ASSOCIATION OF

S.G.A.P. Fern Study Group

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LEADER: Peter Hind, 41 Miller Street, Mount Druitt, 2770
SECRETARY: Moreen Woollett, 3 Currawang Place, Como West, 2226
TREASURER: Joan Moore, 2 Gannet Street, Gladesville, 2111
SPORE BANK: Kyrill Taylor, 16 Elizabeth Crescent, Yagoona, 2100

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Featured in this issue is an article by Calder Chaffey arising from a survey of the ferns of New Caledonia. Calder's visit to the island was in the nature of a holiday. Most visitors there content themselves with lazing in the gentle sun, admiring the scenery and enjoying the superb tropical flavoured French cuisine and shopping. Obviously not so for Calder and others in his group including fellow Study Group members Ann and Geoff Long. Their holiday was centred around the flora. They searched after and ultimately found and identified ferns from each of the 27 families native to the island.

The quality of Calder's article and its worth to future researchers and visitors to New Caledonia is a reminder of the importance of the amateur botanist. This excellent article, though not centred on Australian ferns, is also a timely reminder of the importance of recording and passing on information for the benefit of others in the common search after knowledge. Of course the "recording" and subsequent passing on of information does not have to be as scientifically based or as comprehensive as Calder's coverage of his topic. It might simply be the results of an attempt to propagate a batch of spore. Come on researchers, your Newsletter awaits your input! But that's next Newsletter. Meanwhile, on behalf of all members, thank you Calder for a fine article.

Spore Bank Curator

We officially welcome our new Spore Bank Curator, Kyrill Taylor. Its another case of find a busy person when you are looking for volunteers. Kyrill, one of our most knowledgeable members, offered to take on the task of looking after our Spore Bank on the basis of "if you don't have any other offers". Subsequently there was another offer but it was on a similar "if no one else offers " basis. By the time of the second offer, Kyrill had already been signed up and put in office. Thank you Kyrill for agreeing to help while loaded with other responsibilities. In addition to other interests which include being a family historian, Kyrill is President of SGAP-East Hills Group and a recently appointed Director of SGAP-N.S.W. We are indeed lucky to have Kyrill help us. Our new Curator has expressed a wish to build up the Spore Bank and to do that, for a start, he needs quantities of fresh spore. Would you please help by collecting suitable fresh, ripe spore of any Australian ferns and forwarding them to Kyrill - see Kyrill's address at the top of this Newsletter.

Ferns in New Caledonia

By Calder Chaffey

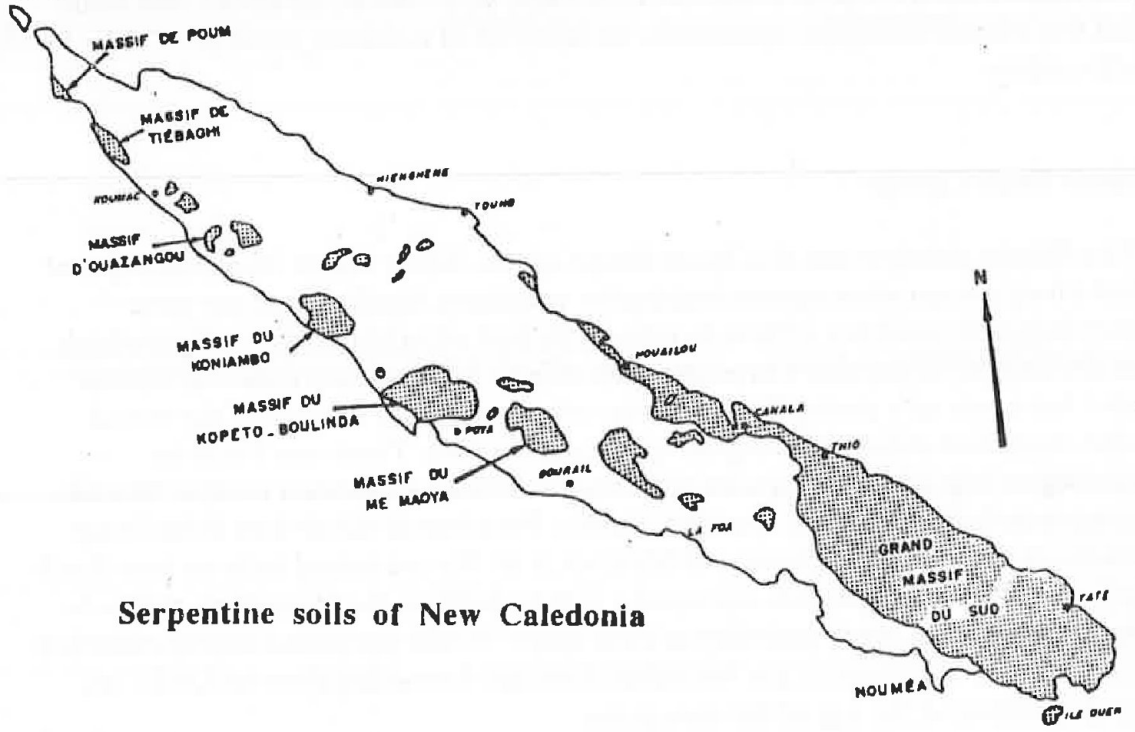
About 160 million years ago a large part of Australia lay in the antarctic circle. Attached to Antarctica, Australia formed part of the southern land mass of Gondwana. New Caledonia and New Zealand were attached to the south eastern side of Australia. At this time there were no polar ice-caps due to a 'greenhouse ' effect which resulted in a profuse flora throughout.

Australia began to break away from Antarctica about 80 million years ago. Just previous to this New Caledonia with New Zealand, Norfolk and Lord Howe Islands, Kermadecs and Chatham Islands separated from Australia and began to move away. This mass of land is known as Tasmantis. Much of it submerged below the ocean leaving the present islands, and New Caledonia came to lie between 19° and 23° S. Due to isolation and climatic differences the flora of each island evolved in vastly different ways although it was from a common stock.

Much of the soil of New Caledonia was formed from ultramafic rocks of the oceanic crust originating deep under the sea. Because of this they are rich in nickel, chromium, manganese and magnesium. These areas resulted from weathering of serpentines and peridotites and have been termed the 'marquis'. This makes up about one third of the island. Nickel is toxic to plant life, interfering with iron absorption. On New Caledonia there has revolved a great variety of species which are resistant to this toxicity. However growth is usually slow, and plants are hardy but small leaved and shrubby. Some plants appear like natural 'bonsais'. Of some 3000 plants which occur in New Caledonia well over 50% are found in the Marquis. In areas of good and nutrient soils, growth is vigorous, as in the rainforests but diversity of species is much less.

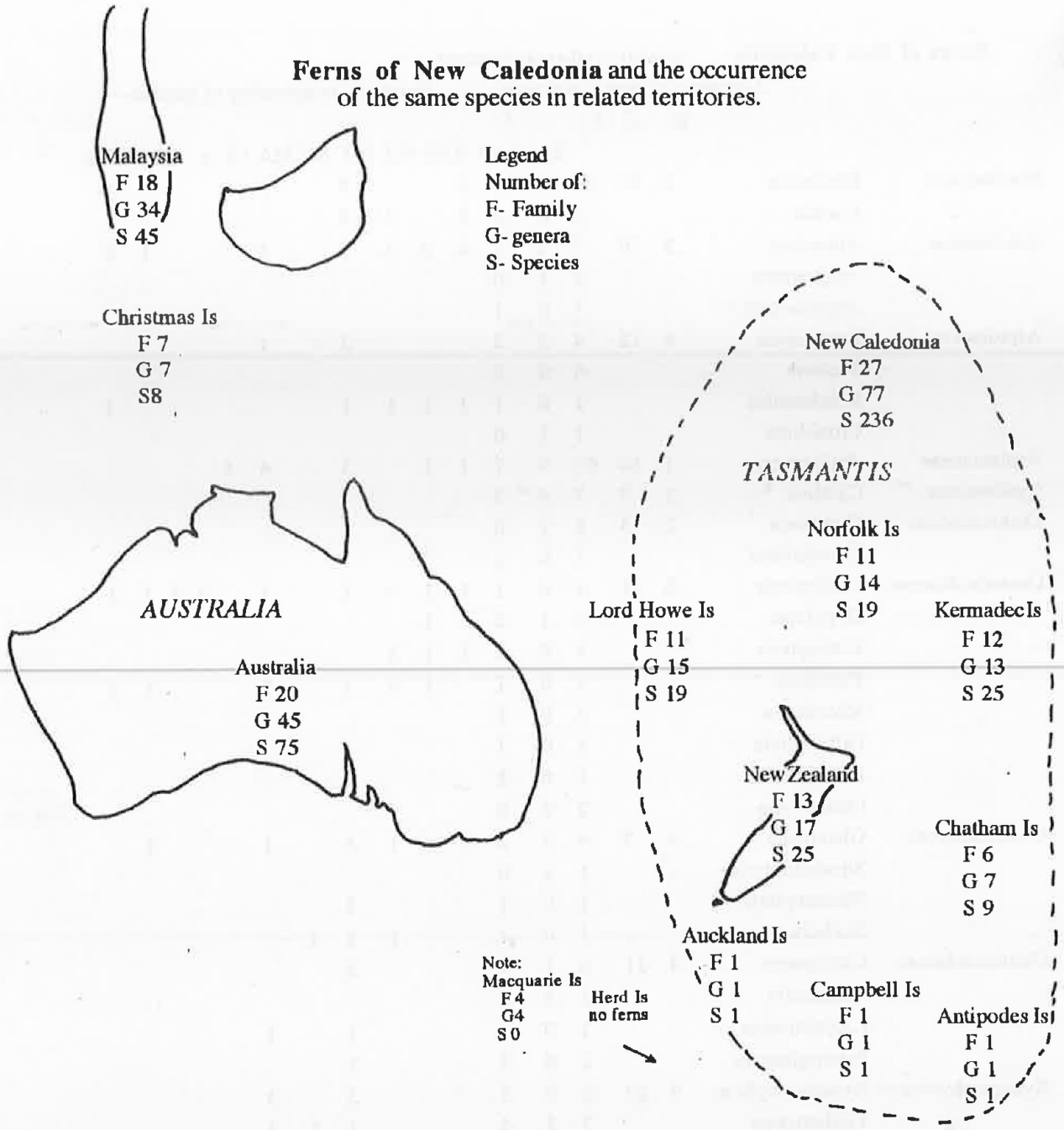
Other factors contribute to the poor growth on the Ma quis such as the drying winds. Higher in the mountains, which rise to 1600 meters, the increase in rainfall encourages better growth on serpentine soils. It is here too where the rainforests occur and these are lush on the fertile soils. Nickel mining and fire, used extensively since settlement for clearing have contributed to erosion and weed problems. *Melaleuca quinquenervia,* which is indigenous, spreads rapidly and thickly after clearing so that it chokes out other natural regrowth.

The Ma quis has a typical flora of ferns. Extensive areas of Dicranopteris linearis outgrow everything else while *Sphenomeris deltoidea, Lygodium reticulatum, Lindsaea moorei, Pteridium esculentum, Adiantum hispidulum* and *Schizaea dichotoma* are extremely common. The rainforests have an extensive fern flora and amongst the more dramatic are the large number of tree ferns represented by two species of *Dicksonia,* seven of *Cyathea,* two *Marattias* and *Angiopteris evecta.*



Serpentine soils of New Caledonia

Ferns of New Caledonia and the occurrence of the same species in related territories.



New Caledonia has about 236 species of ferns in 77 genera and 27 families. A study of the ferns shows that they have largely a common origin with ferns of the other Islands of Tasmantis, with Gondwana and S. E. Asia. They seem to be a Gondwanan compliment which flourished at the time of continental breakup. In many places numerous ferns can be recognised as the same species as in New Caledonia and therefore unchanged since their common origin. There are a large number of common families and genera although genetic changes have been produced by evolution in isolation. The chart following and the diagram above shows these similarities. It is significant that 20 families, 45 genera and 75 species occurring in New Caledonia are the same as in Australia. Thus 74% of families, 58% of genera and 32% of species are common to both countries. Less, but significant are the similarities with New Zealand and its close islands. There are 96 endemic species in New Caledonia emphasising the result of long isolation.

On an expedition to New Caledonia, 4th to 21st August 1995 with Ann and Geoff Long, Julie and Alistair Watt, we found and identified 117 species in 27 families. We collected from 18 sites which sampled most of the Island. We observed similar similarities and differences to the ferns of Australia and New Zealand as we had on Lord Howe Island two years ago.

Note: a comparison has not been made with New Guinea due to lack of information.

Ferns of New Caledonia -related to other occurrences

-Occuring in New Caledonia- ----Territorial relationship of species----

		gf	sf	sg	e	x	Species-	LH	NI	NZ	AU	NG	MA	CI	a	c	h	k	p
Blechnaceae	Blechnum	2	21	19	10	9	3				3		1						
	Doodia			2	0	2	2			1	2							1	
Adiantaceae	Adiantum	3	10	7	2	5	2	2	3		4		3				1	2	
	Syngramma			2	2	0													
	Aspleniopsis			1	0	1													
Aspidiaceae	Lastreopsis	4	12	4	2	2					2		1						
	Tectaria			6	4	2													
	Arachnoides			1	0	1	1	1	1		1							1	
	Cionidium			1	1	0													
Aspleniaceae	Asplenium	1	16	16	9	7	1	1			3		4	1					
Cyatheaceae	Cyathea	1	7	7	4	3													
Dicksoniaceae	Dicksonia	2	3	2	2	0													
	Calochlaena			1	0	1													
Dennstaedtiaceae	Histiopteris	8	11	1	0	1	1	1	1		1		1		1	1	1	1	1
	Hypolepis			3	1	2		1											
	Histiopteris			1	0	1	1	1	1										
	Pteridium			1	0	1		1	1		1		1				1	1	
	Microlepia			1	0	1													
	Orthiopteris			1	0	1													
	Paesia			1	0	1													
	Oenotrichia			2	2	0													
Gleicheniaceae	Gleichenia	4	7	4	2	2				1	2		1				1		
	Stromatopteris			1	1	0													
	Dicranopteris			1	0	1					1								
	Sticherus			1	0	1				1	1	1							
Grammitidaceae	Ctenopteris	4	11	5	1	4					2								
	Grammitis			3	3	0													
	Calymmodon			1	0	1					1		1						
	Scleroglossum			2	0	2					1								
Hymenophyllaceae	Hymenophyllum	8	27	12	9	3					3		3						
	Trichomanes			7	2	5					1	1	1						
	Crepidomanes			2	0	2	1				1		1						
	Macroglena			2	0	2					2								
	Microgonium			1	0	1					1	1	1						
	Microtrichomanes			1	0	1					1	1							
	Pleuromanes			1	0	1					1		1						
	Reediella			1	0	1					1		1						
Lindsaeaceae	Lindsaea	2	13	9	6	3				1	2		1				1		
	Sphenomeris			4	2	2													
Lomariopsidaceae	Elaphoglossum	4	6	3	3	0													
	Lomariopsis			1	1	0													
	Bolbitis			1	0	1													
	Teratophyllum			1	0	1													
Lycopodiaceae	Huperzia	2	15	1	0	1								1					
	Lycopodium			14	2	12				4	5						3	1	
Angiopteridaceae	Angiopteris	1	1	1	0	1					1		1						

Marattiaceae	Marattia	1	2	2	2					1									
Nephrolepidaceae	Arthropteris	2	4	2	1	1				1			1						
	Nephrolepis			2	0	2	1	1		1								1	
Osmundaceae	Leptopteris	1	1	1	0	1													
Ophioglossaceae	Helminthostachys	2	3	1	0	1				1			1						
	Ophioglossum			2	0	2	1	1	1	1			1	1				1	
Polypodiaceae	Belvisia	9	12	1	0	1				1			1						
	Drynaria			1	0	1				1			1						
	Christiopteris			1	1	0													
	Dictymia			2	2	0													
	Goniophlebium			1	0	1							1						
	Phymatodes			2	1	1							1						
	Selliguea			1	1	0													
	Phymatosorus			1	0	1				1			1	1					
	Pyrrosia			2	0	2	1	1		2			1						
Psilotaceae	Psilotum	1	1	1	0	1	1	1	1	1			1						1
Pteridaceae	Acrostichum	2	9	1	0	1				1			1						
	Pteris			8	4	4			1	4	1		3	2					1
Schizaeaceae	Lygodium	2	12	3	1	2				2			1						
	Schizaea			9	4	5			3	3			1					1	1
Selaginellaceae	Selaginella	1	6	6	2	4													
Sinopteridaceae	Cheilanthes	3	6	4	0	4	2	2	1	4			1						
	Doryopteris			1	0	1				1									
	Pellaea			1	0	1	1		1	1									1
Thelypteridaceae	Ampelopteris	4	12	1	0	1				1			1						
	Christella			1	0	1		1		1									
	Cyclosorus			5	1	4							2						
	Thelypteris			5	2	3							2						
Tmesipteridaceae	Tmesipteris	1	3	3	2	1			2										1
Vittariaceae	Antrophyum	2	5	3	1	2				1									
	Vittaria			2	0	2		1		2			1	1					
	Totals	77	236	236	96	140	19	16	25	75	5	45	8	1	1	9	14	1	
					Species		LH	NI	NZ	AU	NG	MA	CI	a	c	h	k	p	
		gf	sf	sg	e	x													

Number of families= 27
Number of genera = 77
Number of species= 236

Column Legend

LH Lord Howe Is.
NI Norfolk Is
NZ New Zealand
AU Australia
NG New Guinea
MA Malaysia
CI Christmas Is
a Auckland Is
c Campbell Is
h Chatham Is
k Kermadec Is
p Antipodes Is

gf number of genera occuring in each family
sf number of species occuring in each family
sg number of species occuring in each genus
e endemic species
x other species

Family	Genus	Species	A	C	D	n	s	t	a	c	h	k	p	r	m	Q	N	V	T	E	S	W	g	G	F
Adiantaceae	Adiantum	aethiopicum	x	x		x	x									x	x	x	x	x	x				
Adiantaceae	Adiantum	capillus veneris	x			*										x				x	x		x		
Adiantaceae	Adiantum	caudatum	x																				x		
Adiantaceae	Adiantum	diaphanum	x		x	x	x					x				x	x	x							
Adiantaceae	Adiantum	fournieri	e																						
Adiantaceae	Adiantum	hispidulum	x	x		x					x	x				x	x	x		x			x		
Adiantaceae	Adiantum	novae-caledoniae	e																						
Adiantaceae	Asplenlopsis	deciplens	x																						
Adiantaceae	Syngramma	francii	e																						
Adiantaceae	Syngramma	marginata	e																						
Angiopteridaceae	Angiopteris	evecta	x													x	x						x		
Aspidiaceae	Arachniodes	aristata	x	x	x						x					x	x								
Aspidiaceae	Cionidium	moorei	e																						
Aspidiaceae	Lastreopsis	rufescens	x													x									
Aspidiaceae	Lastreopsis	subsericea	e																						
Aspidiaceae	Lastreopsis	tenera	x													x							x		
Aspidiaceae	Lastreopsis	vieillardii	e																						
Aspidiaceae	Tectaria	kouniensis	e																						
Aspidiaceae	Tectaria	lifuensis	x																						
Aspidiaceae	Tectaria	pseudosinuata	e																						
Aspidiaceae	Tectaria	seemannii	x																						
Aspidiaceae	Tectaria	sinuata	e																						
Aspidiaceae	Tectaria	vieillardii	e																						
Aspleniaceae	Asplenium	adiantoides	x																				x		
Aspleniaceae	Asplenium	attenuatum	x													x	x								
Aspleniaceae	Asplenium	australasicum aff	x	x	x											x	x								
Aspleniaceae	Asplenium	cuneatum	x																						
Aspleniaceae	Asplenium	dognyense	e																						
Aspleniaceae	Asplenium	filidens	e																						
Aspleniaceae	Asplenium	nidus	x													x							x	x	
Aspleniaceae	Asplenium	novae-caledoniae	e																						
Aspleniaceae	Asplenium	oligolepidum	e																						
Aspleniaceae	Asplenium	polyphyllaticum	e																						
Aspleniaceae	Asplenium	pseudobulbiferum	e																						
Aspleniaceae	Asplenium	pseudotenerum	e																						
Aspleniaceae	Asplenium	robustum	x																				x		
Aspleniaceae	Asplenium	subflexuosum	e																						
Aspleniaceae	Asplenium	unilaterale	x																				x		
Aspleniaceae	Asplenium	vieillardii	e																						
Athyriaceae	Diplazlopsis	javanica	x																						
Athyriaceae	Diplazium	dilatum	x													x	x								
Athyriaceae	Diplazium	echinatum	x																						
Athyriaceae	Diplazium	japonicum	x																						
Athyriaceae	Diplazium	rosenstockii	x																						
Azollaceae	Azolla	pinnata	x			*										x	x	x		x	x	x	x		
Blechnaceae	Blechnum	chaudlodontum	e																						
Blechnaceae	Blechnum	confusum	x																						
Blechnaceae	Blechnum	contiguum	e	x																					
Blechnaceae	Blechnum	corbassonii	x																						
Blechnaceae	Blechnum	diversifolium	e																						
Blechnaceae	Blechnum	fraserix	x																						
Blechnaceae	Blechnum	globum	x																						
Blechnaceae	Blechnum	hirsutum	e																						
Blechnaceae	Blechnum	indicum	x													x	x		x				x		
Blechnaceae	Blechnum	lenormandi	e																						
Blechnaceae	Blechnum	membranaceum	e	e																					
Blechnaceae	Blechnum	minus	x	x												x	x	x	x	x					
Blechnaceae	Blechnum	moorei	e																						
Blechnaceae	Blechnum	obtusatum	x																						
Blechnaceae	Blechnum	occanicum	e																						
Blechnaceae	Blechnum	opacum	e																						
Blechnaceae	Blechnum	orientale	x													x			x	x					
Blechnaceae	Blechnum	subcordatum	x																						
Blechnaceae	Blechnum	vieillardii	e																						
Blechnaceae	Doodia	caudata	x	x												x	x	x	x		x				
Blechnaceae	Doodia	media	x	x	x	x	x				x					x	x	x	x						
Cyatheaceae	Cyathea	albifrons	e																						
Cyatheaceae	Cyathea	alta	e																						
Cyatheaceae	Cyathea	cicatricosa	x																						
Cyatheaceae	Cyathea	intermedia	e																						
Cyatheaceae	Cyathea	novae-caledoniae	e																						
Cyatheaceae	Cyathea	stelligera	x																						
Cyatheaceae	Cyathea	vieillardii	x																						
Davalliaceae	Davallia	solida	x													x							x	x	
Davalliaceae	Humata	banksii	x																						
Davalliaceae	Humata	brackenridgei	x																						
Davalliaceae	Humata	pusilla	x																						
Dennstaedtiaceae	Histiopteris	incisa	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x			x	
Dennstaedtiaceae	Hypolepis	neocaledonica	e																						
Dennstaedtiaceae	Hypolepis	punctata	x													x	x	x		x			x	x	
Dennstaedtiaceae	Hypolepis	tenuifolia	x		x											x									
Dennstaedtiaceae	Microlepia	strigosa	x																					x	
Dennstaedtiaceae	Oenotrichia	macgillivrayi	e																						
Dennstaedtiaceae	Oenotrichia	maxima	e																						
Dennstaedtiaceae	Orthiopteris	firma	x																						
Dennstaedtiaceae	Paesia	rugosula	x																						
Dennstaedtiaceae	Pteridium	esculentum	x		x	x	x	x			x	x				x	x	x	x	x	x	x		x	
Dicksoniaceae	Calochlaena	straminea	x																						
Dicksoniaceae	Dicksonia	baudouini	e																						
Dicksoniaceae	Dicksonia	thyrsopteroides	e																						
Dipteridaceae	Dipteris	conjugata	x													x								x	
Equisetaceae	Equisetum	ramosissimum	x																						
Gleicheniaceae	Dicranopteris	linearis	x			x										x	x		x	x					
Gleicheniaceae	Gleichenia	brackenridgei	e																						
Gleicheniaceae	Gleichenia	dicarpa	x			x	x	x			x					x	x	x	x					x	
Gleicheniaceae	Gleichenia	montagnei	e																						
Gleicheniaceae	Gleichenia	rupestris	x													x	x								
Gleicheniaceae	Sticherus	flabellatus	x			x	x									x	x	x					x		
Gleicheniaceae	Stromatopteris	moniliformis	e																						
Grammitidaceae	Calymmodon	cucullatus	x													x								x	
Grammitidaceae	Ctenopteris	blechnoides	x													x									
Grammitidaceae	Ctenopteris	contigua	x													x									
Grammitidaceae	Ctenopteris	crassifrons	x																						
Grammitidaceae	Ctenopteris	laxiortipes	e																						
Grammitidaceae	Ctenopteris	subsecundo-dissect	x																						
Grammitidaceae	Grammitis	deplanchei	e																						
Grammitidaceae	Grammitis	neocaledonica	e																						
Grammitidaceae	Grammitis	pseudoaustralis	e																						
Grammitidaceae	Scleroglossum	sulcatum	x																						

Legend

A New Caledonia
C Lord Howe Island
D Norfolk Island
n New Zealand- N Island
s New Zealand- S Island
t Stewart Is
a Auckland Is
c Campbell Is
h Chatham Is
k Kermadec
p Antipodes Is
r Herd Is
m Macquarie Is

Q Queensland
N New South Wales
V Victoria
T Tasmania
E Northern Territory
S South Australia
W West Australia
g New Guinea
G Malaysia
F Christmas Is

x occurrence
e endemic

Family	Genus	Species	A	C	D	n	s	t	a	c	h	k	p	r	m	Q	N	V	T	E	S	W	g	G	F
Grammitidaceae	Scleroglossum	woodroofiorum	x													x									
Hymenophyllacea	Crepidomanes	bipunctatum	x													x							x		
Hymenophyllacea	Crepidomanes	saxifragoides	x	x																					
Hymenophyllacea	Hymenophyllum	deplanchei	e																						
Hymenophyllacea	Hymenophyllum	dimidiatum	e																						
Hymenophyllacea	Hymenophyllum	humboldtianum	x																						
Hymenophyllacea	Hymenophyllum	imbricatum	x																				x		
Hymenophyllacea	Hymenophyllum	javanicum	x													x							x		
Hymenophyllacea	Hymenophyllum	le ratil	e																						
Hymenophyllacea	Hymenophyllum	rnioides	e																						
Hymenophyllacea	Hymenophyllum	pumilio	e																						
Hymenophyllacea	Hymenophyllum	rolandi-principis	e																						
Hymenophyllacea	Hymenophyllum	streptophyllum	e																						
Hymenophyllacea	Hymenophyllum	subdimidiatum	e																						
Hymenophyllacea	Hymenophyllum	subotusum	e																						
Hymenophyllacea	Macroglena	spilfolium	x																						
Hymenophyllacea	Macroglena	caudatus	x													x	x	x							
Hymenophyllacea	Microgonium	bimarginatum	x													x							x	x	
Hymenophyllacea	Microtrichoman	vitiense	x													x	x						x		
Hymenophyllacea	Pleuromanes	pallidum	x													x							x		
Hymenophyllacea	Reedella	humile	x													x							x		
Hymenophyllacea	Trichomanes	assimile	x																						
Hymenophyllacea	Trichomanes	denticulum	x																						
Hymenophyllacea	Trichomanes	francii	e																						
Hymenophyllacea	Trichomanes	laetum	x																						
Hymenophyllacea	Trichomanes	maximum	x																				x		
Hymenophyllacea	Trichomanes	tahitense	x													x	x					x			
Hymenophyllacea	Trichomanes	vieillardii	e																						
Lindseaceae	Lindsaea	ensifolia ssp en	x													x				x		x	x		
Lindseaceae	Lindsaea	francii	e																						
Lindseaceae	Lindsaea	harveyi	x																						
Lindseaceae	Lindsaea	linearis	x													x	x	x		x					
Lindseaceae	Lindsaea	moorei	e																						
Lindseaceae	Lindsaea	nervosa	e																						
Lindseaceae	Lindsaea	prolongata	e																						
Lindseaceae	Lindsaea	rufa	e																						
Lindseaceae	Lindsaea	vieillardii	e																						
Lindseaceae	Sphenomeris	alutacea	e																						
Lindseaceae	Sphenomeris	angustifolia	e																						
Lindseaceae	Sphenomeris	chinensis	x																						
Lindseaceae	Sphenomeris	deltoidea	x																						
Lomariopsidaceae	Bolbitis	lonchophora	x																						
Lomariopsidaceae	Elaphoglossum	glabratum	e																						
Lomariopsidaceae	Elaphoglossum	hueriannii	e																						
Lomariopsidaceae	Elaphoglossum	vieillardii	e																						
Lomariopsidaceae	Lomariopsis	novae-caledonia	e																						
Lomariopsidaceae	Teratophyllum	wilkesianum	x																						
Lycopodiaceae	Huperzia	phlegmaria	x																						x
Lycopodiaceae	Lycopodium	balansae	e																						
Lycopodiaceae	Lycopodium	carinatum	x																						
Lycopodiaceae	Lycopodium	cernuum	x			x	x						x												
Lycopodiaceae	Lycopodium	clavatum	x																						
Lycopodiaceae	Lycopodium	deuterodensum	x			x						x				x	x	x	x	x					
Lycopodiaceae	Lycopodium	ignambiense	x																						
Lycopodiaceae	Lycopodium	laterale	x			x	x					x				x	x	x	x	x					
Lycopodiaceae	Lycopodium	rutans	x																						
Lycopodiaceae	Lycopodium	phlegmarioides	x													x									
Lycopodiaceae	Lycopodium	phyllanthum	x																						
Lycopodiaceae	Lycopodium	pseudoverticl	e																						
Lycopodiaceae	Lycopodium	serratum	x																						
Lycopodiaceae	Lycopodium	squarrosum	x													x									
Lycopodiaceae	Lycopodium	volubile	x			x	x	x				x													
Marattiaceae	Marattia	attenuata	e																						
Marattiaceae	Marattia	rolandi-principis	e																						
Marsileaceae	Marsilea	mutica	x			*										x	x	x		x	x	x			
Nephrolepidaceae	Arthropteris	neocaledonica	e																						
Nephrolepidaceae	Arthropteris	palisotii	x													x	x							x	
Nephrolepidaceae	Nephrolepis	cordifolia	x	x	x	*										x	x			x	x	x			
Nephrolepidaceae	Nephrolepis	hirsutula	x																						
Ophioglossaceae	Heminthostachy	zeylanica	x																						
Ophioglossaceae	Ophioglossum	pendulum	x	x												x	x							x	x
Ophioglossaceae	Ophioglossum	petiolatum	x	x	x	x	x																		
Osmundaceae	Leptopteris	wilkesiana	x																						
Polypodiaceae	Belvisia	mucronata	x													x	x							x	
Polypodiaceae	Christopteris	varians	e																						
Polypodiaceae	Dictymia	mackeei	e																						
Polypodiaceae	Dictymia	mettenii	e																						
Polypodiaceae	Drynaria	rigidula	x													x	x							x	
Polypodiaceae	Goniophlebium	subauriculatum	x																					x	
Polypodiaceae	Phymatodes	scolopendria	x																					x	
Polypodiaceae	Phymatodes	vieillardii	e																						
Polypodiaceae	Phymatosorus	punctatum	x													x								x	x
Polypodiaceae	Pyrrosia	confluens	x	x	x											x	x								
Polypodiaceae	Pyrrosia	longifolia	x													x								x	
Polypodiaceae	Selliguea	lanceola	e																						
Psilotaceae	Psilotum	nudum	x	x	x	x										x	x	x				x			x
Pteridaceae	Acrostichum	aureum	x													x								x	
Pteridaceae	Pteris	balansae	e																						
Pteridaceae	Pteris	comans	x			x							x			x	x	x	x						
Pteridaceae	Pteris	ensiformis	x													x								x	
Pteridaceae	Pteris	laevis	e																						
Pteridaceae	Pteris	novae-caledonia	e																						
Pteridaceae	Pteris	tripartita	x													x								x	x
Pteridaceae	Pteris	vieillardii	e																						

Ferns of New Caledonia related islands

Family	Genus	Species	A	C	D	n	s	t	e	c	h	k	p	r	m	Q	N	V	T	E	S	W	g	G	F
Pteridaceae	Pteris	vittata	x													x	x	x				x	x	x	x
Schizaeaceae	Lygodium	hians	e																						
Schizaeaceae	Lygodium	microphyllum	x													x	x		x		x				
Schizaeaceae	Lygodium	reticulatum	x													x							x		
Schizaeaceae	Schizaea	bifida	x		x	x										x	x	x	x	x	x				
Schizaeaceae	Schizaea	dichotoma	x		x				x							x	x		x		x	x	x		
Schizaeaceae	Schizaea	fistulosa	x		x	x		x									x	x	x	x	x				
Schizaeaceae	Schizaea	intermedia	e																						
Schizaeaceae	Schizaea	laevigata	e																						
Schizaeaceae	Schizaea	melanesica	x																						
Schizaeaceae	Schizaea	pusilla	x																						
Schizaeaceae	Schizaea	tenuis	e																						
Selaginellaceae	Selaginella	firmuloides	e																						
Selaginellaceae	Selaginella	hordeiformis	x																						
Selaginellaceae	Selaginella	megastachya	x																						
Selaginellaceae	Selaginella	neocaledonica	e																						
Selaginellaceae	Selaginella	neopilifera	x																						
Selaginellaceae	Selaginella	vieillardi	x																						
Shizopteridaceae	Chedanthes	austrotenuifolia	x													x	x	x	x	x	x	x		x	
Shizopteridaceae	Chedanthes	distans	x	x	x	x	x									x	x	x		x	x				
Shizopteridaceae	Chedanthes	hirsuta	x													x				x	x				
Shizopteridaceae	Chedanthes	sieberi	x	x	x											x	x	x	x	x	x				
Shizopteridaceae	Doryopteris	concolor	x													x									
Shizopteridaceae	Pellaea	falcata	x	x		x					x					x	x	x	x						
Thelypteridaceae	Ampelopteris	prolifera	x													x				x		x		x	
Thelypteridaceae	Christella	parasitica	x		x											x	x				x				
Thelypteridaceae	Cyclosorus	arbuscula	x																						
Thelypteridaceae	Cyclosorus	gongylodes	x																					x	
Thelypteridaceae	Cyclosorus	invisus	x																						
Thelypteridaceae	Cyclosorus	richardi	e																						
Thelypteridaceae	Cyclosorus	truncatus	x																					x	
Thelypteridaceae	Thelypteris	fasciculata	e																						
Thelypteridaceae	Thelypteris	harveiana	x																						
Thelypteridaceae	Thelypteris	immersa	x																					x	
Thelypteridaceae	Thelypteris	obliquata	e																						
Thelypteridaceae	Thelypteris	uliginosa	x																					x	
Tmesipteridaceae	Tmesipteris	lanceolata	e		x	x				x															
Tmesipteridaceae	Tmesipteris	sigmatifolia	x		x	x																			
Tmesipteridaceae	Tmesipteris	vieillardii	e																						
Vittariaceae	Antrophyum	alatum	x																						
Vittariaceae	Antrophyum	novae-caledoniae	e																						
Vittariaceae	Antrophyum	plantagineum	x													x									
Vittariaceae	Vittaria	elongata	x		e											x	x							x	x
Vittariaceae	Vittaria	zosterifolia	x																						

A New Caledonia
C Lord Howe Island
D Norfolk Island
n New Zealand- N Island
s New Zealand- S Island
t Stewart Is
e Auckland Is
c Campbell Is
h Chatham Is
k Kermadec
p Antipodes Is
r Herd Is
m Macquarie Is

Q Queensland
N New South Wales
V Victoria
T Tasmania
E Northern Territory
S South Australia
W West Australia
g New Guinea
G Malaysia
F Christmas Is

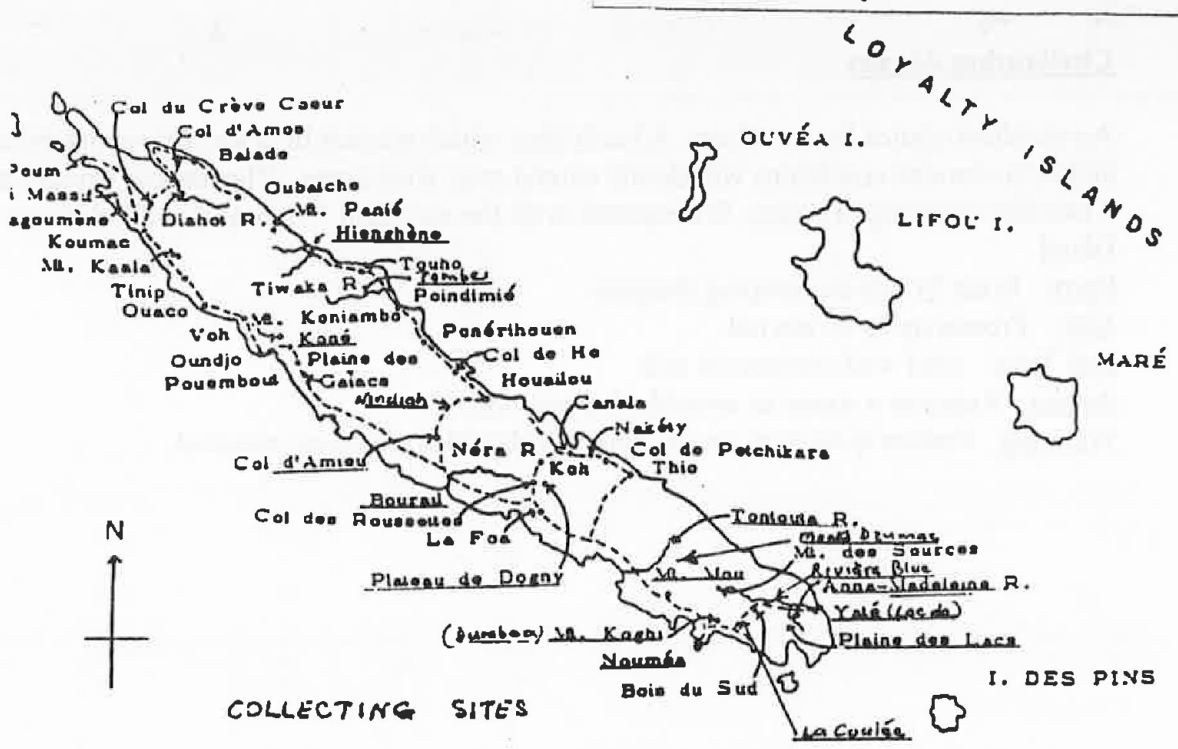
x occurrence
e endemic

Table Key

Column numbers refer to places where collections were made:

1 Noumea	10 Mt Dogney
2 la Coulée	11 C de Amieu
3 Plaine des Lacs	12 Koné district
4 Lac de Yaté	13 Pombei
5 Rivière Bleue	14 Hienghene
6 Chutes de la Madeleine	15 Hienghene limesto
7 Monts Dzumac	16 Nindiah
8 Mt Koghi (Dumbea	17 Mt Mou
9 Tontouta Valley	18 Bourail

New Caledonia: collection areas underlined.



FERNS IN GARDEN DESIGN

Following on from the December 1995 Newsletter, the following are further ferns considered valuable in garden design.

Blechnum penna-marina

This is the smallest of our Australian Blachnums and the only one that forms a low, compact ground cover.Its dark green fronds look particularly attractive when grown among rocks in shaded moist situations. In nature, Blechnum penna-marina is found at high latitudes in cold areas but grows readily in temperate coastal regions. Best if planted in a moist, fairly protected position where it tolerates all but the hottest sun. From sub-alpine districts of NSW, Victoria and Tasmania..

Form: Fronds erect to sometimes prostrate, spreads by rhizomes just under the soil with bright new fronds crowded around the growing ends.
Size: Fronds 15 to 30 cm tall.
Soil Type: Loamy well composted.
Aspect: Part shade , good in an easterly aspect..
Watering: Will recover from dry spells but responds to regular water.

Blechnum wattsii

Widespread and common from Southern Queensland down through the Eastern States and also extends to South Australia. Forms large, tangled clumps when growing in favourable conditions..

Form: Dark green, leathery erect fronds are an attractive bronze pink when new. Spreads from a creeping rhizome. Fertile fronds are much narrower than the ones sterile.
Size: Up to 1 m tall.
Soil Type: Favours moist, loamy soil.
Aspect: Requires shaded position protected from hot wind.
Watering: Water regularly to prevent soil from drying out.

Cheilanthes distans

An excellent choice for a rockery. A hardy fern which spreads by a short creeping rhizome and in favourable conditions will slowly extend over wide areas.. The narrow fronds have a hair-like covering of scales. Widespread in all the mainland States and in Lord Howe Island.

Form: Erect fronds on creeping rhizome.
Size: Fronds up to 15 cm tall.
Soil Type: Acid well composted soil.
Aspect: Requires a sunny to semi-shaded position.
Watering: Prefers to be kept on dry side and should not be over-watered..

Deadline for Copy
Contributions to the Newsletter are more than welcome - in fact the Newsletter is dependant on them. For the June Newsletter, articles should be forwarded to the Secretary by 15 May 1996.

NOTES FROM THE SYDNEY AREA

Report on End of Year Function at Dee Why, 3 December 1995
We concluded our year's activities with this informal get-together at Stony Range Flora Reserve.. All 21 present were delighted that our good friend and friend of Australian plants, Alec Blombery was able to join us for part of the day. As usual on these occasions the cooks among us surpassed themselves adding to the day's pleasures.

Report on Meeting at Epping, 17 February 1996
Our thanks to Rose Bach for hosting this gathering. As happened after weeks of overcast showery weather, the day was sunny and perfect for the 22 members who enjoyed the opportunity of admiring Rose's splendid, diverse range of plants with the ferns outstanding. After a short business session and Dot Camp's presentation of 'A Member's Fern' (reported on page 11 of this Newsletter) Peter led the Study Session dealing with Tree Ferns. Peter elected to break the Tree Ferns into three sections, those from the southern States, the other mainland tree ferns that are native to North Queensland and finally those of Lord Howe Island. For the day, Peter discussed the species which are found in the southern States in Eastern Australia.

The 'Flora of NSW' recognise just two genera, Dicksonia and Cyathea. Peter pointed out the most important distinguishing features. Dicksonia have fine hair-like scales and marginal sori protected by a cup-shaped indusium while on Cyathea species the scales are flattened and the sori superficial and away from the margin.

There are two Dicksonia species in the southern States, a third in North Queensland. D. antarctica is by far the commonest extending from Southern Queensland south through all the Eastern States and South Australia. It is also very popular in cultivation but likes well protected positions and moist conditions. Very slow growing, it develops a massive trunk covered in coarse brown fibrous roots and with soft brown hairs on the stipe bases. D.youngiae grows in areas of Southern Queensland and in Northern NSW as far south as Kempsey. Its stipes are covered by stiff dark hairs and the fronds have a distinctly glossy upper surface.

South of Queensland there are five Cyathea species and Peter divided these into two groups according to the scales on the stipe bases. Firstly, Cyatheas having brown scales with pale margins are C.australis, C.cunninghamii and C.marscens; and secondly, those with generally pale, straw coloured scales with dark spinules along the margins; they are C.leichhardtiana and C.cooperii. Peter said he found it difficult to identify on the basis of colour only but with the aid of Kyrill's microscope, members were readily able to see the distinctive spinules on scales of C.cooperii.

C.australis is widespread in the four Eastern States. The scales are reddish brown and it has a trunk 16 to 40 cm in diameter. C.cunninghamii is mainly found in Victoria and Tasmania with only spasmodic recording of this fern in Southern Queensland and NSW. C.cunninghamii has pale scales and a very thin trunk only 3 to 15 cm in diameter. Both of these ferns grow readily in cool, sheltered positions although C.cunninghamii (Rose has a fine 3 m high specimen) is less tolerant of dry conditions. The third member of this group, C.marscens is believed to be a naturally occurring hybrid of C.australis and C.cunninghamii. It is a huge fern up to 10 m tall with a 40 cm diameter trunk and is native to Tasmania and Victoria. Peter said it needs to be grown in a sheltered position because it is sensitive to strong sunlight. There is a specimen just inside the gates at the Royal Botanic Gardens in Sydney. All three species in this group have persistent stipe bases.

Cyathea cooperii has two types of scales and generally yellowish, warty stipe bases which fall off cleanly usually leaving a tell-tale dollar spot marking. Peter warned that the dollar spot may not be noticeable when the trunk is kept well watered. A native of NSW and Queensland, it is a very hardy, fast growing fern and members noted that it is a weed in many bushland areas. C.leichhardtiana has long straw coloured scales, dark persistent stipe bases and prickles all up the rachis. It is generally not easy to keep growing in cultivation. In nature it is usually found in sheltered gullies and hails from Queensland, NSW and Victoria.

NOTES FROM SOUTH EASTERN QUEENSLAND

Report on Outing to Tallagulla, 3 December 1995

Contributed by Irene Cullen

Twelve members were able to attend the end of year meeting at Merle and Geoff Goadby's home, Tallagulla. Six apologies were received. We made plans for the early part of the next year and spent some time discussing the article "Harvesting From the Wild" from the December Newsletter. Peter, through his work, found himself involved in much of the observing of the project. He gave us a good insight into it. We have asked him to share his experience with the rest of the Study Group. An article should appear in the next Newsletter. After our usual plant swap and lunch, the highlight of the day was a walk down the well contoured paths of the gully. Despite the savage drought the tree canopy had grown considerably since our visit in February 1993 and the number of fern species growing in the gully and on the trees total 72 native species. Our visit was much enjoyed. (Ed.: A list of the ferns identified has been provided and is to appear in the next Newsletter).

Fifteen members met at Pat Shaw's home for the February meeting . Peter Bostock gave us an excellent insight into Pyrossia, particularly discussing Pyrossia confluens and Pyrrosia lanceolata - their differences and similarities. After lunch, most of our members took the opportunity to visit Rod Paterson's well displayed gardens of ferns and 'house plants', growing under a canopy of shade trees. It was voted a very enjoyable day.

Has Your Subscription Been Paid?

A reminder to anyone who has not yet paid the $4 ($10 for overseas members) subscription for the 1996 calendar year. When paying please make the remittance payable to the Fern Study Group. Sometimes there is a problem (depending it seems on the Bank Teller's mood) with Group cheques drawn in the name of P.Hind. Payments should be made out to the Fern Study Group, and forwarded to the Treasurer, Miss J.Moore, 2 Gannet Street, Gladesville, 2111.

Harvesting Sticherus flabellatus, Gleichenia dicarpa & Dicranopsis linearis

The article published last issue regarding harvesting ferns from Queensland forests has brought forth several comments and one written response. Geoff Long has written as follows:

"Although the matter of harvesting from the wild must be approached with great caution I have no fundamental difficulty with the concept providing:

1. The species is common in the area and in other areas; 2. It's removal has no marked effect positive or negative on the other species of the area - faunal or floral; 3. It is known that the species reproduces adequately rapidly; and, 4. The state forest collects appropriate commission which is used to manage better the native species of the area.

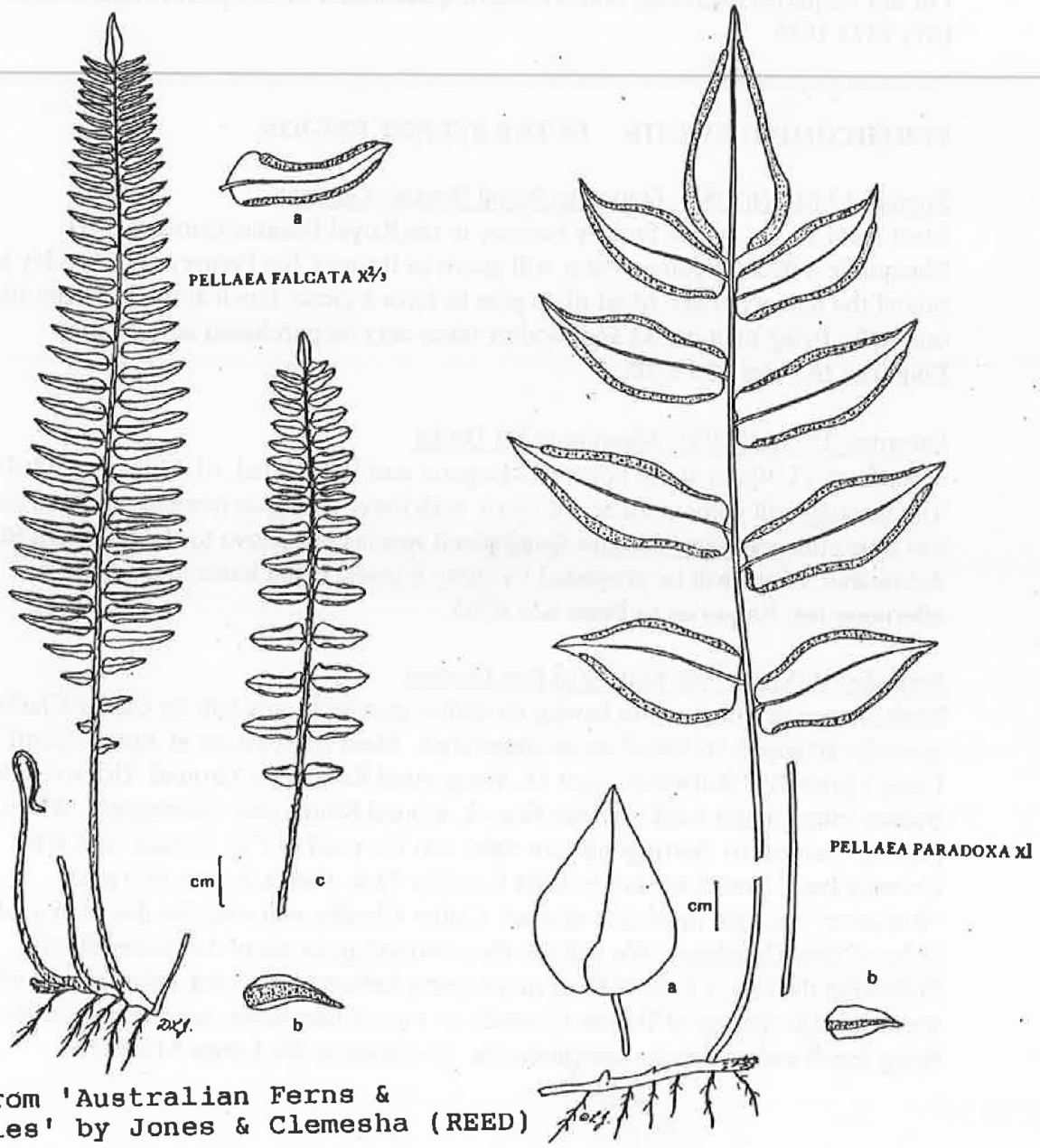
In fact having slogged my way through some very dense, tangled thickets of D.linearis I would heartily applaud thinning it out a bit."

A MEMBERS FERN - Pellaea paradoxa

Presented by Dot Camp

Dot mentioned that there are about 80 Pellaea species world-wide. An interesting feature with Pellaea is that the developing fronds are hooked rather than rolled as in the case of most other ferns. There are only two Pellaea in Australia and both grow in the Sydney district. P.paradoxa is the less common of the two species and is generally found in rainforest areas. On her property near Gosford, Dot said that P.paradoxa grows on the top of an escarpment in a rock shelf. She mentioned that P.paradoxa young plants look different to more mature specimens. The young ferns have distinctive broad heart shaped pinnae but grow longer and narrower on larger fronds. According to Jones and Clemesha these ferns grow to 20 to 60 cm tall. On her property fronds are usually around 20cm. As the fronds age, stipes tend to persist after shedding their pinnae. The bare stipes are prickly and need to be trimmed to improve appearance.

With the aid of potted plants and some fronds which she had brought to the meeting, Dot showed us their bands of marginal sori and tough pinnae - features shared with the other local Pellaea, P.falcata. However, on P.falcata the pinnae stalks are very short - usually only 1 mm or less, while on P.paradoxa the pinnae stalks are from 1 to 5 mm long. She explained the spore seem to be present for most of the year. In cultivation, P.paradoxa is described as being hardy once established, They generally resent disturbance but Dot explained that she had successfully transferred several to pots. They are drought resistant.



Sketch from 'Australian Ferns & Fern Allies' by Jones & Clemesha (REED)

FORTHCOMING EVENTS : IN SOUTH EASTERN QUEENSLAND

Sunday 3 March 1996. Excursion Pullenvale
Meet 9.30 am at Graham Nosworthy's home, 609 Grandview Road, Pullenvale, to start our excursion into the nearby forestry..

Sunday 14 April 1996 Study at Capalaba
Venue Ray and Gwen Norris's home, 3 Timbertop Court, Capalaba. The topic is "Growing Ferns - Successful and Proven Methods".

Sunday 5 May 1996 Excursion Mapleton
Mapleton Forest Drive - Meet at the 'Lily Pond' Park at Mapleton at 9.30 am.

Sunday 16 June 1996 Study at Algester
Meet at 9.30 am at the home of Russell and Irene Cullen, 220 Ringwood Road, Algester. Topic: By popular request, "Identification".

For any enquiries regarding South Eastern Queensland events phone Irene Cullen on (07) 3273 1055.

FORTHCOMING EVENTS : IN THE SYDNEY REGION

Sunday 17 March 1996, Outing to Royal Botanic Gardens
Meet from 10 am at The Sydney Fernery in the Royal Botanic Gardens, Mrs Macquarie's Road, Sydney. Peter will guide us through the Fernery and possibly to one of the nursery areas. Most of us plan to have a picnic lunch at the Gardens after our walk. Bring own drinks and food or these may be purchased at the Kiosk. Enquiries to Peter 625 8705.

Saturday 27 April 1996, Meeting at Mt Druitt
Meet from 11.30 am at the home of Margaret and Peter Hind, 41 Miller St., Mt Druitt. The meeting will commence at 1 o'clock with Peter telling us more about Tree Ferns, this time concentrating on those Queensland species not native to the Southern States. A Member's Fern will be presented by Betty Rymer. Bring lunch and a plate for afternoon tea. Enquiries to Peter 625 8705.

Saturday 18 May 1996, Outing to Fox Ground
Note change of time - we're having an earlier start to fit in a talk by Calder Chaffey specially arranged by Geoff as an added treat. Meet from 10 am at Ann & Geoff Long's property "Bolwarra", Lot 10, Foxground Road, Fox Ground. Drive south from Sydney along major road towards Nowra, around Kiama past Gerringong. When 6 km past the turn-off to Gerringong turn right into the road to Fox Ground and Wild Country Park. Travel 4.5 km to Wild Country Park, then a further 600 m to "Bolwarra" on right hand side of road. Calder Chaffey will start the day with a talk on ferns of New Caledonia. We will see the relationship to many Australian ferns. Following the talk, a look at ferns on property before lunch, later a choice of a stiff walk towards the top of Barren Grounds or a stroll inspecting rainforest near the road. Bring lunch and a plate for afternoon tea. Enquiries to the Longs 519 5536.

Sunday 23 June 1996, Meeting at Yagoona
Meet from 11.30 am at the home of Kyrill Taylor, Elizabeth Crescent, Yagoona. Meeting to commence at 1 o'clock with Peter telling us more about Tree Ferns, this time, the Lord Howe Island species. A Members Fern will be presented by Geoff Long. Bring lunch - you are welcome to use the Taylor's barbecue if you wish, and a plate for afternoon tea. Enquiries to Kyrill 644 5531.

Saturday 13 July 1996, Outing to Holgate / Matcham
Meet from 11 am at the Dot and Graham Camp's property 'Palomar Park', RMB 6154 Toomey's Road, Holgate / Matcham. Detailed directions and map in June Newsletter.

FORTHCOMING EVENTS : IN THE MID NORTH COAST , N.S.W.

For details contact Charlie Charters, phone (065) 86 1088 .

FORTHCOMING EVENTS : .. IN VICTORIA !

No, not a SGAP- Fern Study event, yet one that most of us would like to attend. The Fern Society of Victoria FERN SHOW being held at the Holmesglen College of TAFE, Waverley Campus Auditorium, 585 Waverley Road, Glen Waverley, between 10 am and 5 pm the week end of 30 - 31 March 1996. Features: Native & Exotic Ferns - Plants, Spore & Book Sales. Admission: Adults $3, Concession $2, Children Free.

KNOW YOUR PESTS - Red Spider Mite

(Based on "Encyclopaedia of Ferns" by David L. Jones - Lothian)

Recently Peter has told us of the damage caused by the Red Spider Mite or as sometimes called, the Two Spotted Mite (Tetranychus urticae). We have seen its effect on particularly on Todea barbara both in the bush and in some of our gardens.

"Spider mites have eight legs and are therefore not insects. They generally congregate in colonies on the underside of fronds and feed by sucking the sap. The undersurface of the fronds is coated with a very fine web, which helps to protect the mites and aids in their movements. Adult mites are so small they are difficult to detect, even with the aid of a magnifying glass. Young mites are miniature, scaled-down versions of the adult. Spider mites favour warm, dry weather and can reproduce very rapidly when conditions are suitable. Symptoms of their attack are a dryish, mottled appearance of the fronds. Sometimes the fronds may go silvery and in severe infestations they may yellow prematurely.

Control: Spider Mites are sporadic rather than persistent pests of ferns. Their presence may be an indication that the plants are too dry or the humidity is too low. Control measures should be initiated when the pests are first noticed because they can increase in numbers very quickly. Dusting with a mixture of equal parts by weight of fine sulphur and hydrated lime has been used with some success. Predator mites are available from some commercial outlets. Miticides may be needed to clean up persistent infestations (difocol or tetradifon)."

ASGAP FERN STUDY GROUP

STATEMENT OF RECEIPTS & PAYMENTS

RECEIPTS	1995	(Previous Year)
Members Subscriptions	504	540
Donations (SGAP Regions & Groups $99.60, Members $21.90)	122	133
Raffles - Sydney Meetings	55	59
Interest Received	36	35
Sale of Ferns - Net Proceeds	-	170
Sale of Booklets	-	20
Total Receipts	717	957
PAYMENTS		
Newsletter Expenses - Paper & Printing	238	309
- Postage	252	252
Postage - Correspondence	17	26
Stationery	6	8
Photos - Display Material	25	96
Expenses of Book	-	20
Bank Charges & Money Orders	9	13
Total Payments	547	724
Surplus for Year	170	233
	717	957

SUMMARY

Cash at bank at beginning of the year	$2,695.62
Surplus for Year	$170.14
Cash at Bank at end of year	$2,865.76

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