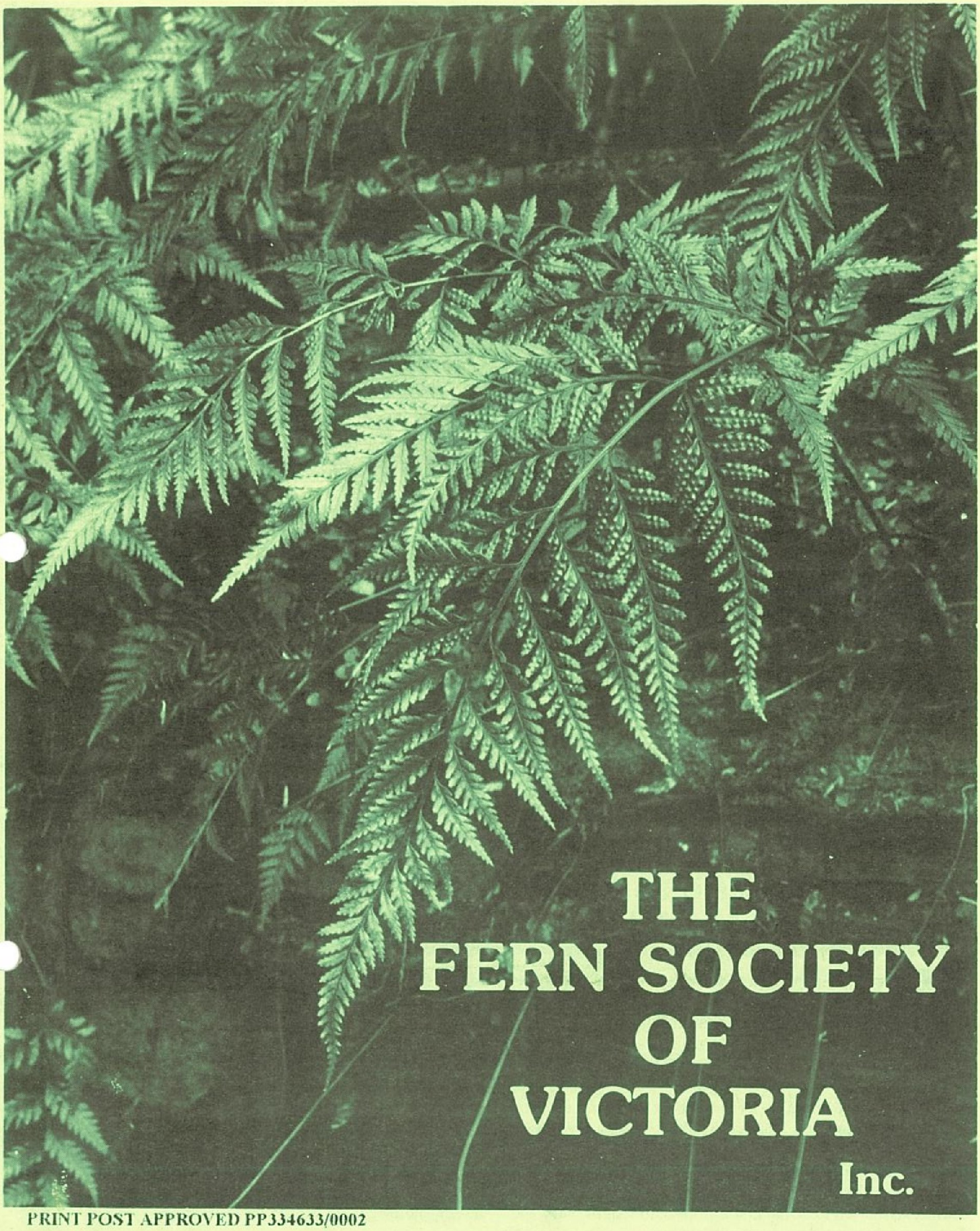

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NEWSLETTER

VOL. 20, Number 5 - September / October, 1998. Reg. No. A 0002585 E

FERN SOCIETY OF VICTORIA Inc.

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SUBSCRIPTIONS:

Single -	$13.00	Pensioner/student $10.00
Family -	$15.00	Pensioner Family $12.00
Overseas -	A$20.00 (Magazine by airmail)	

Subscriptions fall due on 1st July each year.

Meetings are held on the third Thursday of each month except January at Victoria Bowling Club, 217 Grattan Street, Carlton. Melways 2B D8.

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.

EXCURSION to DEN OF NARGUN and FAIRY DELL. 26th and 27th September, 1998.

The FSV is pleased to be able to offer the opportunity to escape from the football hyperbole of the grand final weekend of the 26th and 27th of September, and instead to spend a much more interesting weekend visiting two delightful fern spots.

The Den of Nargun is a rocky cave about 40 k beyond Sale. According to aboriginal beliefs the 'Nargun' was a mysterious cave dwelling creature which dragged passers-by into its cave. Bullets and spears were said to be ineffective as it could turn them back in the direction from which they came. The explorer Howitt is believed to be the first European to visit the cave and he was nearly trapped by a raging bushfire.

The cave has a special atmosphere with small stalactites hanging from the roof and stalagmites up to 30 metres tall on the floor. The cliffs leading up to the cave on both sides of the valley are up to 150 metres high. The deeper parts of the valley have an interesting collection of ferns. There are two walks, one fairly short down to the Den, and a longer one down to the Mitchell river and the bluff lookout.

Fairy Dell is a delightful spot tucked away in a valley just out of Bruthen. About 25 species of ferns have been noted in Fairy Dell (see the March/April 98 Newsletter), it would be nice to enlarge the this list. The walk is short and easy. The good rains in Gippsland this winter should ensure that both fern spots are looking good.

It is proposed to visit The Den of Nargun on Saturday afternoon, stay overnight at Bairnsdale, then visit the fairies on Sunday morning,

A 12 seater minibus has been booked and is filling fast, however private transport may suit other people. Accommodation has been arranged at a motel in Bairnsdale for $25 a head, bed and breakfast, twin share, and a 3 course evening meal for $15. Anyone wishing to come please ring Barry White on 9337 9793.

1998 MEETINGS & EVENTS

ANNUAL GENERAL MEETING followed by a General Meeting
Thursday 17th September at 8.00 p.m.

A RECENT TRIP TO CAIRNS, N.QUEENSLAND

with FAMOUS TRAVEL WRITER AND DEMONSTRATOR **IAN BROUGHTON.**

*Please note - a change of subject.

Whether you have been to Cairns and Cape York Peninsular or not, you'll thoroughly enjoy this.

Competition: A North Queensland fern.

✺✺

Excursion Weekend of 26th & 27th September

FAIRY DELL AND DEN OF NARGUN

Latest details on page 71. Further information from Barry White (Tel. 03-9337-9793)

✺✺

General Meeting Thursday 15th October at 8.00 p.m.

MILTON DYER ON MULTICROP PRODUCTS
VIDEO OF ALBERT JENKINS' FERNERY

Competition: An epiphyte.

✺✺

General Meeting Thursday 19th November at 8.00 p.m.

TERRY TURNEY ON DAVALLIAS

Competition: Davallia (Hare's foot fern)

✺✺

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.

DON'T FORGET OUR ANNUAL GENERAL MEETING THIS MONTH!

The nineteenth Annual General Meeting of the Fern Society of Victoria Inc. will be held at 8.oo p.m. on Thursday 17th September 1998 at the Victoria Bowling Club, 217 Grattan Street, Carlton.

Business to be transacted includes the very important election of a new president and some other committee members. Nominations may be called at the Annual General Meeting only if insufficient have been received previously to fill all vacancies.

Ferns and Fern Allies in the Canberra Region.

David Nicholls

Species marked [C] are recorded from the Australian Capital Territory.
Others are only recorded from elsewhere in the region.

ISOETACEAE
Isoetes L.
I. drummondii A.Br. "Plain Quillwort"
I muelleri A.Br. "Quillwort" [C]

LYCOPODIACEAE
Lycopodium L.
L. australianum Herter et Allan "Fir Clubmoss"
L. deuterodensum Herter "Bushy Clubmoss"
L. fastigianum R.Br. "Mountain Clubmoss" [C]

TMESIPTERIDACEAE
Tmesipteris Bernh.
T. billardieri Endl "Long Fork-Fern"
T. parva Wakef.

AZOLLACEAE
Azolla Lam.
A. filiculoides var rubra (R.Br.) Strasb. "Pacific Azolla" [C]
A. pinnata R.Br. "Ferny Azolla" [C]

MARSILEACEAE
Marsilea L.
M. hirsuta R.B~ "Short-fruit Nardoo" [C]
M mutica Mett. [C]

Pilularia L.
P. novae-hollandiae A.Br. "Austral Pillwort" [C]

OPHIOGLOSSACEAE
Botrychium Swartz
B. australe R.Br. "Austral Moonwort" [C]
B. lunaria (L) Swartz "Moonwort" [C]

Ophioglossum L.
O. lusitanicum L.. ssp *coriaceum* (Cunn.) Clausen "Austral Adders-tongue" [C]

SCHIZAEACEAE
Schizaea J.Sm.
S. fistulosa Labill. "Narrow Comb Fern"
S. rupestris R.Br. [C]

HYMENOPHILACEAE
Hymenophyllum Sm.
H. cupressiforme Labill. "Common Filmy Fern" [C]
H. flabellatum Labill. "Shiny Filmy Fern"
H. peltatum (Poir.) Desv. "Alpine Filmy Fern" [C]

Polyphlebium Copel.
P. venosum (R.Br.) Copel.

Sphaerocionium Presl
S. lyallii (Hook.f.) Copel.

OSMUNDACEAE
Todea Willd.
T. barbara (L.) T.Moore "King Fern" [C]

CYATHEACEAE
Cyathea Sm.
C. australis (R.Br.) Domin "Rough Tree Fern" [C]

DICKSONIACEAE
Calochlaenia (Maxon) M.D.Turner et R.A.White
C. dubia (R.Br.) M.D.Turner et R.A.White "Common Ground Fern, Rainbow Fern or False Bracken" (previously known as *Culcita dubia*) [C]

Dicksonia L'Hér.
D. antarctica Labill. "Soft Tree Fern" [C]

ADIANTACEAE
Adiantum L.
A. aethiopicum L. "Common Maidenhair Fern" [C]
A. hispidulum Sw. "Rough Maidenhair Fern" [C]

ASPIDIACEAE
Polystichum Roth
P. proliferum (R.Br.) Presl "Mother Shield Fern" [C]

ASPLENIACEAE
Asplenium L.
A. bulbiferum ssp gracillimum P.J.Brownsey "Mother Spleenwort" [C]
A. flabellifolium Cav. "Necklace Fern" [C
A. flaccidum Forst.f. "Weeping Spleenwort"
A. hookeranum Col.
A. polyodon Forst.f.
A. trichomanes ssp quadrivalens L. "Common Spleenwort" [C]

Pleurosorus Fée
P. rutifolius (R.Br.) Fée "Blanket Fern" [C]
P. subglandulosus (Hook. et Grev.) Tindale

ATHYRIACEAE
Cystopieris Bernh.
C. tasmanica Hook. "Brittle Bladder Fern"

Diplazium Sw.
D. australe (R.Br.) Wakef. "Austral Lady Fern" (previously known as *Athyrium australe*) [C]

BLECHNACEAE
Blechnum L.
B. cartilagineum Swartz "Gristle Fern" [C]
B. chambersii Tindale "Lance Water Fern"
B. fluviatile (R.Br.) E.J. Lowe ex Salom. "Ray Water Fern" [C]
B. minus (R.Br.) Ettingsh. "Soft Water Fern" [C]
B. nudum (Labill.) Mett. ex Luerss. "Fishbone Water Fern" [C]
B. patersonii (R.Br.) Mett. "Strap Fern" [C]
B. penna-marina (Poir.) Kuhn "Alpine Water Fem"[C]
B. wattsii Tindale "Hard Water-fern" [C]

Doodia R.Br.
D. aspera R.Br. "Prickly Rasp Fern"
D. caudata R.Br. "Small Rasp Fern"
D. media R.Br. "Common Rasp Fern" [C]

DAVALIACEAE
Rumohra Raddi
R. adiantiformis (Forst. f.) Ching "Leathery Shield Fern or Shield Hare's Foot"

DENNSTAEDTIACEAE
Histiopteris (Agardh) J.Sm.
H. incisa (Thunb.) J.Sm. "Bat's-wing Fern" [C]

Hypolepis Bernh.
H. muelleri Wakef. "Hash Ground Fern" [C]
H. punctata (Thunb.) Mett. ex Kuhn "Downy Ground Fern" [C]
H. rugosula (Labill.) J.Sm. "Ruddy Ground Fern" [C]

Pteridium Scop.
P. esculentum (Forst.f.) Cockayne "Common Bracken" [C]

.....*Continued on page 79*

The President's Page

My three year term as President has almost come to an end and has surprisingly passed very quickly. Another year has seen our Society prosper in its nineteenth year since inauguration.

Finances

Our financial position is still quite satisfactory, with a balanced budget and a satisfactory balance in the bank. Don Fuller is to be commended for his excellent work over the past year as Treasurer. It is his hard work that has kept the Society's finances in shape and we are much indebted to him.

Monthly Meetings

Our monthly meetings have been quite successful, even though our numbers are down a little. Our speakers throughout the year included Roy Jacobs with a spectacular slide and music show on 'Tasmania and the Kimberleys', Barry White on 'The Ferns of Lord Howe Island' and later on in the year with 'The Ferns of Fiji'. Geoff Beilby gave us a very interesting talk and slide show on 'The Ferns of the Otways' and in March Neil Shirley from South Australia gave us an excellent talk on 'The World of Tree Ferns'. Kathy Goodall and Keith Hutchinson gave us a slide presentation and video on their fern trip to New Zealand. Max Moore spoke on Hostas, Lisa Haines on Seasol and last month we were all entertained by Jane Edmanson. I presented a video on our trip to the U.S.A. and Canada, in June. We had one Demonstration Workshop night, and the Christmas Break-up meeting was held at our nursery in Lara.

The fern competitions at our monthly meetings have been well supported and it is pleasing to see such fine specimens of ferns being entered. Many thanks to Barry White for his competent judging.

Excursions.

Two successful excursions were held earlier this year. In February a small group of members rendezvous with Lorraine, myself and Martin Rickard (President of the British Pteridological Society) at the Rippon Lea Estate for a tour of the fernery. Then there was an excursion in March to Dorothy and Ian Forte's farm at Garfield North and then on to Glen Nayook.

Fern Show

Our fern show was quite different this year as we teamed up with the Australian Rhododendron Society - Vireya group and moved to a new venue at the Mount Waverley Community Centre. The display was excellent as was the venue, the attendance was good on the Saturday but not quite so good on the Sunday. Our thanks again to Mary Frost for her competent judging and to Don Fuller for the hard work involved in organising and co-ordinating the show. Thanks also, to the speakers and demonstrators at the show, and also to the Show Committee and other members who participated in the show.

Newsletter.

Our newsletter goes from strength to strength and is the lifeline of our Society. Lyn Gresham has again excelled in this difficult task. She not only edits the newsletter but often writes the guest speakers' talks from tapes taken at each meeting, contributes articles and all the news items. Thanks also, to other contributors to the newsletter and to Margaret Radley and her daughter, Sharon for their part in folding and mailing of the newsletter.

Committee of Management.

The Committee of Management has functioned well again over the past year. Several members will not be standing again for the next term, so there will be some vacancies to fill. My thanks go to all the members of the committee for their contributions to the Society. George Start (Vice President), Barry White (Secretary and Past President), Don Fuller (Show Co-odinator), Lyn Gresham (Editor) and to Jean Boucher, Simon Hardin, Ray Harrison and Lexie Hesketh.

Non-elected Positions.

There are many members who have given their time and effort over the past year. Thank to Joy Hormon and Margaret Radley for selling raffle tickets at the door, to Jean Boucher, Norma Hodges and Nancy Perry for their much appreciated work in providing supper at the meetings. Don Fuller for organising the merchandise to be sold at our monthly meetings, Lorraine Goudey for her work on the Fern Sales table, John Oliver as Property Manager and Membership Secretary, David Radford as Librarian, Ivan Traverso for Book Sales, Barry White who manages the Spore Bank and John Hodges for taking care of the raffles at the general meetings. Special thanks to Mavis Potter for baking the Christmas cake for the Christmas Break-up raffle.

In conclusion, I would like to thank all the members for their support throughout the past year, and I look forward to the coming year in the knowledge that the Fern Society of Victoria will continue to prosper.

Chris Goudey

Speaker Report 1 - July 1998 meeting.
SEASOL LIQUID SEAWEED EXTRACT SOIL REVITALISER AND PLANT TONIC.
Lisa Haynes

Lisa is Technical Officer for Rezitech P/L and has a background in science. Her primary role is to advise and assist farmers to use Rezitech products effectively, economically and safely. Rezitech has a firm policy of promoting sustainable agriculture, and indeed home gardening.

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

Seasol is a **liquid seaweed extract** which is produced in Tasmania by Rezitech, an Australian owned and operated company, under the "Earthcare" brand. It is the only 100% Australian liquid seaweed widely available on the retail market. Earthcare products are backed by extensive research data to validate product effectiveness and environmental responsibility. The highest quality control and consistent market availability are assured.

It is **not a fertilizer**. It is a dynamic growth stimulant, a soil conditioner and a plant tonic and it works very differently to a fertilizer. It is made from a unique species of bull kelp, *Durvillaea Potatorum.*

Durvillaea Potatorum is endemic to the relatively unpolluted waters around King Island in Bass Strait. It has the highest alginic acid content of any brown kelp in the world. This means a very high solids content can be achieved in the final product.

Pure, Clear Water?

Seaweed in general acts like a magnet for radio isotopes and heavy metals. In fact, when scientists want to detect the level of pollutants in the sea, they generally just test the kelp.

The kelps imported into Australia are from northern seas, around heavy industry which means they are relatively contaminated compared with our native kelp, which are not exposed to heavy industry. Whilst this may not be important while growing ornamentals, it becomes significant in the home vegetable garden, or broadacre food production, and of course in any certified organic set up.

The Bass Strait kelp is harvested from the beach. Enough kelp is washed up each year for the few companies working there to utilise. NO kelp is taken from the marine forests, so the ecosystem is not affected.

An Export Industry.

Most of the kelp available in Australia is imported in processed form (in products). On the other hand, *Dervillaea* is exported to many companies in over twenty countries around the world. It is used in hundreds of products, including ice-cream, toothpaste and to stabilise the head of your beer.

How does Dervillaea Potatorum affect growth?

As already stated, Seasol is NOT a fertilizer. A fertilizer stimulates growth by providing various quantities of nitrogen, phosphorus, potassium and perhaps some trace elements.

Kelp stimulates growth quite differently. It contains small quantities of hormones; cytokinins, auxines and a few giberellins. Plants only require small amounts - parts per billion - of these hormones to have their reproductive and vegetative capacity profoundly affected. These hormones can extend the flowering season, increase the number of fruits per plant, stimulate the root system and improve the 'typeness' of the fruit (produce an even size and quality).

In certain soils (eg., those which have a high organic matter content, have had a lot of composts added or are heavy clay) the nutrients are there but might not be readily available to the plant. Seasol has chelating abilities (ie., it renders nutrients in the soil soluble and ready for uptake into the plant) so fertilizers work more efficiently.

A lot of fertilizers have a high nitrogen content. Though nitrogen is essential for plant growth, when it is overused (which is easy to do) the cells in a plant are actually stretched. The elongated cell walls become weaker and so become very susceptible to invasion by pests eg., the mycelia of fungi or the proboscus of a sucking insect. Seasol counteracts this by making the plant cells stronger. Instead of creating growth for growth's sake, which can be weak and spindly, it creates strong, healthy growth.

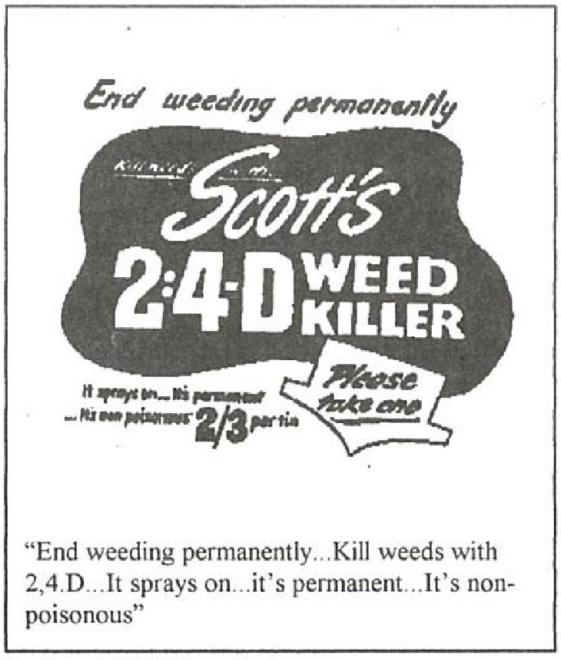
What does this mean for the home garden? What benefits are we going to derive?

1. Increased root growth. This is important when you are transplanting anything, especially in winter. Plants can only use the nutrients in the soil if they have a healthy root system so it's no use fertilizing your new plants until they have healthy roots. Kelp stimu-

ates the plant and so reduces transplant shock.
2. Resistance to root diseases.
3. Healthy growth.
4. Stimulation of flowering and enhanced seed germination rate by the hormones present in the product.
5. Resilience to extreme weather conditions. The extra cell strength means a reduction in susceptibility to damage from such climatic extremes as frost, drought, heat and wind. This does not mean that a garden which has very dry soil, no shelter and heavy frosts will not be damaged but home gardeners have often reported a noticeable improvement in frost tolerance in kelp treated plants.

Why choose Seasol rather than other kelp-based products which are available?

1. Seasol is the only 100% Australian liquid seaweed widely available on the retail market.
2. Rezitech has a solid apprenticeship in commercial horticulture. That is the base of their business.
3. The scientific data is largely Australian, not American or Scottish.
4. In the unique process used the growth regulators are liberated freely. The increase in their availability to the plant is quite significant.
5. It won't precipitate (settle), it has a long shelf life and it won't block spray equipment. That tends to be a problem with kelps.
6. It's the only one with a B.F.A. (Biological Farmers' Association) organic certification on the retail market.
7. It's the only Australian liquid seaweed on the market.



"End weeding permanently...Kill weeds with 2,4.D...It sprays on...it's permanent...It's non-poisonous"

How do you use it?

Seasol can be used either as a foliar spray or applied to the soil.

It is readily absorbed via the leaves so if you have a soil problem, a root problem or need to fix a stressed plant really quickly, a foliar spray would be best.

For most of the time, though, you can just dilute it in a watering can and apply it to the soil. As well as being easily taken up through the roots, it stimulates the healthy soil bacteria and fungi.

Seasol Soup!

When you dilute Seasol you activate the microbes in it so if you leave it in a watering can on a warm day, by the next day it will have grown - the microbes will have replicated and you will have a foul-smelling mess on your hands!

Is it compatible with insecticides and fungicides?

Seasol has been mixed with all sorts of chemicals for many years. However the only group of chemicals Rezitech have hard data on, is herbicides where it was shown to have no adverse effects whatsoever. (In fact, herbicides like "Round Up" which need to be translocated through the plant, can show increased efficacy.)

Regarding fungicides and insecticides, there is plenty of anectdotal evidence suggesting compatibility, but it is best to conduct a simple compatibility test first.

Most insecticides are stabilised in an acid medium (pH below 6) and Seasol is very alkaline so when you mix the two together you could start to denature the active constituents of the insecticide. But farmers, who have been mixing them for years, rarely have a problem.

What about fertilizers?

Seasol is quite compatible with fertilizers and usually increases their efficacy and uptake. Mixing Seasol with a soluble fertiliser is an ideal way to use it, as long as you don't overdo the nitrogen component.

Is it safe for livestock and pets?

Absolutely. If it was more palatable humans could safely drink it. In fact, Rezitech make a livestock feed supplement which some of our staff sprinkle on their breakfast cereal. It is really no different to buying kelp tablets at your healthfood shop; they are just the powdered kelp which has been tabulated.

Can you overuse Seasol?

Although Seasol is generally safe, the hormonal action is quite powerful. If applied every few days, or even weekly at high rates, these growth regulators can have a detrimental effect on plant growth. The growth becomes a little stunted (albeit with very dark green and shiny leaves!) but no long term damage is done. As soon as the rate is lifted, the plants "take off" and often thrive better than untreated plants.

Will constant use of Seasol at the recommended rate alter the soil's pH?

No. Although the pH of Seasol is 9.5 to 10.5, its action in the soil is microbal rather than chemical. (In the plant it is hormonal, of course.) Trials have shown that if it is used at, or even far over, the recommended rate it will not be anywhere near strong enough for any change to take place.

Just a word on safety.

People are becoming more aware of the potential dangers of exposure to the chemicals we use and the importance of protecting ourselves from them. History has shown over and over again that we just don't know their long term effects so it's best to avoid using them as much as we can. When you must use chemicals, follow the instructions carefully and wear the appropriate protective gear. An old advertisement for 2,4.D weedkiller claimed that it was "non-poisonous". We now know that it is far from safe. Today's fact is, indeed, tomorrow's fiction. We just don't know - so let's be careful.

Report by Lyn Gresham

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MONTHLY COMPETITION RESULTS

JULY GENERAL MEETING

Competition: Asplenium.

1. Jack Barrett's *A. australasicum* Multilobum'
2. Karin Graham's *A. antiquum* 'Victoriae'
3. Jean Boucher's *Asplenium* Sp.

Exhibitors' Draw: Jean Boucher
Special Effort: Reg Kenealy, Pat Nicholls, Margaret Radley, Phil , Barry White, Jean Boucher.

AUGUST GENERAL MEETING

Competition: Any Fern with Simple Fronds.

1. Don Fuller's *Pyrrosia lingua* 'Variegata'
2. Lorraine Goudey's *Asplenium goudeyii*
3. Don Fuller's *Microsorum fortuneii*

Exhibitors' Draw: Terry Turney.
Special Effort: Reg Kenealy, John Hodges, Simon Hardin, Eric Perry.

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.

fernsfernsfabulousfernswonderfulfernsgloriousfernsirresistiblefernsbeautifulfernsferns

HOW LONG WILL LITTER LAST?

Here is some food for thought. Lorraine brought it back from America and we think you will find it interesting.

Cigarette butts.....1-5 years
Glass bottles .....1,000 years
Plastic bags.....10-20 years
Plastic coated paper.....5 years
Plastic film containers .....20-30 years
Orange and banana peels.....up to 2 years
Nylon fabric .....30-40 years
Wool socks .....1-5 years
Tin cans .....50 years
Plastic six-pack holders .....100 years
Aluminium cans and tabs .....500 years
Leather .....up to 50 years

BRITISH FERNS

Part 2 of the British Pteridological Society video report

Continued from the last newsletter.

Lyn Gresham

In upland Britain, such as Snowdonia we find different fern communities, some requiring an acid substrate, others needing lime. Similarly, high in the mountains above Glen Lyon in central Scotland the same types of community exist. We will first look at those species that require acid or neutral conditions, before going on to those that need lime or standing water.

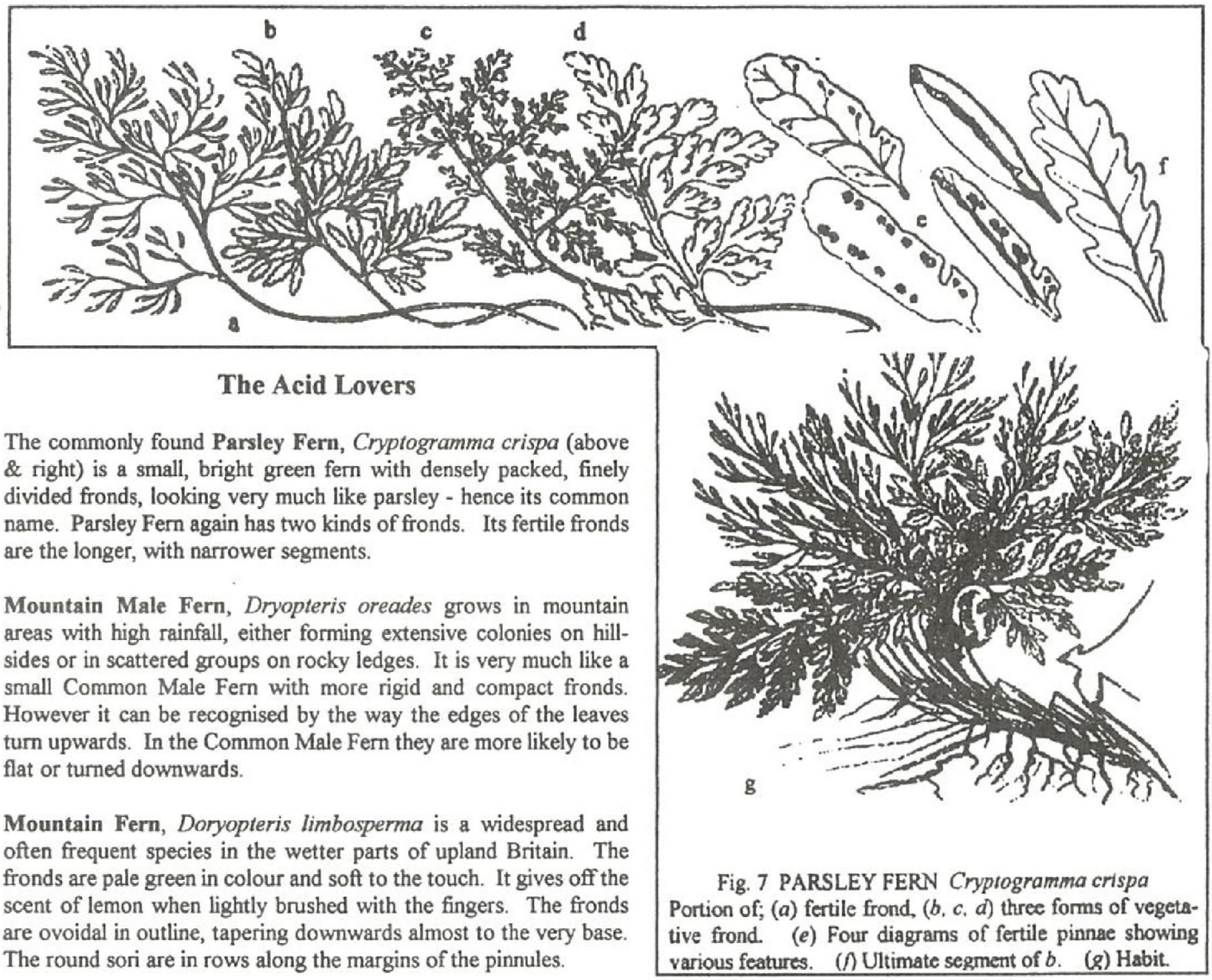

Fig. 7 PARSLEY FERN *Cryptogramma crispa*
Portion of; (*a*) fertile frond, (*b, c, d*) three forms of vegetative frond. (*e*) Four diagrams of fertile pinnae showing various features. (*f*) Ultimate segment of *b*. (*g*) Habit.

The Acid Lovers

The commonly found **Parsley Fern**, *Cryptogramma crispa* (above & right) is a small, bright green fern with densely packed, finely divided fronds, looking very much like parsley - hence its common name. Parsley Fern again has two kinds of fronds. Its fertile fronds are the longer, with narrower segments.

Mountain Male Fern, *Dryopteris oreades* grows in mountain areas with high rainfall, either forming extensive colonies on hillsides or in scattered groups on rocky ledges. It is very much like a small Common Male Fern with more rigid and compact fronds. However it can be recognised by the way the edges of the leaves turn upwards. In the Common Male Fern they are more likely to be flat or turned downwards.

Mountain Fern, *Doryopteris limbosperma* is a widespread and often frequent species in the wetter parts of upland Britain. The fronds are pale green in colour and soft to the touch. It gives off the scent of lemon when lightly brushed with the fingers. The fronds are ovoidal in outline, tapering downwards almost to the very base. The round sori are in rows along the margins of the pinnules.

Northern Buckler Fern, *Dryopteris expansa* is a much rarer plant of upland Britain which grows mainly in rock crevices or screes. The fronds are most similar to those of the Broad Buckler Fern, *Dryopteris delatata* although they are broader and more divided.

Flexile Lady Fern, *Athyrium flexile* (Fig. 8) is an extremely rare variant of the Alpine Lady Fern.

Brittle Bladder Fern, *Cystopteris fragilis* is one of the commonest mountain ferns. Plants have tufts of finely divided, pale to mid green, thin textured fronds. They indicate calcareous (limestone or chalky) conditions but can be found in acidic areas where traces of lime occur.

On a mountainside in the Lake district is a rare fern that can be found on or among acid rocks. It is the **Forked Spleenwort**, *Asplenium septentrionale* (Fig. 9) whose fronds are narrow, wedge-shaped and characteristically forked, looking supeficially as much like a grass as a fern.

Limestone Pavement

In the south eastern Lake district and the northern Pennines there exist vast tracts of limestone country. Where the limestone reaches the surface it is often exposed as limestone pavement. Cracks in these pavements create a unique habitat where specialised species live. The most notable example is the **Limestone Buckler Fern**, *Dryopteris submontana,* which has stiff, rigid and finely divided fronds of a blue-green colour. It has kidney shaped sori on the underside of its pinnules. Sometimes this species is found growing in association with another, much commoner fern that is also limited to basic environments. This is the **Limestone Oak Fern**, *Gymnocarpium robertianum*. Its fronds are similar to those of the Oak Fern although larger and comparatively narrower. They are also duller in colour with a mealy-textured surface produced by a covering of minute glands.

The **Holly Fern**, *Polystichum lonchitis* (Fig. 10) is an uncommon species of Shield Fern only widespread in the mountains of central and north western Scotland. The fronds are dark, glossy green and leathery and characteristically divided into segments that somewhat resemble holly leaves. It is a handsome plant that has suffered from over-collecting in the past.

Also in the basic rocks (containing some silica) of the central Scottish highlands is a very rare species of fern, the **Mountain Bladder Fern**, *Cystopteris montana* (Fig. 13). It is another species whose fronds are characteristically triangular and arising singly from an underground rhizome.

Fig. 8 FLEXILE LADY FERN *Athyrium flexile*

Fig. 9 FORKED SPLEENWORT *Asplenium septentrionale*. (above) Habit. (below) Fronds showing veins, spore pattern.

The Woodsias are very rare mountain ferns and both species are completely protected by law. The **Alpine Woodsia**, *Woodsia alpina* (Fig. 12) has small, delicate fronds which might be confused with young plants of *Cystopteris fragilis*. The presence of hairs and a cup-shaped indusium will however easily distinguish the Woodsia.

Oblong Woodsia, *Woodsia ilvensis* (Fig. 11) has broader fronds than the Alpine Woodsia. This species is possibly the rarest British fern.

Green Spleenwort, *Asplenium viride* is widely scattered in the upland regions of Britain, although growing exclusively on limestone and other base-rich rocks. The fronds are small and once-divided into rounded segments. Its rachis is characteristically green.

Ferns For Dry Walls

In contrast to their normal association with high humidity and shade, some fern species are among the most successful colonizers of dry walls. It is amazing that these so-called primitive plants can thrive where few flowering plants can exist. Most wall ferns prefer some lime in the substrate. This is seen here, where a colony of the **Rusty Back Fern**, *Asplenium ceterach* (Fig. 14) has become established. The Rusty Back has somewhat fleshy fronds that are only divided into alternating lobes. The back of the fronds are densely covered with scales that overlap, rather like slates (tiles) on a roof.

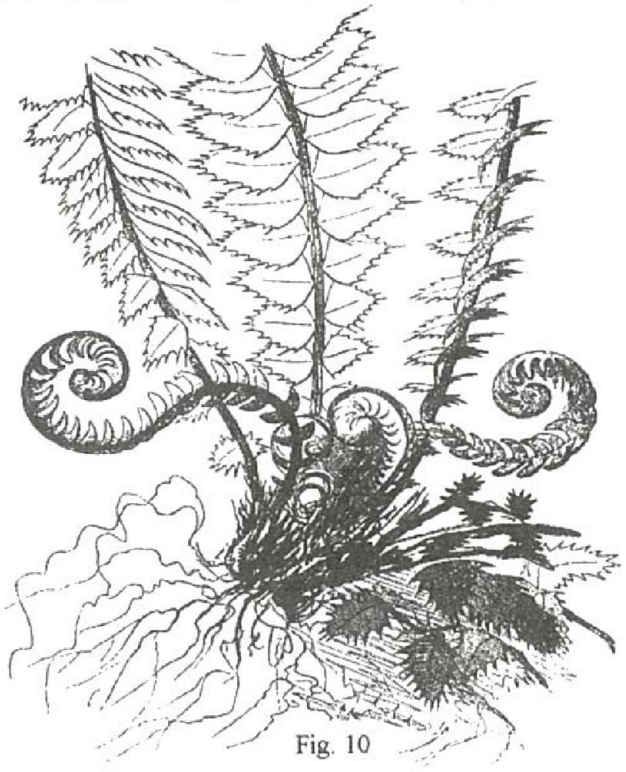

Fig. 10

Fig. 11

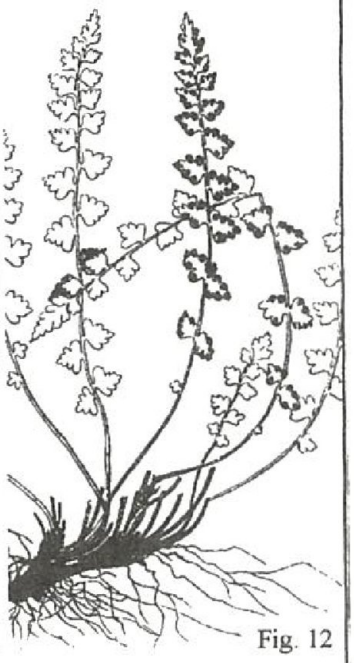

Fig. 12

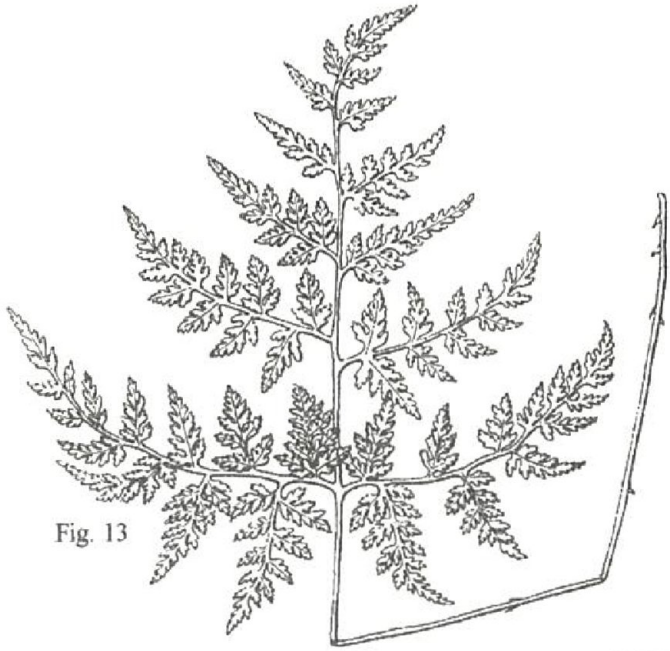

Fig. 13

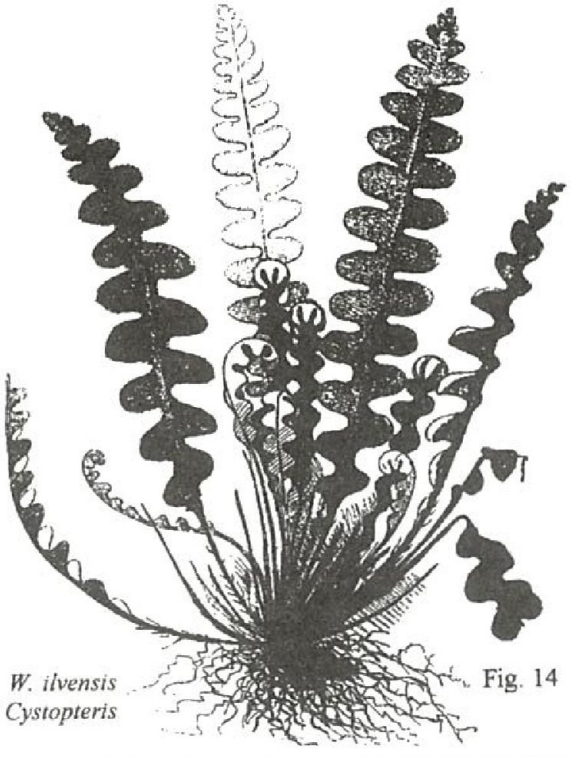

Fig. 14

10. HOLLY FERN *Polystichum lonchitis.* 11. OBLONG WOODSIA *W. ilvensis* 12. ALPINE WOODSIA *W. alpina.* 13. MOUNTAIN BLADDER FERN *Cystopteris montana.* 14. RUSTY BACK FERN *Asplenium ceterach.*

Maidenhair Spleenwort, *Asplenium trichomanes* is another common species. It is similar to the Green Spleenwort in having simply divided fronds but its rachis is black, not green.

Wall Rue, *Asplenium ruta-muraria* has triangular fronds divided into stalked, fan-shaped segments.

Black Spleenwort, *Asplenium adiantum-nigrum* has triangular fronds with dark brown or black rachis.

On Usk Castle in south Wales we find the **Southern Polypody**, *Polypodium cambricum*. Curiously, this fern seems to have an affinity for castles where its sub-triangular fronds often crown the crumbling walls.

Polypodiun vulgare and the closely related *Polypodium interjectum* with its ovate and more leathery fronds, favour a wider range of walls and banks. A close examination of their sporangia is necessary to distinguish the three species.

The final part of this article will appear in the Nov/Dec issue of our Newsletter.

From Here and There....

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JAMES WOOD DYCE, MBE 1905 - 1996.

We celebrate the life of James Wood Dyce, one of Great Britain's - and the world's - great pteridologists.

James ("Call me Jimmy") Dyce was indifferent to ferns until he was 29 years of age, when a friend asked him to collect some hart's tongue fern while on holiday in Scotland. Discovering that there was much more to ferns than he had thought, Jimmy set about pursuing this new interest with typical Dyce vigour and enthusiasm. A passion was born. He was keen to learn all he could about ferns and within a year had discovered and joined the British Pteridological Society.

Jimmy almost single-handedly saved the Society from extinction after the war and has filled almost every post in the Society at one time or another, many of them simultaineously.

His interest was not confined to ferns. He discovered a variety of heather which now bears his name, undertook breeding daffidils and enjoyed wine and malt whisky.

He was a horticulturist who valued the professional, scientific side of pteridology and encouraged professional involvement in the Society.

Field meetings were always his favourite way of enjoying his hobby, either in the wild or in other members' gardens. He became known as "Mr. Fern" to many for his knowledge, his willingness to share it with others, his relaxed friendliness and his eagerness to foster others' interest in and enjoyment of ferns.

Jimmy's catalytic effect was not confined to Britain. He went to great lengths to encourage fern interest elsewhere. Most notably he corresponded with several Australians including Ray Best in Sydney and Chris Goudey in Melbourne. Both have subsequently written books on ferns. Chris was also instrumental in setting up the Fern Society of Victoria and is now one of the leading fern growers in the world. Chris says that without Jimmy's help and encouragement there would not have been a Fern Society of Victoria, so we owe him a great debt of gratitude.

I wonder how many fern enthusiasts visiting Britain were given hospitality by Jimmy. And how many BPS members and others cherished his friendship and his encouragement to them, either in person or through correspondence.

Jimmy had two books published by the BPS and wrote numerous articles and notes for the Society. The BPS have manuscripts for two more books, so watch out for their release. He had a wonderful personal library of fern books and I consider myself very fortunate to now have three of them on my bookshelves, with "Fern Names and their Meanings," written by him and published in 1988. The illustrations for our current series of articles on British Ferns all came from one of his library books - so we can say that he is still promoting fern societies to this day.

We give thanks for the life of James Wood Dyce MBE. I wish I had known him.

Much of the above article was gleaned from vol.5 no.2 of the British Pteridological Society BULLETIN and is used with thanks.

Lyn Gresham.

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KEVIN HEINZE GARDEN CENTRE.

We have received an invitation to all garden lovers to spend an evening with Kevin Heinze, Jane Edmanson and Rob Pelletiere on Friday September 11th at the Whitehorse Centre, 379 Whitehorse Rd Nunawading. Kevin, Jane and Rob will present some of their favourite facets of gardening, with time for questions. A short auction offering great bargains will follow.

All proceeds will go to the Kevin Heinze Garden Centre, a community based organisation that provides recreational gardening activities for people of all ages who have disabilities and special needs. Volunteers support the groups and individuals who visit, with encouragement and physical aid as they are needed and you are welcome to become part of this life-changing place, either as a visitor, or as a volunteer for two hours a week.

Call 9848 3695 (9.30am - 4pm) to book your tickets. Cost is $10 which includes supper. Direct your enquiries about the volunteer program to Rhonda, Helen or Sharon on the same number.

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Remember, old folks are worth a fortune, with silver in their hair, gold in their teeth, stones in their kidneys, lead in their feet and gas in their stomachs.

I have become a little older since I saw you last and a few changes have come into my life.

Frankly, I have become a frivolous old girl. I'm seeing five gentlemen every day. As soon as I wake up Will Power helps me out of bed. Then I go to see John. Next it's time for Uncle Toby to come along, followed by Billy T. They leave, and Arthur Ritus shows up and stays the rest of the day. He doesn't like to stay in one place very long, so he takes me from one joint to another. After such a busy day I'm really glad to go to bed with Johnny Walker. What a life! Oh yes, I'm also flirting with Al Zimer.

P.S. The preacher came the other day. He said that at my age I should be thinking about the hereafter. I told him I do all the time, no matter where I am. If I'm in the parlour, upstairs, in the kitchen or down in the basement I ask myself, "Now, what am I here after?"

✿✿✿✿✿

TRAIN-ING TREE FERNS.

Extract from *Puffing Billy Railway Monthly News,* June 1998.

"Tree ferns are becoming a problem at the up side of the School Road, Menzies Creek crossing. These will have to be dealt with soon before becoming completely entangled in the overhead line."

...it seems fern growers are not the only ones who have their occasional troubles with tree ferns - albeit usually somewhat different troubles!

...for those who don't know already, "Puffing Billy" is Australia's premier tourist (narrow gauge) steam railway, and one of the country's major tourist attractions. It runs on 13.5 kilometres of scenic track in the Dandenong Ranges, about 40 km. from Melbourne.

Thanks to Barry Stagoll for this snippet.

✿✿✿✿✿✿✿✿✿

Sticherus urceolatus (Gleicheniaceae), a New Fern Species from Southern Australia

described by M. Garrett, G. Kantvilas and H. Laws.

Recent Sticherus Family Change.

Sticherus tener (R.Br.) Ching has been revised and a new species, *S. urceolatus* M. Garrett & Kantvilas, is segregated. Both occur in Tasmania and Victoria and are readily distinguished morphologically and cytologically.

Sticherus urceolatus. **Note the lanceolate-shaped ultimate branchesbearing segments that are obliquely angled.**

Gleicheniaceae Family History.

The family Gleicheniaceae has been variously treated in the past. Initially it encompassed the one broad genus *Gleichenia*. Copeland (1947) recognised four genera, *Gleichenia, Sticherus, Dicranopteris* and *Histiopteris*, whereas Holttum (1957) included only two, *Gleichenia* and *Dicranopteris*. Holttum divided *Gleichenia* into the three subgenera *Gleichenia, Diplopterygium* and *Mertensia*, and the genus *Dicranopteris* into the subgenera *Dicranopteris* and *Acropterygium*. Recent authors on Australian ferns (e.g. Jones and Clemesha 1981; Andrews 1990) have used a combination of these treatments, recognising four genera: *Gleichenia* (six species), *Sticherus* (four species), *Diplopterygium* (one species) and *Dicranopteris* (one species). Each of these genera has its own distinctive basic chromosome number (Walker 1966).

Distribution of Gleicheniaceae in Australia.

Dicranopteris occurs from New South Wales northwards.

Diplopterygium is confined to north-eastern Queensland.

Gleichenia is wide-ranging, but most diversity is in the eastern States.

Sticherus is confined to the eastern States: *Sticherus milnei* occurs on Cape York Peninsula, *S. flabellatus* in Queensland, New South Wales and Victoria, *S. lobatus* in all eastern states, and *S. tener* in New South Wales, Victoria and Tasmania.

Sticherus.

The genus *Sticherus* is distinguished from the other three genera in having pinnatifid fronds bearing elongated branch-segments with once-branched veinlets, and by each segment bearing several sori, each with three to five sporangia. It contains approximately 90 species worldwide.

In the past, *Sticherus* in Tasmania consisted of two recognised species: *S. lobatus*, which is uncommon to rare and localised mainly in the north-west and *S. tener*, which is common and widespread (see Garrett (1996) for distribu-

Key to Southern Australian Species of Sticherus

1. Ultimate branch segment arising at near right angles (79-90°) to the axis 2
1. Ultimate branch segment arising obliquely 3
   2. Segment undersurface glabrous, undersurface of minor rachis glabrous or with broad, pale-brown, slightly fringed scales ..... S. lobatus
   2. Segment undersurface sparsely covered with pale-brown hairs (may become glabrous with age): undersurface of minor rachis covered in narrow, brown, heavily fringed scales ..... S. tener
   3. Segment undersurface glabrous or with a sparse covering of hair-like scales; angle between primary branches of paired pinnae <45° ..... S. flabellatus
   3. Segment undersurface sparsely covered with pale-brown hairs; angle between primary branches of paired pinnae >45° ..... S. urceolatus

tions), However, field work in Tasmania suggested that a third species was also present.

The *Sticherus urceolatus* Story.

Since the earliest publications on Australian ferns, *Sticherus urceolatus* has been overlooked and submerged within other taxa. The first published recognition of the distinctiveness of *S. urceolatus* is by Garrett (1996) who refers to the taxon as "*Sticherus tener* form A".

The specific epithet (species name) describes the vase-shaped habit of the plant's pinnae when growing in an exposed position.

Sticherus urceolatus is a scrambling or thicket-forming terrestrial fern. Its rhizome is dark brown to black and is up to 4 mm thick, long-creeping, bearing semi-appressed, light brown to reddish brown, ciliate scales. Stipes are stiff and erect, to 90 cm in length, arising up to 50 mm apart, black at the base, brown or green in the upper section, glabrous except for appressed scales at the base similar to those on the rhizome. Pinnae are fan-shaped, paired at the stipe apex and with up to 4 annual increments of growth arising from the rachis bud, pseudodichotomously branched up to 4 times, with a dormant bud at each axis which rarely develops.

The angle between paired primary branches is 50°, though can be 45-75°; the ultimate branch 6-13 (most usually 9) times the length of the primary branch, lanceolate, sometimes with a caudate apex. Minor rachises are sparsely covered in brown, narrow, heavily fringed scales. Ventral surfaces are light to dark brown in colour. There is a rachis bud situated between paired primary branches and the bud and basal section of new rachis growth bears light or reddish brown ciliate scales. The segments on the primary branch are usually variable in size and coverage, on the ultimate branch
arising at 55-65° (can be 50-75°) to the axis, sessile, broadened at the base, with the apex obtuse or acute and margins entire or slightly crenate undersurfaces with pale brown, simple and branched hairs along midveins and veinlets. Sori exindusiate, in a single row either side of the segment midvein, situated halfway between the midvein and the segment margin on one branch of a forked veinlet mostly absent from distal sections of both segments and ultimate branches, each with 3-5 large sporangia. Spores yellow, monolete and kidney shaped.

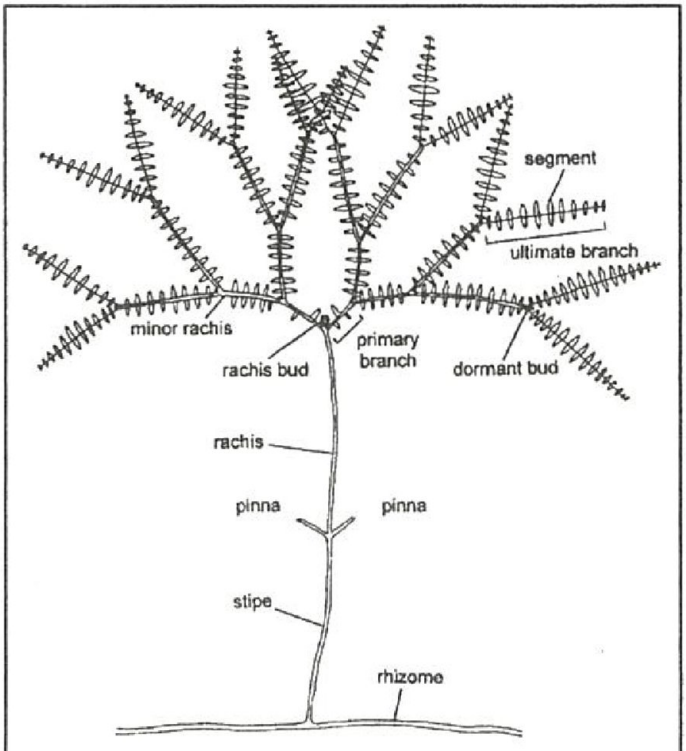

Diagram of a *Sticherus*, explaining terminology used.

Cytology

Chromosome counts indicate that *S. urceolarus* is tetraploid whereas *S. tener* is diploid.

Chromosome number: n = 68, Tasmania, Hastings Caves Road, 23.xi.1995, M. Garrett; n = c. 68, Tasmania, St Marys, Gardiner Creek, 5.ii.1997, M. Garrett. Relatively few chromosome numbers are known for the approximately 90 species of *Sticherus*, but the base number, x = 34 has been established for the genus (Walker 1990). *Sticherus urceolatus* is therefore tetraploid. The taxon Thrower (1963) figured and described as *Gleichenia* (subgenus *Mertensia*) *tenera*, is in fact *S. urceolatus;* her chromosome count of n = 68 confirms those recorded here for Tasmanian collections.

Distribution and Ecology

Sticherus urceolatus is endemic to Australia, occurring in Tasmania and Victoria where it is common and widespread, and along the Central Coast of New South Wales. The species grows in wet forests in areas of high rainfall from sea-level to 800 m., in permanently moist clay soils beside streams, rivers and waterfalls, and on forested slopes. It is common in seepage lines on sheltered rock-faces where it may grow in soil at the top or base of outcrops, or in soil-filled seams in the rock. In disturbed sites such as road cuttings, track margins and on uprooted tree buttresses, the species may clothe the near-vertical substrate to the exclusion of other plants.

Notes

As regards gross morphology, the new species is most similar to *S. flabellatus*. Both species possess fronds with ultimate-branch segments that are obliquely angled. *Sticherus flabellatus* is distinguished by its narrower segments with serrated margins, by its usually glabrous segment-undersurfaces, by the acute angle between its paired primary branches, and by its comparatively very short primary branches.

However, there is likely to be greater confusion between *S. urceolatus* and *S. tener*, at least in Tasmania, where both species are common and widespread, *S. lobatus* is uncommon and localised, and *S. flabellatus* is not present. Both *S. urceolatus* and *S. tener* possess hairs on the segment undersurfaces, a character which taxonomically has perhaps helped unite the two species in the past. However, they are obviously distinguishable by two macrocharacters: the angle of the segments to the axis of the ultimate branch (55-65" in *S. urceolatus*, 80-85" in *S. tener)* and the shape of the ultimate branch (lanceolate in *S. urceolatus*, linear in *S. tener)*. These characters are easily discernible in Figures 2A and 2B. Furthermore, the ratio of the width of the ultimate branch (at its widest point) to its length is 1:4.3 (28 specimens measured) in *S. urceolatus*, compared with 1:5.7 (22 specimens) in *S. tener*.

Scales from all parts of *S. urceolatus* are marginally broader, less caudate and lighter in colour than those of *S. tener*.

S. urceolatus also exhibits uniform gradation in the length of segments on the ultimate branch whereas segment

***Sticherus tener*- the *Sticherus* most easily confused with *S. urceolatus*. Note the linea-shaped ultimate branches bearing segments which are at almost right angles to the rachis. Compare this with *S. urceolatus*, illustrated on page 71.**

length is noticeably uneven in *S. tener*. Segments are less likely to be present on the primary branch in *S. urceolatus* than in *S. tener* but when present, are more inclined to be stunted or not of uniform size. The sori tend to cover less of the segment length of *S. urceolatus* than of *S. tener* and in the latter species are borne on segments nearer the distal end of the ultimate branch. The lamina of *S. urceolatus* is overall thicker textured and more glossy than that of *S. tener*, and the indentations of the sori are often noticeable on its upper surface.

When growing under severely exposed conditions, plants of both species are stunted, but the pinnae of *S. urceolatus* are held semi-erect and the frond is vase-shaped, whereas pinnae of *S. tener* are drooping and the frond umbrella-shaped. Sporelings of the two species are easily identified because the first pair of pinnae display the distinguishing characters of segment angle and ultimate-branch shape.

The diploid *S. tener* is fairly stable in its morphological characters whereas the tetraploid *S. urceolatus* is infamous for its instability of characters. Thus any plant presenting confusion as to its proper identity is probably *S. urceolatus*.

In Tasmania, the distributions of the two species are broad and seemingly coextensive. However, *S. urceolatus* occurs mostly at or near sea-level, and only extends to higher altitudes in milder areas of the State such as Mount Victoria in the north-east. *Sticherus tener* is infrequently found in the north-east and on the north and east coasts, but is abundant at sea-level on the west and south coasts and from there extends inland up to at least 900 m a.s.l. Both species occasionally occur sympatrically under identical ecological conditions.

Sticherus urceolatus is easily distinguished from *S. lobatus* by the segments arising acutely to the axis of its ultimate branches, and by the presence of hairs on its segment undersurfaces.

Report; Lyn Gresham.

** Information contained herein was found in Muelleria Vol 11 1998 and is presented to facilitating FSV members' private research. The complete paper will soon be available in our library. Muelleria is published annually by the National Hebraium of Victoria, Royal Botanic Gardens, Melbourne*

fernsfernsgoodnews!anewfernrestfulfernhardyfernnativefernbeeautifulfernsferns

Ferns and Fern Allies in the Canberra Region

Continued from page 68.....

GLEICHENIACEAE

Gleichenia J.Sm.

G. dicarpa R.Br. "Pouched Coral Fern" [C]

G.. rupestris R.Br.

Sticherus Presl

S. flabellatus (R.Br.) StJohn "Umbrella Fern or Shiny Fan Fern"

S. lobatus Wakef. "Spreading Fan Fern"

GRAMMITIDACEAE

Grammitis Sw.

G. billardieri Willd. "Finger Fern" [C]

G'. poepiggiana (Mett.) Pichi Serm. "Matted Finger Fern"

HEMIONITIDACEAE

Anogramma Link

A. leptophylla (L.) Link "Annual Fern"

LINDSAEACEAE

Lindsaea Dryand. ex J.Sm.

L. linearis Sw. "Screw Fern"

POLYPODIACEAE

Microsorium Link

M. diversifolium (Willd.) Copel "Kangaroo Fern" [C]

M. scandens (Forst.f.) Tindale "Fragrant Fern"

Pyrrosia Mirbel

P. rupestris (R.Br.) Ching "Rock Felt Fern"

PTERIDACEAE

Pteris L.

P. tremula R.Br. "Tender Brake" [C]

P. vittata L. "Chinese Brake"

SINOPTERIDACEAE

Cheilanthes Swartz

C. austrotenuifolia Quirk et Chambers "Rock Fern" [C]

C. distans (R.Br.) Mett. "Bristly Cloak Fern" [C]

C: sieberi Kunze "Mulga Fern" [C]

Pellaea Link

P. falcata (R.Br.) Fée var. falcata "Sickle Fern" [C]

P. falcata var. nana Hook.

P. paradoxa (R.Br.) Hook. [C]

This is a working list and will be updated from time to time. Thanks to Max Gray and David Jones for much of the source material. Another good source is the on-line database of specimens at the Australian Herbarium.

David Nicholls
July 1997

Thank you to Barry Stagoll for handing this on. It's much appreciated. More Internet news in future issues.

BUYERS' GUIDE TO NURSERIES.

VICTORIA:

Andrew's Fern Nursery / Castle Creek Orchids - Retail. Phone (03)5826 7285.
Goulburn Valley Highway, Arcadia 3813 (20 km south of Shepparton).
Large range of ferns and orchids for beginners and collectors. Open daily 10am - 5pm except Christmas Day.

Austral Ferns - Wholesale Propagators. Phone (03)5282 3084.
Specialising in supplying retail nurseries with a wide range of hardy ferns; no tubes.

Coach Road Ferns - Wholesale. Phone (03) 9758 6878. Monbulk 3793.
Retail each Saturday and Sunday at Upper Ferntree Gully Market (railway station car park) Melway Ref, 74 F5.
Wide selection of native and other ferns. Fern potting mix also for sale.

Fern Acres Nursery - Retail phone (03)5786 5031. 1052 Whittlesea-Kinglake Road, Kinglake West 3757.
On main road, opposite Kinglake Primary School. Specialising in Stags, Elks and Bird's-nest Ferns.

Fern Glen - Wholesale and Retail Phone (03)5629 2375,
D & I, Forte, Garfield North 3814. Visitors welcome.

Kawarren Fernery - Wholesale and Retail. Phone (03)5235 8444.
Situated on the Colac-Gellibrand Road, Kawarren (20 km south of Colac),

The Bush-House Nursery - Wholesale and Retail. Phone (03)5566 2331.
Cobden Road, Naringal (35 km east of Warnambool), Ferns - trays to advanced. Visitors welcome.

NEW SOUTH WALES:

Kanerley Fern Exhibition and Nursery - Wholesale and Retail. Phone (049) 872 781.
204 Hinton Road, Osterley, via Raymond Terrace, 2324. By appointment.

Marley's Ferns - Wholesale. Phone (02) 9457 9188. 5 Seaview Street, Mt. Kuring-Gai, 2081.
All Fern Society members welcome. By appointment.

QUEENSLAND:

Moran's Highway Nursery -
Wholesale and Retail.
Phone (07) 442 1613.
Bruce Hwy, Woombye (1 km north of Big Pineapple; turn right into Kiel Mountain Road).
P.O. Box 47, Woombye, 4559.

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