Fern Society of Victoria Inc.
NEWSLETTER

Lastreopsis acuminata
- Laurie Andrews 1999

Print Post approved PP334633/0002 **Reg. No. A 0002585 E**

Volume 22 Number 1 - January / February 2000

FERN SOCIETY OF VICTORIA Inc.

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Treasurer	Don Fuller	"	9306 5570
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SUBSCRIPTIONS:

Single -	$13.00	Pensioner/student $10.00
Family -	$15.00	Pensioner Family $12.00
Organisation	$15.00	
Overseas -	$20.00 - Payment by international bank cheque in $A please. Overseas sent by Airmail.	

Subscriptions fall due on 1st July each year.

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.

THE PRESIDENT'S PROMULGATION

Ian Broughton

Christmas has been and gone - Santa visited and left me a pile of bills to pay. The bite of the Millenium Bug proved to have very little venom - for which I thank God. Summer has been and gone and returned again and repeated the cycle several times over (isn't Melbourne weather delightfully unpredictable?). I hope that you have all enjoyed the celebrations of the season and that the new year and new millenium (or last year of the old one, but who really cares?) treat you well and leave you plenty of time to enjoy the wonders of our common interest - FERNS!

If you haven't done it yet, liberal applications of organic mulch will be of enormous benefit to your ferns and your wallet when it comes time to pay your water account. Of course, it will also be of enormous benefit to the millions of blackbirds that inhabit this region and shred our gardens in their endless search for food. If you know of a way to selectively eliminate blackbirds please let us know, I'm sure the population of them on our property has doubled over the last 12 months and they do displace native birds such as the grey shrike-thrush.

(Continued on page 5)

MEETINGS & EVENTS IN 2000

General Meeting on Thursday 17th February

OLINDA RHODODENDRON GARDENS

One of our 'Parks Victoria' properties

James Brincat

Five Minute Fern Talk by Pat Nicholls

Competition; *Cheilanthes, Notholaena, Pellaea* and *Astrolepis*.

General Meeting on Thursday 16th March

THE FERNS OF NORTH QUEENSLAND

Part II

Ian Broughton

Five Minute Fern Talk by George Start

Competition; The ferns of North Queensland

Fern Show 2000 *is on April 29th - 30th.*

The Society's 21st Anniversary *is on 21st, May, 2000.*

We are still seeking information regarding past members of the Society, in our efforts to invite them to the 21st Anniversary celebrations. Anything you could tell us would be a great help in this quest. Please ring Keith on 03 9457 2997 or write to him at 17 Grandview Grove, Rosanna 3084.

GENERAL MEETING TIMETABLE:

7.30	Pre-meeting activities - Sale of ferns, spore, books, merchandise and Special Effort tickets. Also library loans.
8.00	General Meeting.
8.15	Workshops and demonstrations.
9.15	Fern identification and pathology, Special Effort draw.
9.45	Supper.
10.00	Close.

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

Apology

Included with the posting of the Nov./Dec. newsletter were a number of subscription reminder notes. These were intended to be sent to members who had not to that date renewed their membership.

Unfortunately a small number of these notes were inadvertently included in the newsletters of members who had renewed. **To these members we offer our sincere apology** for the error and any embarrassment it may have caused.

As some members who should have received the reminder note missed out, the procedure is being repeated with this issue.

If you receive a reminder and believe you have renewed please do not hesitate to contact me.

Don Fuller
Treasurer
Telephone (03) 9306 5570

GYMNOGRAMME.
AS DESCRIBED IN THE 1880's.

Gymnogramme (from *gymnos*, naked, and *gramma*, writing, referring to the spore cases) includes *Ceterach* (in part), *Dictyogramme, Grammitis* (in part), *Pterozonium, Selliguea,* and *Trismeria.* ORD. *Felices.* A genus consisting of about a hundred species of (except where otherwise stated) beautiful stove Ferns. Sori arising from the veins on the under surface of the frond, linea or linear-oblong, simple or forked. Those species which have the under surface of the fronds covered with a yellow powder are popularly known as Gold Ferns, and those with silver powder as Silver Ferns.

FIG. 159. GYMNOGRAMME CALOMELANOS PERUVIANA.

G. calomelanos (beautiful black). *sti.* tufted, 6in. to 12in. long. *fronds* 1ft. to 3ft. long, 6in. to 12in. broad, tripinnatifid ; pinnæ close, lanceolate, lowest largest, about 2in. broad ; lower pinnules distinct, often cut down nearly to the rachis ; powder white. A variable species.

G. c. chrysophylla (golden-leaved). Very like *G. c. peruviana,* but with darker rachis and bright yellow powder. Others included in the species by Mr. Baker are; *Brackenridgei, intermedia, L'Herminieri, Martensii,* and *Massoni.*

G. c. peruviana (Peruvian). *sti.* and rachis castaneous. *fronds* smaller ; lower pinnae deltoid ; lower pinnules often cut quite down to the rachis.

G. caudiformis (tail-like). *rhiz.* woody, creeping, scaly. *sti.* 6in to 9in long. *fronds* 6in to 9in long, ovate-oblong, acuminate ; sterile ones 3in to 4in broad ; others 1in to 2in broad. Malay Archipelago, &c., 1862.

G. chærophylla (Chervil-leaved). *sti.* tufted, slender, 3in to 6in long. *fronds* 3in to 6in long, 2in to 4in broad, quadripinnatifid ; lower pinnæ and pinnules deltoid ; the segments flabellately cut. Cuba to Paraguay, 1825. An elegant annual, producing an abundance of spores.

G. decomposita (decompound). *sti.*1 ft long. *fronds* lanceolate-deltoid, 1½ ft long, 1 ft broad, four- or five-pinnatifid ; pinnae close, lanceolate, the lowest largest ; pinnules close, stalked, deltoid ; powder yellow. South America 1873.

G. ferruginea (rusty). *sti.* tufted, 6in to 12in long, tomentose. *fronds* about 1 ft long, 3in to 4in broad ; pinnae 2in to 3in long, ½in to 1in broad, cut to the rachis into oblong or linear-oblong entire or slightly toothed lobes ; lower surface and rachis densely tomentose. Tropical America.

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PRESIDENTIAL PERSPECTIVES

(Continued from page 2)

Our Christmas breakup at the Kevin Heinze Garden Centre was a very enjoyable day. A special thank you goes to Norma and Jean who prepared the salads and sweets for the barbeque and to Lyn who organized the quiz and Millenium Bug prizes. The weather was great, the food was great, the company was great - the only disappointment was that I didn't win the Christmas cake in the raffle (or any of the other prizes, for that matter).

At our February meeting we hope to have James Brincat from Parks Victoria address us about a possible involvement of the Fern Society in the Rhododendron Gardens in Olinda. (We have just received confirmation that he will be our Feb. speaker - Lyn) The competition category will be ferns in the Cheilanthes, Notholaena, Pellaea and Astrolepis genera and Pat Nicholls will give our 5-minute fern talk.

At the March meeting I will be giving a second presentation on the ferns of North Queensland. The competition category will be the ferns of North Queensland (about 75-80% of all ferns found in Australia). George Start will give the 5-minute fern talk.

Please don't forget, and plan to be involved in, both our Fern and Vireya Rhododendron Show at the end of April and our 21st Anniversary in May. We would all like both events to be memorable and successful.

I hope to see you in February,
Ian Broughton.

Speaker Report - Meeting held in September, 1999. Reviewed by Lyn Gresham.

FERN FOSSILS

Jack Douglas

Jack is a retired geologist who worked for the Mines Department (whatever it is called now) doing geological surveying for 35 years. He is also a trained botanist who eventually developed a speciality in palaeontology, especially in fossil plants.

Our library contains some of the books and papers on fossils that Jack has written.

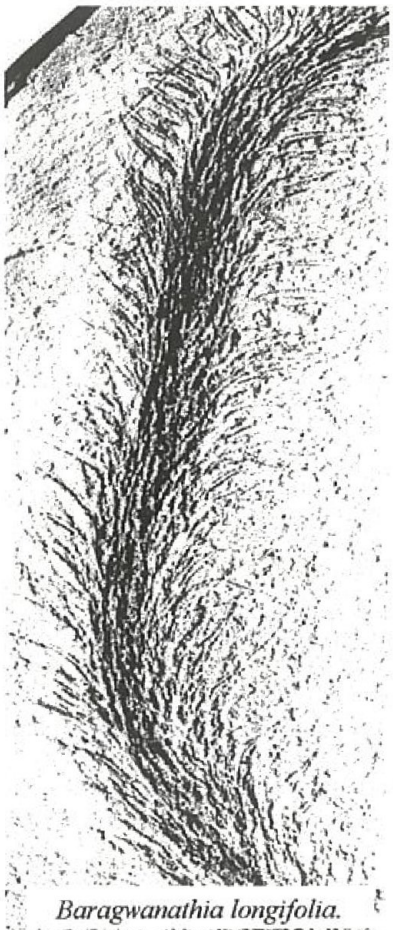
He lives in Warrnambool.

Ferns have an immense and inconceivably long history, and that history is recorded in the rocks of the past. They were among the most ancient of the biota (life-forms) on Earth - that is, not in the sea.

A fossil is the record of past life preserved in rocks. It could be bones, a footprint or the impression or compression of an ancient life-form. Victorian fossil ferns are among the oldest fossilised ferns found anywhere in the world.

The geological periods relating to ferns go back 500,000,000 years. In comparison, human recorded history only goes back about 20,000 years. We are just new boys on the block, compared to the oldest fossils recorded.

500,000,000 years ago and for the following 100,000,000 years approximately, the Eastern seaboard of Australia (including Victoria and the highlands) was occupied by a sea of various depths and it teemed with marine life, both vertebrate and invertebrate. Vertebrates were not well developed but invertebrates such as shells, trilobites, coral and such like were prolific. Seaweed also grew abundantly. At that time the land was bare. There was water - both salt and fresh - but neither plants nor large land animals had appeared on land.



Baragwanathia longifolia.

Meddulosa was a seed-fern of Carboniferous forests.

Land ho!

Then, 400,000,000 years ago there grew a large (to 2 metres) plant that was the ancestor of today's Selaginellas, and fossilised remains of this plant have been found in Silurian rocks at Yea, Victoria. It had conductive tissues, a good stem and very well developed leaves and is a bit of an enigma. It is not quite a fern but has been classified as a lycophite. Because it is found in the oldest dated rock to contain land plants, this could well have been the first one on Earth.

Our earliest fern fossils are found in Devonian rock in east central Victoria. A pinnate fossil from Wangarabell on the Genoa River is the oldest fossil from Victoria that looks like a fern. Actually it may not have been a true fern because in the Devonian an extinct plant group which they called **seed-ferns** were very common throughout the world. They didn't reproduce by spores (with an alternation of generations of a gametophyte and a sporophyte) as present-day ferns do. They had a seed which was more in common (though there were some fundamental differences) with a certain angiosperm's seeds. It was large (up to 15ft tall). Whether a fern or a seed fern, it was certainly along the evolutional line of the ferns.

By the time ferns appeared in the late Devonian, the sea had disappeared from Eastern Australia and the highlands were part of a land surface. The fossils from this period started to be in freshwater deposits. For example, the coalfields at

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FERN SHOW 2000

(COMBINED FERN AND VIREYA RHODODENDRON SHOW)

Fern Show 2000 will again be a joint venture with the Australian Rhododendron Society (Victorian Branch), this being our third year as a combined show. The date will be Saturday 29th April and Sunday 30th April which is a little later than previously. The venue will again be the excellent facilities of the Mt Waverley Community Centre - 47 Miller Crescent Mt Waverley (cnr. Miller Crescent and Stephensons Road - opposite Mt Waverley Railway Station) Melway Ref. 70 - E1.

The Show will be open from 10.00 amto 5.00 pmon botrh days and the admission charge for the public will be Adults $3.00, Concession $2.00. Mermbers of both Societies contributing to either competition or display, plus those acting in an official capacity for the day, will be entitled to free admission. For other members the charge will be the concession rate of $2.00.

The Show is a most important activity for our Society as it provides an opportunity for a "public face" and the long-term viability of the Society depends on attracting new members. We need to ensure that it is a success and therefore seek the support of all members by contributing as follows

- Publicising the Show
- Contributing to the dosplay and entering the fern competition
- Attending the Show and helping with the activities

Advertising flyers will be included in the March newsletter but will be available at the February meeting or from Don Fuller.

Competition

We will again be conducting a Fern Competition and we ask all members to enter into the spirit of the competition. To be eligible to enter a member must have owned the fern for at least six months. The categories are as follows.

1 Adiantum
2 Asplenium
3 Davallia
4 Nephrolepis
5 Pteris
6 Fern in Hanging Container
7 **Fern Arrangement (1 Fern + 2 Other Plants).

**We have again included the Fern Arrangement category and would like many more of you to have a go and display your artistic skills. The guidelines are as follows.

- 1 fern plus 2 other plants which may be flowering or foliage
- Pots can be of varying sizes but should be of the same colour
- Props/Structures are permitted but not a pot inside another pot.

Fern Display

For our feature display this year we have chosen "Ferns of Australia" and we would greatly appreciate hearing from anyone with ideas on how we may best display them. So please give it some thought and let us have your ideas.

The Fern Show is a great opportunity to display your best or most interesting ferns, so please give it some thought and start grooming them now as time passes quickly. Please ensure that all plants are clearly labelled with their botanical name. There is time to get help if you do not know the name of any fern.

Sales

Members who enter the Fern Competition and/or contribute to the display will have the opportunity to bring in ferns for sale. There will be further details in the March newsletter.

Committee

The Show Committee members are Jack Barrett, Ian Broughton, Fran and Ray Harrison, John and Norma Hodges, Don Fuller (Chairperson), Bernadette Thomson and Barry White. If you have any queries or suggestions please feel free to contact them.

More details of the Show will be included in the March newsletter.

**I must apologise to Dorothy and to our readers for the delay in publishing this very intereesting) fern talk, which was illustrated by many ferns and fronds. I'm afraid it got tangled up in our house shifting episode in May. - Lyn.*

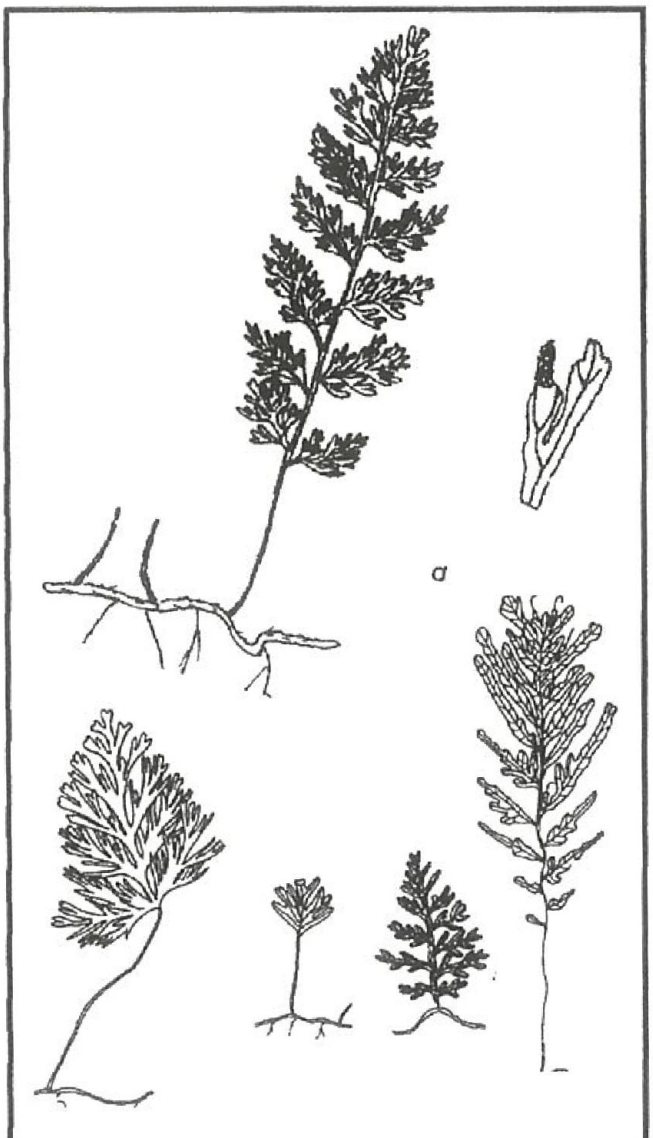
Five Minute Fern Talk - April 1999.

FILMY FERNS - AND OTHERS.

by Dorothy Forte

Filmy Ferns

Dorothy shared with us some highlights from her <u>really</u> favourite ferns, **Filmy Ferns**, including some from her own natural fern gully on the farm at Garfield North. She told us she likes them particularly because they remind her of the many fern club (and other) trips she's had when we've combed the gullies in Victoria, New South Wales and Queensland - and best of all, New Zealand and New Caledonia and found some which were even more delightful than the ones we have at home.



Macroglena caudata (at top) with four other Australian Filmy ferns (bottom, from left); Pleuromanes pallidum, Reediella humilis, Sphaerocionium lyallii & Polyphlebium venosum, Note: M. caudata is shown at a greater magnification than the others. It is actually about the same height as Pleuromanes pallidum.

She encouraged the members present to pass the ferns she had brought around, but did ask us to be particularly careful with a *Macroglena caudata* (Jungle Bristle fern) which is the only one of its kind that she had ever found.

Thanks to Chris Goudey she has been able to grow some of the very special ones in her plastic mini-houses in the fernery, where they receive sufficient humidity. They do quite well, but to quote an article in a book from New Zealand by Patrick Brownsley, "Filmy ferns are essentially plants of damp bush in high rainfall areas but, despite their thin fronds, many species can tolerate long periods of drought by curling up tightly and then reviving completely when moistened by rain again. Others grow in mat-like masses on trunks or rocks, so that their fronds protect each other, and their roots collect humus to retain moisture."

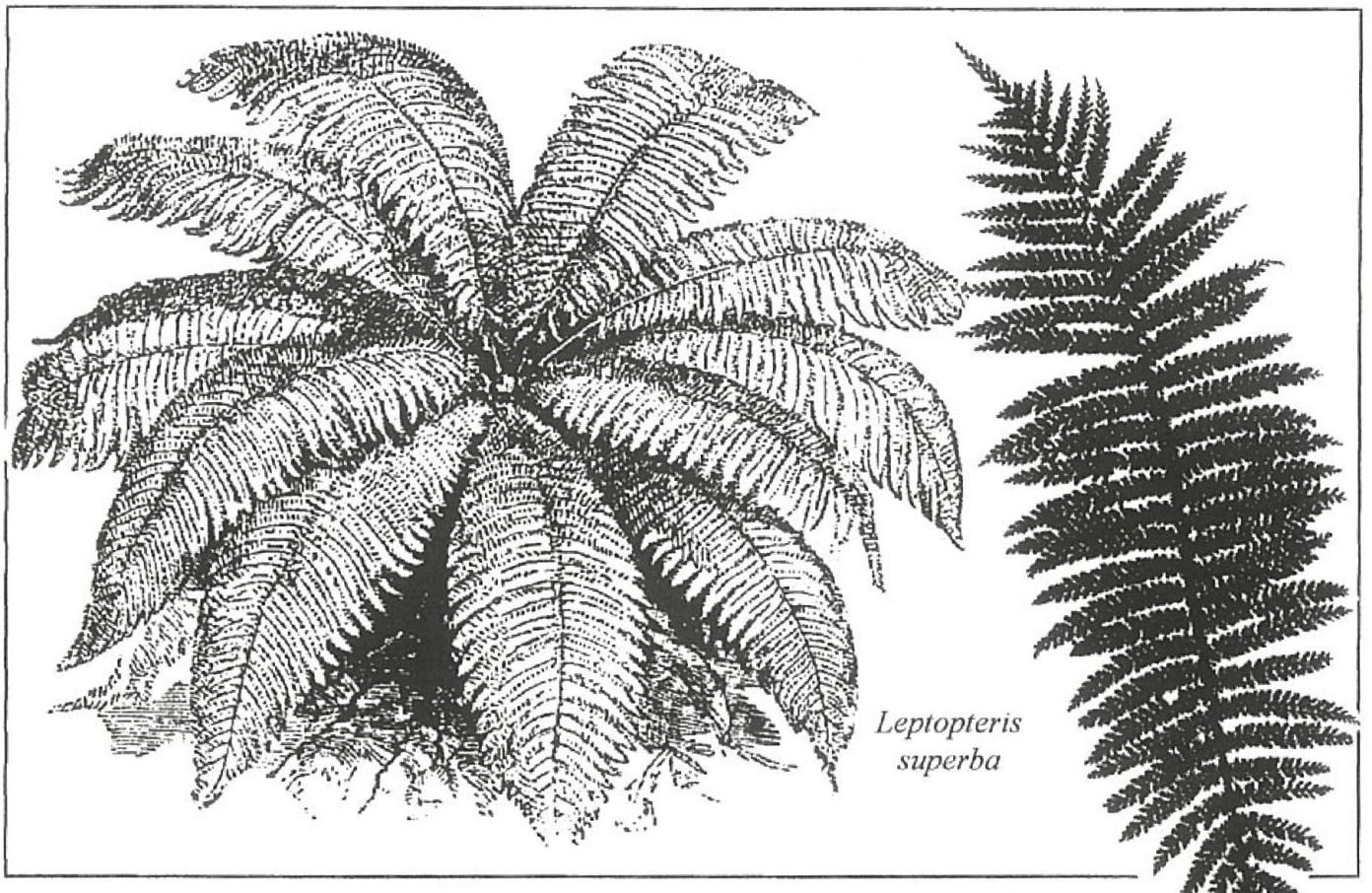
That is exactly what Dorothy's do in the bush. They've been frazzled and dried up over two years of drought, and when they have finally had good rains you'd hardly know that anything had happened to them! It is a small miracle that they have recovered. To quote Dorothy, "I have no trouble growing these because Mother Nature does a very, very good job. I don't have to touch them, just go and look at them occasionally!"

Leptopteris moorei

Dorothy produced a frond of her ***Leptopteris moorei*** from Lord Howe Island. It also grows in her hothouse and will not grow anywhere other than under a plastic 'tent'. Leptopteris are much harder to grow than the filmy ferns, needing constant humidity and extra moisture on hot days. They also need protection from the Victorian sun. The beautiful specimen we saw was grown in Dorothy's normal soil and compost with a bit of slow release fertiliser (or whatever is handy).

Leptopteris superba

Last but not least, the *pièce de résistance*. To the accompaniment of many loud and envious groans, out came a lovely frond of ***Leptopteris superba.*** This was considered to be the most photogenic fern by the Society members on their recent New Zealand trip, judging by the number of slides featuring it that we saw in the report. According to "New Zealand Ferns and Allied



Plants" (Brownsley) *Leptopteris superba*, known as the most beautiful fern in the world, has a number of common names; Crape fern, Heruheru, Ngutungutu kiwi and Prince of Wales Feathers. Plants can grow up to a metre tall and have laminae which are elliptical, tapering equally to the base and apex. They are wooly hairy, which creates the illusion of being see-through.

The delicate appearance and graceful habit of this fern impress all but confirmed fern-haters, I'm sure. And even they might be swayed! ❀❀❀

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continued from page 6

Yallourn are formed from land-dwelling (freshwater) plants.

99% of fossils are found in sedimentary rock. It would be silly to look in volcanic rock which comes from the bowels of the earth. The only exception is that trree trunks etc. can be encased in lava.

The First Fern-like Plants.

How do we know that we are dealing with a fern fossil? In a lot of instances, we don't. Plant fossils rarely, if ever, are of complete plants. They are usually a mass of matted leaves, silicified wood.or other fragments which rarely come with convenient spores or other means of positive identification so we generally give them artificial names. Some well known ones can be aligned with present day plants and these can be confidently named. One is the Maidenhair tree, *Ginkgo biloba,* though other Ginkgo fossils have been found. An Equisetum is another. In Australia they died out 100,000,000 years ago but in China and elsewhere in the Northern Hemisphere they have survived to the present time so identification is easy.

Jack showed a wonderful selection of slides and talked about the methods palaeontologists use to try and identify compressed fossil plants, including maceration (soaking), chemical cleaning to eliminate the rock content, microscopic inspection and micromanipulation to tease out the various parts of the plant (spores, veins, stomata, papillae, cells etc.).

Generally, fossils from rocky outcrops and other surface rocks are weathered and rather damaged. However, if during geological disturbances and folding, the rock layer ends up underground, maybe many miles underground, very good fossil specimens can be preserved. A good source of these is bore cores.

An interesting (and encouraging) point that Jack made was that to reveal the fossils in a rock sample, you don't slice the rock where you think there might be something, nor do you make gently taps on it, but you give it a good , sharp blow and more often than noty it will break at the 'weak spot' which is the preserved fossil.

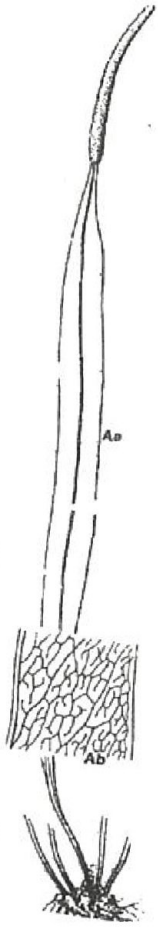
To finish off, Jack shared that he finds it wonderful and almost inconceivable that fossilised remains can not only be preserved for millions, hundreds of millions of years but can give up more and more of their secret information to us today. And there is still much that we don't know.

I glimpsed from his talk that palaeontology will always be a fascinating and ever mobile science, as we develop technology and methods of better 'reading' the messages which rocks and their contents have for us. ❋

FERN SOCIETY OF VICTORIA
SPORE LIST

ORDERING The following spore is free to members who donate spore. Otherwise members 20 cents per sample, non-members 50 cents, pus $1.00 to cover postage and handling. Available at meetings or by mail from Barry White, 24 Ruby St. West Essendon Vic. 3040 Australia, Ph. (03) 9337 9793. 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.

Adiantum raddianum cv.micropinnulum 1/98
Adiantum trapeziforme 9/99
Adiantum whitei 1/99 N
Aglaomorpha meyeniana 2/99
Anemia mexicana 9/99
Arachniodes aristata 8/98 N
Arachniodes simplicior 12/98
Asplenium australasicum 5/98 N
Asplenium obtusatum 4/98 B
Athyrium filix-femina 12/99
Athyrium niponicum 'pictum' 2/99
Athyrium niponicum 'pictum' (large) 1/99
Belvisia mucronata 12/98 N (illus. ▸)
Blechnum attenuatum 2/98
Blechnum chambersii 2/99 N B
Blechnum colensoi 4/98
Blechnum discolor 4/98 B
Blechnum filiforme 4/98 B
Blechnum fluviatile 2/99 N B
Blechnum gallanum 12/99
Blechnum minus 6/99 N
Blechnum patersonii 8/99 N B
Blechnum penna-marina 4/98 B
Blechnum procerum 4/98 B
Blechnum punctulatum v. punctulatum 6/98



Blechnum sp. Kiokio(N.Z.) 4/98 B
Blechnum tabulare 6/98
Blechnum vulcanicum 4/98 B
Coniogramme fraxinea 6/99
Cyathea albifrons 2/99
Cyathea aramaganensis 3/99
Cyathea atrox 3/99
Cyathea australis 3/99 N
Cyathea brownii 2/98
Cyathea celebica 3/99 N
Cyathea cooperi 'Brentwood' 98 N
Cyathea cooperi var. cinnamonia 99 N
Cyathea cooperi 9/99 N
Cyathea dealbata 9/98
Cyathea leichhardtiana 2/98 N
Cyathea medullaris 10/98
Cyathea muelleri 3/98
Cyathea robusta 2/98 N
Cyathea smithii 4/98 B
Cyathea tomentosissima 1/99
Cyclosorus interruptus 3/99 N
Cyrtomium caryotideum 5/98
Cyrtomium falcatum 8/99
Cystopteris fragilis 1/99
Dennstaedtia davallioides 2/98 N
Dicksonia fibrosa 1/99
Dicksonia youngiae 1/99 N
Doodia australis 12/99
Dryopteris athamantica 2/98 B
Dryopteris carthusiana 1/99
Dryopteris guanchia 9/99
Dryopteris sieboldii 3/99
Gymnocarpum oyamense 5/98
Humata tyermanii (crested) 10/98
Humata tyermanii 7/99
Lastreopsis acuminata 9/98 N
Lastreopsis glabella 4/98 B
Lastreopsis hispida 4/98 B
Leptolepia novae-zealandia 4/98 B
Llavea cordifolia 4/98
Macrothelypteris torresiana 2/99 T

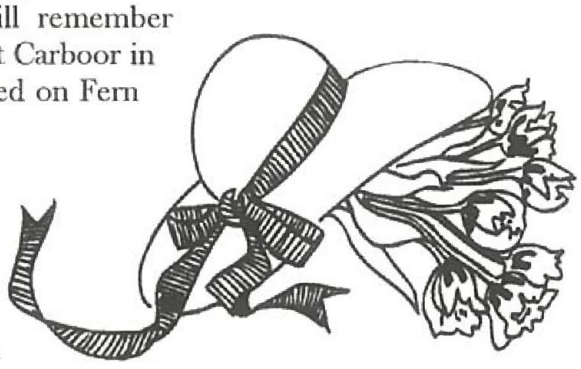
Microlepia speluncae 5/98 N
Microsorum fortunei 10/99
Microsorum pappei 07/99
Pityrogramma calomelanos v.aureoflava 6/98
Platycerium bifurc. cv. Hilo 99 N
Platycerium bifurc. cv.HulaHands 99 N
Platycerium bifurc. cv.Roberts 99 N
Platycerium bifurc. var.venosa "Mt.Lewis" 99 N
Platycerium bifurc.cv Willinckii Scofield 99 N
Platycerium bifurcatum 6/98
Platycerium hillii 99 N
Platycerium superbum (Cairns) 99 N
Platycerium superbum 9/99 N
Platycerium veitchii 8/99 N
Pneumatopteris pennigera 1/00
Polypodium formosanum 9/99
Polypodium vaccinifolium 2/98
Polystichum (crested) 10/98
Polystichum australiense 12/99 N
Polystichum formosum 6/99 N
Polystichum retroso-paleaceum 10/98
Polystichum wonrovii 11/98
Pronephrum asperum 3/99 N
Psilotum nudum 8/99 N B
Pteris cretica 'Parkeri' 6/98
Pteris macilenta 2/99
Pteris umbrosa 6/99 N
Rumohra adiantiformis (Cape Form) 2/99
Scyphularia pycnocarpa 3/98
Sticherus cunninghamii 4/98 B
Sticherus flabellatus 8/99 N B
Sticherus urceolatus 3/99 N B
Thayeria cornucopia 2/99
Thelypteris navarrensis 2/99
Woodwardia martinez 04/99
□

N.B. The letter 'N" after a fern indicates an Australian native, and the letter 'B' one collected in the bush. The area of collection is available on request.

Thank you to the following spore donors: Keith Rogers, Lorraine Deppeler, Don Fuller, Neville Crawford, Matthis Schmidt, Andrey Lee.

Vale

Norma Wood (Bussell)



Many longtime members of the Fern Society will remember Norma from "Norma's Fernery" which was established at Carboor in 1979. Norma, as a member of the Fern Society, travelled on Fern Trips to New Zealand, Tasmania and Lord Howe Island.

Norma stocked the fernery with 350 different ferns amounting to thousands of plants.

After her marriage breakdown Norma sold her ferns and moved to Wangaratta but retained an interest in ferns, keeping specimens of Davallia, Adiantums and Platyceriums. Norma often called on me to see any new varieties.

Norma fought a long battle with breast cancer and she died 11th January 2000 and was buried in Wangaratta on 14th January, leaving her husband Geoff Wood and two sons, Darren and Craig Bussell.

Mary Frost.

WINNERS in November and December, 1999

November

Lady ferns - Athyriums & Diplaziums

1. *Athyrium filix-femina* 'Frizelliae' (Tatting Fern) - Ian Broughton.

2. *Athyrium filix-femina* (European Lady Fern) - Dorothy Forte.

equal 2. *Dryopteris filix-mas* cultivar - John Hodges.

3. *Athyrium otophorum* (Chinese Plum Fern) - Don Fuller.

Exhibitors' Draw; Ian (redraw), Dorothy Forte.

Special Effort; Lyle Timms (2), Margaret Radley, Barry Stagoll and Fran Harrison.

December

Everyone who shared our Christmas wingding was a winner - it was a beaut day!

Most people scored a fun prize or two from the quiz and a baby fenlet to grow up.

Thank you to everyone who was there - you all contributed to the pleasure of the occasion.

Special Effort; Margaret Radley (Christmas cake), Don Fuller, Reg Kenealy and Dorothy Forte (2).

What Are Ferns?

Filicales is one of the main divisions of the Pteridophyta. It is characterised by vigorous growth, well developed leaves which are often large and much branched, and a stem which is usually short and not much branched. The sporangia are borne on the leaves and are usually very numerous.

Five Minute Fern Talk
November 1999

CHEILANTHES - ROCK FERNS.

Lyn Gresham

My First Wild Rock Ferns.

Some time ago, maybe four or five years after I moved out of the city to Avenel (roughly 100 km inland from Melbourne), I was telling Dot Miniken, a neighbour and my fern mentor, about a large population of Fishbone Water Ferns I'd found growing in Hughes Creek. Apart from *Pteridium esculentum,* the tough old Bracken, this was the only fern I'd seen in the area. Typical fern habitats - moist environments beside creeks and in damp gullies - are not easy to come by up there, so I was pretty excited about my find.

Dot then said something **really** stupid. "You know, you'll find lots of Grass trees and ferns growing up on the hill at the end of such-and-such a local road".

Right..... I knew where she meant and it was a dry, rocky, mostly bare, inhospitable hill which only supported Gum trees and a few Silky oaks. Not even remotely fern country; the woman was mad. Even so, it sounded as though she thought there was the **chance** of finding ferns - and besides, the Grass trees (*Xanthorrhoea minor*) would be interesting. A walk up there shouldn't be a total waste of time.

Well, I began at the foot of the hill and walked upward. I looked and looked. There was nothing even vaguely resembling a fern. I knew it! She was pulling my leg. But I continued up, to have a look at those Grass trees. Towards the summit the ground became more and more rocky and arid, until it was just rock with a bit of soil, supporting scattered small, weedy looking plants under sparse, scrubby gums.

And then I was astonished to find a little fern with a big attitude - a real survivor, *Cheilanthes* or Rock Ferns. It took ages to see my first one but then I saw them everywhere, peeking out from under rocks in the most uncomfortable looking places. I had previously obtained permission from the land owner (who swore there were no ferns there; "Yer wasting yer time, love") to remove what I wanted so with difficulty got what I hoped were a couple of healthy clumps with enough root to survive. They didn't.

I got out my Duncan and Isaac when I got home and decided they were *Cheilanthes austrotenuifolia*, the Rock Fern.....or maybe *C. sieberi*, the Narrow Rock Fern, also called Mulga Fern. The more I looked the more muddled I became. Just recently I read that these two are often found growing together so don't feel so bad about my confusion.

At the meeting they were indeed identified as just that - a mixture of both - so at last I can name them with confidence.

About Cheilanthes.

The name Cheilanthes comes from the Greek **kheilos** a lip, and **anthos** a flower, referring to the lip formed over the sori by the incurving edge of the lamina.

There are 18 species of Cheilanthes worldwide, spread across tropical and temperate regions. Four of these are native to Vic. They are:

- **C. lasiophylla** (Wooly Rock fern) whose whole frond is wooly
- **C. distans** (Bristly Cloak fern) which has a dense coat of scales on the underside of the lamina and a narrow frond
- **C. sieberi** (Narrow Rock fern or Mulga fern) which is also narrow, but only has scattered hairs on the stipe and rachis and glabrous (hairless) lamina. When young, the deeply reflexed lobes of the fertile pinnules look like little fists. It grows in soil 5cm deep, or even less.
- **C. austrotenuifolia** (Rock fern), which is the most common one in Victoria. It fits roughly the same description as *C. sieberi* but has a noticeably wider frond. It prefers moister, deeper (10-12cm) soil than *C. sieberi*. Both are described as 'variable' which is just so helpful, I don't say! There are clear differences in the fertile pinnules **in the books**, - but mine always look about halfway between the two to me! Barren fronds are almost never found on *C. austrotenuifolia.*

All four Vic. ones can be found among rocks in drier areas, often lightly wooded hilltops or hillsides, as were my specimens. Patches of green in an otherwise parched landscape warrant a closer look - they could be Cheilanthes.

Adapting to the Environment.

Cheilanthes have some features which help them survive the dry conditions they grow in. They have small, finely divided, lacy fronds, so there are no large surfaces for reduced moisture loss, and the fronds are fairly to very hairy. A lip formed by the rolled under edge protects the sori, which are arranged around the edges. In drought they shrivel, further reducing the frond surfaces' exposure to the sun. They look dead, but after rain they rehydrate and 'come back to life'. In dry weather it can be difficult to tell the difference between fertile and barren fronds because of the way

AVENEL'S CHEILANTHES

Comparison between the two most common Rock Ferns in central Victoria.
from "Ferns and Allied Plants etc." - Duncan and Isaac.

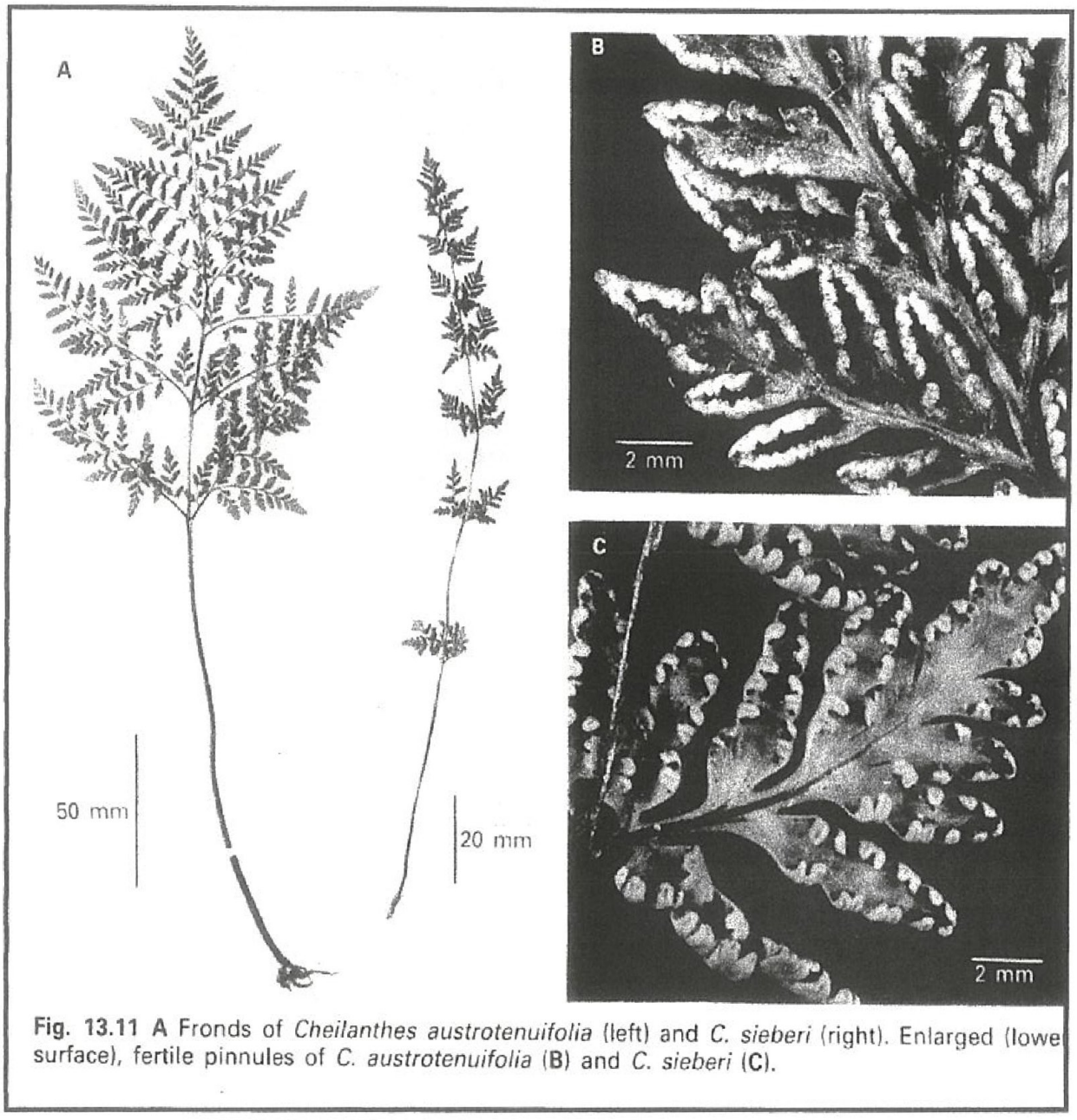


Fig. 13.11 A Fronds of *Cheilanthes austrotenuifolia* (left) and *C. sieberi* (right). Enlarged (lowe surface), fertile pinnules of *C. austrotenuifolia* (B) and *C. sieberi* (C).

they roll up.

The roots of Cheilanthes grow down between rocks and extend deep into the soil, which is why most plants collected from the bush will not survive. Sometimes the first few centimetres of root travel down bare rock fissures, encouraging us to think they will be easy to remove intact, but this is not so.

Lyn had brought in seven labelled pots of Cheilanthes which had been collected from seven slightly different habitats so we could see how environmental conditions affect the growth habit. We could see that the moister, more shaded rocky spots produce the tallest ferns with significantly more fresh, healthy fronds. She told of finding one plant growing in an extremely exposed spot, which had fertile fronds 1 to 2cm long!

Lyn concluded her presentation by saying that she likes her local fern star because it has to be tough and tenacious to succeed in a very harsh environment, so different to the run-of-the-mill fern wimps we usually grow.

§§§§§§

MORE THAN I BARGAINED FOR

Arch Busby

Since Ammonium nitrate, once readily available, became the preferred explosive of unsophisticated terrorists in Ireland and elsewhere, it has disappeared from the usual range of garden fertilisers. This is a pity since it combines the two forms of soluble Nitrogen in convenient form. Potassium nitrate, another convenient combination of two of the principal nutrients required by plants has also come under a cloud as the prime constituent of that substance quaintly known as gunpowder.

With all these things going on in the name of safety it was no surprise to find on a pack of citrus fertiliser the following statement:-

> "This product contains less than 5ppm Lead, 10ppm Cadmium and 0.5ppm Mercury."

These metals are recognised as highly toxic substances so if it was intended to assure the user of the quality of the product, imagine the effect of the statement that followed:-

> "WARNING : Use of this product may result in Cadmium and Mercury residues in excess of the Maximum Permissible Concentration (MPC) in plant and animal products and may also result in the accumulation of these residues in soils."

I thought of the Orange and Lemon Marmalade we made and consumed each year and of the Grapefruit crops which finished on the breakfast table. I wondered what sort of a horticultural standard could allow such an obvious disclaimer to be printed on a pack of citrus 'food' which conformed to the Fertilisers Regulations 1995 amended September 1 1998. When I consulted the newly amended Standard, I realised we were getting off lightly; for the maximum allowable limit for Lead as an impurity in any fertiliser is now 100ppm and if the fertiliser contains a range of trace elements, as my pack of Citrus food does, the maximum Lead content may not exceed 500ppm (half a kilogram per tonne).

For Cadmium, my citrus food just made the Standard maximum at 10ppm.

For Mercury it was a shoe-in, 0.5ppm where the Standard permits 5ppm.

If my fertiliser conformed to the standard, why the dread WARNING?
Ah..... well that's quite another matter.

The Standard provides that should any fertiliser contain more than 20ppm Lead or 1ppm Cadmium or 0.2ppm Mercury, the package must contain the WARNING.

As Alice so succinctly put it, 'Curiouser and curiouser.'

**The term ppm is short for 'Parts per million' which is equal to milligrams per kilogram or grams per tonne.* 9999

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Arch included some other observations and information in the note that accompanied this article. They were not intended to be part of it but I am publishing them as I believe they may be of interest to some readers;

* I didn't intend to 'point the finger' at citrus fertiliser. If you look at other fertilisers in the shop you will find different levels of impurities but you should find the same warning.
* Just think; if the stuff carries no warning, is it so pure it doesn't need one or is the manufacturer telling us he doesn't give a hoot for all these newfangled regulations?
* The impurity analysis is the responsibility of the ultimate supplier of the compounded fertiliser. However, manufacturers of fertiliser products rely heavily on the suppliers of component materials for information about their composition. These analysis don't come cheap and setting up a lab of their own is even more expensive.

British Pteridological Society....World Conservation Union Species Survival Commission Specialist Group for Pteridophytes

Fern Flora Worldwide - Threats and Responses

An International Symposium

23 - 26 July 2001

University of Surrey in Guildford

In recognition of the increased pressure being place on pteridophyte populations worldwide, the BPS, in conjunction with the World Conservation Union (IUCN) is organising this international symposium. Specialised habitat requirements are widespread across the fern flora, making pteridophytes particularly vulnerable to threats such as alien plant invasions, the activities of man and climatic change. It is expected that this symposium will be a significant contribution to pteridophyte conservation awareness and action.

If you wish to contribute a paper or poster to a particular theme please contact Clive Jermy, Co-ordinator of the 'scientific Program, C/o the Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, England. Our secretary, Barry White has a circular with a programme outline and more details.

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