoo.

-FERNSONTHEINTERNETDOTCOMDOTWOOHOO-

Thank you, Barry, for the most clear, informative and encouraging explanation I've ever seen. As one who is severely internet-challenged, I may even have another go, now. Lyn.



May Garden Visits

We chose a lovely day for our latest outing. Many members and guests rallied at Surrey Hills for morning tea at the Nicholls' garden and enjoyed wandering around Pat's amazing fernery. Also of interest were their many collections - they are certainly a couple with eclectic taste!

From Surrey Hills we were off to the Busby's lovely, well established and interesting bushland garden in Warrandyte featuring (for me) some water gardens and beautiful trees. We gathered for lunch just down the way on the Yarra River bank from where many of us sampled the local cuisine and 'did' the op shop, bookshop etc (would you believe they've even got a candlestick maker?!!).

A good finale for the day was the Stagoll's garden at nearby Park Orchards, another bushland garden where, as well as planting some beautiful and rare plants of all sizes the owners have concentrated their efforts on facilitating the natural regeneration of as many indigenous plants as possible; with admirable success, may I say. Just when we thought it was all over a marvellous afternoon tea appeared and we suddenly discovered we were hungry, after all!

Our thanks to Pat and Brian and their daughter; Olive and Arch; and Gay and Barry for a thoroughly pleasurable interlude in life and for being so welcoming to us all, trusting us to not trample all over precious gardens. We very much appreciated all your contributions to a lovely day.

☽☽☽

MONTHLY FERN COMPETITION WINNERS!!!!

May 2002

*No competition due to our Garden Visits this month.

June 2002

1st Don Fuller's
Asplenium bulbiferum×surrogatum 'Island Beauty'.

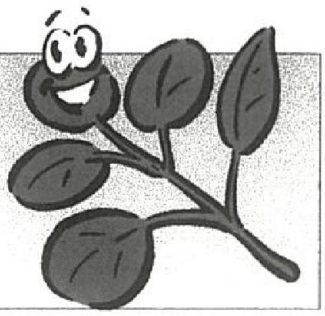
2nd John Hodges'
Adiantum raddianum 'Crested Fritz'.

3rd Don Fuller's
Nephrolepis exaltata 'Fluffy Ruffles'.

Competitors' Draw - Jack Barrett.
Special Effort - Mavis Potter, Don Fuller, Barry White, Jack Barrett.

THE LEAF

Barbara Joe Hoshizaki, Los Angeles, LA



What follows is a brief description of the development and structure of a leaf relative to how it functions. A general understanding of leaves can be useful to gardeners solving growing problems.

Leaf Development

A leaf typically starts from the stem tip. A cell from the stem tip separates from the mass of dividing cells and divides to form a bump. At the top of the bump a particular cell (*Leaf initial*) develops into a peg-shaped structure that late becomes the leaf's stalk (*petiole or stipe*) and midrib (*rachis*). If the leaf is pinnate, growths appear on the sides of this peg-shaped structure that eventually become the pinnae. This stage of leaf development takes varying amounts of time depending on the size and intricacies of the leaf.

At the margins of this embryonic leaf a row of special dividing meristematic cells (*marginal meristem)* form the leaf blade. When climatic conditions are appropriate, the leaf starts to uncurl as cells begin to elongate. Sufficient water is essential at this stage as the cells need water to stretch out and allow the leaf to take shape. At this point leaf enlargement occurs primarily through cell elongation and not the development of new cells.

Once the leaf cells cease division, new cells are no longer produced. Consequently there are no new cells available to repair or replace broken or lost leaf cells. Mature leaves of most ferns do not "heal" once leaf cells are damaged. Within a leaf, undamaged leaf blade tissue continues to photosynthesise and produce food adjacent to un-repairable, damaged tissue. Growers must decide if the plant is better off with the food that can be manufactured from these partial leaves or if garden aesthetics is reason for removal. This is unlike discoloured fronds that result from insufficient light or mineral deficiencies and that may be restored to their normal colour with the proper light or fertilizer.

Some ferns produce new, replacement leaves if the damaged ones are removed whereas others should be allowed to keep as many leaves (including damaged ones) as possible. It is important to note that total leaf loss does not equate with total loss of the plant; sufficient food reserves in the stem or roots may allow continued leaf development.

Insects feeding on new leaves while the leaf cells are in their early stages of development can cause puckering or abnormal leaves. Unfavourable weather or other adverse conditions may also cause damage to cells that produce abnormal leaves. In most instances, these conditions are transitory and the plant subsequently produces normal shaped leaves.

A few ferns have mature leaf cells that remain meristematic and are capable of dividing into new cells. *Nephrolepis*, the Boston fern, has meristematic cells at the tip of its leaves and this accounts for the continued growth in leaf length that occurs in this species (*indeterminate growth*). *Lycopodium*, the climbing fern, has unusual vine-like leaves, which remain indeterminate. Lygodiums also produce buds at the tip of the pinnae that grow into more leaves. *Camptosorus*, the walking fern, has meristematic cells at the tips of mature leaves that divide to form small plantlets.

Leaf Anatomy

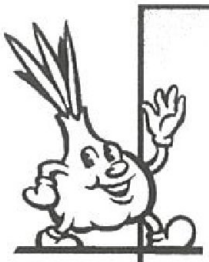
Leaf cells take on their characteristic shape and function after they have finished elongating and have matured. The surface sells (called *epidermal cells* or collectively *epidermis*) are flat and serve to protect the underlying tissue. Scattered (especially on the lower surface of the leaf's epidermis) are pairs of sausage-shaped cells called *guard cells*. Between each pair of guard cells is a hole known as the *stoma* (*stomata*, pl.). Stomata control the movement of carbon dioxide and oxygen in and out of the leaf. Also on the epidermis are hairs, scales, glands and waxy or powdery substances that serve to protect the fern. The middle of the leaf (*mesophyll*) contains layers of thin-walled cells that make food for the plant through photosynthesis. These cells are full of green *chloroplasts* where photosynthesis occurs. Among the mesophyll cells is a network of veins (*conducting tissue*) that conduct food and water between the leaf and stem.

Leaf Functions

The primary function for a leaf is to manufacture food for the plant. Raw materials needed for photosynthesis are carbon dioxide, water and sunlight. Carbon dioxide from the air enters the stomata while water moves from the stem's conductive tissue to the leaf mesophyll and eventually to the chloroplast. In a series of complex steps the sun's energy is combined (in the chloroplast) with carbon dioxide and water to form sugar (and oxygen). The sugar is used to fuel the plant's metabolic and growth requirements. Healthy plants have leaves that are turgid and directed toward

the light for photosynthesis. In wilted plants water is in short supply for maintaining leaf turgidity and consequently the leaves wilt. In these water stressed plants a feedback mechanism allows guard cells to become limp causing the stomata to close protecting the leaf from further water loss. Open stomata are a major source of water loss for plants, but evaporation of water at the leaf surface is key to water transport in the plant. Evaporation pulls up water from the roots through the stem and hydrates the plant. This massive movement of water also allows minerals, transported from the soil and required for many functions such as photosynthesis, to reach all parts of the plant.

-Fiddlehead Forum (vol.28 No.3, May-July 2001) Bulletin of the American Fern Society.
Used with many thanks.



Garlic

Garlic is a wonder food,
You should eat it every day.
It may not cure what you've got,
But it keeps the world at bay.

Germs take flight in horror,
That gives you peace of mind.
Plus dogs and cats and roosters,
And loved ones close behind.

Fern Society of South Australia Inc April/May 2001 Used with thanks for an interesting collection of recipes.

Maidenhair Fern Potting Mixes

During a chat to Coralie Hime recently, I was made aware that there was quite a difference in potting mixes used by elite Maidenhair (Adiantum) growers. Their wonderful successes are well known and successful mixes could be relevant to the area where they live and their growing conditions. As Coralie says, to succeed in your area, you may need to try all three or invent a mix made up of parts of each. You also need to remember that some Adiantums prefer Acidic, others Alkaline and others Neutral potting mixes. Read your fern books or ask the Adiantum growers what mix to use for your species or cv.

Coralie Hime's Adiantum mix.

1×500g. container of 2yr. old used Orchid medium. (Orchid medium consists of 5 ml. pine bark, marble chips, rice hulls & charcoal. This mix is starting to break down).
2×500g. Nu-erth Premium potting mix.
1 handful of crushed egg shells
1 handful of crushed dry oak leaves.

Best used slightly damp & Rapid raiser is added just below potting level so that a layer of Premium Potting mix can then cover the fertilizer.

Mary Maitland's Adiantum mix.

5 parts compost
1½ parts Peat Soil (top grade potting mix)
2 parts Peat moss
1 part charcoal
2 parts cow manure
1½ parts vermiculite
2 parts oak leaf compost
½ part dynamic lifter (pelletised chicken fertilizer)
1 part "OR 90'* (fish product)
4 handfuls Dolomite.

Betty Weaver's Adiantum mix.

Sieved compost x 4 litres
Charcoal x 1.5 litres
Perlite x 1.5 litres
Peat moss x 1.5 litres
Cow manure x 1.5 litres
Dolomite x 1 teaspoon
Hoof and horn x 1 pinch.

Helpful hints

(1) If plants in plastic hanging baskets look bedraggled and unattractive, try removing the drip tray. Many keen gardeners never put them on. In the Wet season especially, they tend to be constantly filled with water which quickly causes the plant to become waterlogged and the soil to turn sour.

(2) To gain active aeration and even all round growth for plants in hanging baskets, place a brass swivel (there is probably one among your fishing gear) above the basket on the connection to the hook. The wind rotates the basket and the plant will not turn its leaves in a set direction for light.

(3) Water ferns more frequently on windy days and fertilise with a fish emulsion fertiliser.
(4) To rejuvenate your large fern baskets cut out the middle, replace with new soil mix and replant with segments removed.

**Sorry, my scanner went mad and I don't know what it meant. Must be a dried fish product. Lyn*

Fern Society of Victoria
Nomination Of Committee Member

This form must be completed by nominating members, endorsed by the candidate and delivered to the secretary of the society not less than seven days before the date fixed for the holding of the annual general meeting.

I nominate ..... for the position of ..... for the year 2002 - 2003.

Name (Block letters) .....and signature ..... of person nominating.

Name (Block letters) ..... and signature .....of person seconding the nomination.

I, the candidate, accept the nomination and am willing to take the above position if elected

(Signed).....

Make New Garden Objects Look 'Old' Using Moss

This concept has been around for years and is a good way to 'age' a new article which is porous or to disguise an unsightly surface on an old item.

Recipe

3 cups liquid clay mixture
1 cup liquid fish emulsion
1 cup sphagnum moss

Mix together in a blender until all ingredients (especially the moss) are blended.

The clay gives the moss a base in which to adhere and grow and the fish emulsion will keep the moss fertilized.

Using a large paintbrush, brush the fluid mixture onto concrete urns, stones, rocks, and/or any other porous garden items that can be located in a shady or fern garden. Place in a moist spot and within several weeks, the moss mixture will begin to grow on the surface to which it has been applied.

(I have tried painting concrete pots with milk and with natural yoghurt at different times, with remarkable lack of success, though I know of others who have been successful when porous items are actually sitting in shallow water. This method sounds as if it may be worth a try. I don't know where I sourced this recipe so cannot obtain permission to use it or acknowledge its author. If you're out there...thanks! Lyn.)

Extract Reprinted from Fern Society of South Australia Inc Feb 86 -Newsletter

DAVALLIA STUDY GROUP REPORT
BETTY WEAVER

With Davallias our conclusion for a soil mix was as follows:
1/3 regular soil mix plus 2/3 of the following: Perlite, charcoal, Johnsons Orchid mix, tree fern fibre, willow roots (previously left in sun to dry & crumbled), rotted oak leaves, cow manure (pulverised), spaghnum moss (milled or cut with scissors & Elk fibre (crumbled).

Davallias grow as semi epiphytes; in the ground (some species), on trees and rocks, but mainly on natural fibres. The best lining for baskets therefore are natural fibres, such as; willow roots, spaghnum moss, tree fern fibre or logs, or any material that has been or is a living plant, definitely not plastic.

BUT MY FERNS ARE WET...

Jolanda Nel

People often approach me with the question, " But my ferns are wet. Why did they die?"

The science behind the behaviour of water in pots is actually quite amazing. Two concepts that are necessary to understand are **adhesion** and **capillary action**.

Adhesion is the tendency of water to cling to the surfaces of containers or particles. A *cohesive* force exerted by the other water molecules opposes this attractive force toward the wall of the container. If the adhesion is greater than the cohesion, a liquid in a narrow tube will rise to a specific height. This tendency of water to rise in a narrow tube is called **capillary action**. Another property of water is the tendency to assume a spherical shape as a consequence of surface tension, e.g. raindrops.

Potting soils are porous, with small spaces between the granules. These narrow spaces act as capillaries in the soil. When water enters soil, it penetrates the spaces and adheres to the particles and does not just run through the soil and out the bottom of the pot. So, because of adhesion and capillary action, a significant amount of water is retained by the soil.

Plants need to withdraw water from the soil and the roots must now exert suction or negative pressure on the moisture in the soil. The plant must use energy to get water from the soil. The required negative pressure can be quite high. If the effective capillary radius of the soil is 10^{-3}, the pressure required to withdraw the water is 1.46×10^5 dyn/sec or o.145 atm. This pressure required to withdraw water is called the **soil moisture tension** (SMT).

Put differently, soil moisture tension is a measurement of the energy or the force in which water is held by the soil. In determining the quality of soil, the SMT is a very important parameter. The higher the SMT, the more difficult it is for roots to withdraw the water necessary for plant growth. The term **moisture tension** represents the degree of suction and will be given as a positive number, while the scientific term matrix potential of soil is –10 kPa. This is pretty simple, but can lead to confusion when scientists and growers get together and start talking about high or low tensions and potentials.

SMT depends on three factors:

1. Grain size of the soil
2. Moisture content of the soil
3. Material composition of the soil.

Spaces between the particles of soil increase with the size of the grain. Capillary action is greater in a narrow tube, so it follows that finely grained soil will hold water more tightly than soil of similar material with larger grains.

Moisture content of soil is inversely proportional to SMT. When all the pores in soil are filled with water, the moisture tension is at its lowest value and less pressure is required by roots to withdraw water from the soil. Plant roots however need some air. Saturated soil is thus not a good medium for plant growth and no air is present when soil is fully saturated. In loam with a moisture content of 20%, the SMT is about 0.19 atm. When the moisture content drops to 12%, the AMT rises to 0.76 atm. The rise in SMT follows, because as the soil loses moisture the remaining water is bound more in the narrower capillaries and also because as the moisture content decreases, sections of water become isolated and tend to form droplets. A small droplet with a radius of 10^{-5} cm requires a negative pressure of 14.5 atm for water to be drawn by roots.

Type of soil determines the strength of adhesion. Under similar conditions of grain size and moisture content, the SMT in clay soil can be ten times higher than that in loam. Size and total volume of pore space are a function of both the soil's texture and structure. Clay soils can hold a significant amount of water, because of the relatively large surface areas of individual clay particles and the large number of very small pores. Sand particles, on the other hand, have relatively small surface areas, and sandy soils contain a smaller number of pores that are larger in size. It must be noted that many garden soils have been modified significantly with additions of organic matter, such as compost or shredded pine bark, which can dramatically increase the water holding capacity of a soil. Both the amounts of available and unavailable water increase as the clay content of soil increases. Thus, sands have a much lower water holding capacity than clay and organically enriched soils.

Knowing the water holding capacity of soils is important in determining the amount and frequency of watering. Therefore, a plant may thrive in loam and yet wilt in a clayey soil with twice the moisture content. «»

This item is from "Pteridoforum" (Number 60; January 2002), journal of the F. S. of Southern Africa and is reproduced with thanks. ※※※

NEWSLETTER
If undeliverable return to:
FERN SOCIETY OF VICTORIA INC.
P O Box 45, Heidelberg West, 3081
Victoria Australia.
Print Post approved PP334633/0002

SURFACE MAIL

Postage Paid West Heidelberg Vic. Aust. 3081