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NEWSLETTER

VOLUME 18, Number 1

January / February 1996

FERN SOCIETY OF VICTORIA Inc.

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Ruth Illingworth, Joan Rowlands, Cheryl Shelton

SUBSCRIPTIONS:

Single - \$15.00 (Pensioner/Student - \$11.00)

Family - \$18.00 (Pensioners - \$13.00)

Overseas - A\$30.00 (by Airmail)

Subscriptions fall due on 1st July each year.

PRESIDENT'S MESSAGE:

Well, the new year is upon us. I hope you all had an enjoyable Christmas and New Year break.

Our Christmas barbecue break-up at Fernworld went off very well with a good crowd in attendance, including some of our country and interstate members. Special thanks must go to Mavis Potter for her annual donation of a beautifully decorated Christmas cake for the raffle. Also on behalf of all members of the Fern Society of Victoria our thanks go to Neil, Debbie, Andrew and staff for their hospitality and a donation of a fern for our special effort. I am sure it was an afternoon enjoyed by all.

Later in the afternoon, we had our Committee meeting, which came to an abrupt end when the automatic sprinklers came on. That was what we were told, but I'm not so sure!!!

Our first meting for the new year will be at our new venue in the Theatrette, Inglesby Road, CAMBERWELL, at the rear of the City Library on Thursday, 15th February. Our guest speaker will be Mary Frost from Wangaratta.

We are still working on our speaker programme for this year; the first half of the year is nearing completion. Michael Garrett from Bicheno Nursery will be giving us a talk on the ferns of Tasmania and Ray Edwards from Cool Waters Fern Nursery will be demonstrating sporeraising techniques later in the year.

FERN SHOW

Our Fern Show, which will be at a new home this year, is less than two months away now. I hope everyone is grooming their ferns so that they will be at their peak for the Show.

Don Fuller and the Show Committee put a lot of effort into the Show and it is up to us to give them our full support.

Chris Goudey

FORTHCOMING MEETINGS

(1) THURSDAY - 15th FEBRUARY, 1996

Topic:

Preparation and Presentation of Ferns for Show

Speaker:

Mary Frost

(Mary is a RHSV accredited judge)

(2) THURSDAY - 21st MARCH, 1996

Topic:

Philippines Visit

Speaker:

Barry White

VENUE:

The Theatrette

Inglesby Road, Camberwell.

(Melway Ref. 59 K2 - see below for further directions)

MEETING TIMETABLE:

7.30 p.m. Pre-meeting Activities:- Sales of Ferns, Spore, Books and Special Effort Tickets.

Library Loans.

8.00 p.m.

General Meeting

8.30 p.m.

Topic of the Evening

9.30 p.m.

Fern Competition Judging

Fern Identification and Pathology

Special Effort Draw

9.45 p.m.

n. Supper

10.00 p.m. Close

FERN COMPETITIONS

(1) February -

A Nephrolepis

(2) March -

A Blechnum

NEW MEETING VENUE

Please note the new meeting venue in the notice above. All monthly meetings will be held here until further notice. The Committee is continuing efforts to locate a suitable venue more centrally situated.

The entrance to the Theatrette is in Inglesby Road about 80 metres from the junction with Camberwell Road at the end of a block of Council offices. There is a THEATRETTE sign is above the door. Parking is available in the street or in a large car park opposite the Theatrette.

If you are coming by public transport, catch <u>Tram 75</u> along Camberwell Road to <u>Stop 43</u>, which is in front of the City Library and about 30 metres from the corner of Inglesby Road. (A point of possible confusion here is that this tram stop has apparently been renumbered; it shows as Stop 50 in the 1995 Melway directory - the correct number is definitely 43.)

FERN SHOW - 1996

SATURDAY, 30th MARCH - SUNDAY, 31st MARCH

Don Fuller

As reported in the last newsletter, the Fern Show will be held on the above dates. The venue this year is new, being the

Holmesglen College of TAFE

- Waverley Campus

585 Waverley Road

Glen Waverley (next to the Schools Nursery).

The Show will be open 10.00 a.m. - 5.00 p.m. and admission charge will be Adults \$3, Concession \$2. Members attending as visitors on both days need only pay for one day. We are giving away a free fern tube with each paid admission.

The Fern Show is a very important activity of the Society and its success is essential to the Society's well being. There are several ways in which you can contribute to the success of the Show.

- 1. Publicise the Show.
- 2. Contribute to the display.
- 3. Attend the Show and help with Show activities.

1. PUBLICITY

A substantial amount of publicity has, or will be, arranged in gardening magazines, newspapers and radio. However, what is required most is for members to publicise the Show by word of mouth to interested friends and acquaintances and to distribute our advertising pamphlets. Two of these are included in this Newsletter for this purpose and additional copies will be available at the February and March meetings. Please try to have them displayed in suitable locations.

2. DISPLAY

The available display area this year is larger and we need to take advantage of this. Here is an opportunity for all local members to display their favourite ferns so please start planning to contribute to the display. We need a wide variety of good quality ferns. Size is of minor importance.

Please ensure that all display ferns are clearly identified with their botanical name and some form of personal identification to ensure safe return to you. If you do not know the botanical name of the fern, please endeavour to find it out before the Show.

It is realised that some members may have difficulty getting their display ferns to the Show, but please plan to contribute and then talk to other members in your area about transport. You probably can work something out, but if not please let me know. I would also be pleased to hear from anyone who has a suitable vehicle and is able and willing to help with pickups on Friday afternoon.

SHOW ACTIVITIES

The Committee hope that all members will be able to attend the Show, especially those unable to attend the monthly meetings. Come and make yourself known; there is plenty of room to socialise.

We are anxious to hear from members able to help with setting up on the afternoon of Friday, 29th March and assisting with the Show on Saturday and Sunday. We need people on the doors, stewards in the display area, people to assist in the sales areas and people willing to give demonstrations. We will also require people to assist with packing up after the Show on Sunday.

Offers of assistance can be made to any member of the Show Committee who are as follows:-

Ian Broughton
Don Fuller (Chairman)
Chris & Lorraine Goudey
John & Norma Hodges
Bernadette Thomson
Bill Taylor
Barry White

We also require additional members willing to serve on the Show Committee.

FERN COMPETITION

We will again conduct a Fern Competition and all ferns in the display will be automatically eligible. First and second awards will be made in the first nine of the following categories:

- 1. Adiantum
- 2. Asplenium
- 3. Blechnum
- 4. Davallia
- 5. Platycerium
- 6. Polypodium
- 7. Pteris
- 8. Fern in Hanging Container
- 9. Best Ferns in other than above categories
- 10. Best Fern of Show

FERN SALES

Members who contribute to the display also have the opportunity to bring ferns for sale. These must be free of pests and disease and be clearly labelled with their botanical name and growing conditions. There is no limit on the number for sale, but it should be in proportion to your contribution to the display. We

cannot accept small tubes for sale.

Those wishing to sell ferns should contact Bernadette Thomson at either the February or March meeting or telephone (03) 9399 1587 and arrange to obtain the necessary "booking-in" form.

We will also need a large number of cardboard boxes for packing in the Sales Area; if you can help by providing some it would be greatly appreciated.

SETTING UP

Setting up the fixtures in the display and sale areas will begin at 12.00 noon on Friday, 29th March and we should be in a position to accept display and sales ferns from approximately 2.00 p.m. Anyone wishing to bring ferns after 6.00 p.m. on Friday evening, or on Saturday morning, should contact Don Fuller.

The following article is from the Newsletter of the Fern Society of South Australia Inc., No. 165, June/July, 1995

BACKING FOR PLATYCERIUMS

Trevor Norman

If Platyceriums are mounted on a board and given a large volume of carefully shaped organic matter on which to grow, they can form a large plant or clump with a mature appearance within a relatively short period of time. One of the problems however is finding suitable material for this backing.

Sphagnum moss is one of the most widely used and useful materials but is not without its problems. It is not always available at nurseries and can be quite expensive. I have found it is ideal in summer if it is kept constantly damp, but in winter it can hold too much water which can cause rotting of the shield fronds and unsightly black patches. This is more a problem in young plants when there is only one shield frond over the sphagnum moss. In older plants when there are several layers of shield fronds, the new green fronds are protected from the excess water by the older fronds underneath.

A further problem with sphagnum moss is that it can dry out and is quite hard to wet again. This often occurs if the back of the board is in direct sunlight or up against a hot wall. Unfortunately, the sphagnum moss often dries out in the middle of the clump as the roots draw the water out but remains damp or wet on the top surface where it is watered, giving the appearance that all is well. The first sign of the problem is wilting of the fronds which can become quite pale in colour. The plant usually weighs much less than normal, as sphagnum moss normally holds many times its own weight of water. To wet the backing one usually has to immerse the whole plant in a tub of water for an hour or more, a task which is not easy with a large plant which tends to float.

To overcome these problems I have found it best to mix sphagnum moss with other organic matter in the ratio 1:4, to decrease the overall "wetness" of the backing on the one hand, but increase the permeability to water on the other. I have found that mixing palm fibre, pine bark, shredded old flax leaves or cork achieves the desired results.

These materials should be weathered for some time before being used in the mixture. This can be achieved by cutting the material up into pieces one centimetre in diameter and placing them in a bucket with drain holes out in the garden for approximately six months, so they are kept wet or damp by the rain and watering. The lower layers which are damp for most of the time break down first and can be used first. It may seem a long time to wait but it is well worth it and will help you grow better platyceriums.

The following aticle is taken, with thanks, from "Fiddlehead Forum" 22, 6 (Nov./Dec. 1995), the Bulletin of the American Fern Society. The author is from the Dept. of Systematic Botany, Univ. of Aarhus, Denmark.

IN SEARCH OF THE FERN SEED

Robbin C. Moran

In Shakespeare's *Henry IV*, Falstaff, Prince Hal, and Poins scheme to rob a rich merchant on his way to London in the dark hours of the early morning. Because they need help with the heist, one of Falstaff's henchmen tries to persuade another thief to join them. He says to the thief: "We steal as in a castle, cock-sure; we have the receipt of fern-seed, we walk invisible." To which the thief replies, "Nay, by my faith, I think you are more beholding to the night than to fern-seed for your walking invisible" (Act 2, Scene 1, lines 95-98).

What do the thieves mean by fern seed? Anyone who has taken a botany course knows that ferns don't have seeds; instead, they disperse by tiny dustlike spores. Did people in Shakespeare's day believe that ferns had seeds? And what's this about walking invisible?



Fig. 1. The dark spots or lines (sori) on the undersides of fern leaves, thought by most early botanists to contain the fern seed. L--R: Crested Shield-fern (*Dryopteris cristata*), Maidenhair fern (*Adiantum pedatum*), Bird's-nest fern (*Asplenium nidus*).

In 1597 when *Henry IV* was written and performed, the belief that ferns had seeds was common and widespread. To be sure, no one had ever seen a fern seed, but they couldn't imagine how ferns (or any plant, for that matter) could reproduce without such propagules. Therefore they reasoned that ferns *must* have seeds. "The views of those who believe all plants have seeds are founded on very reasonable conjectures," wrote Joseph Pitton de Tournefort, a celebrated French botanist, in 1694.

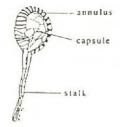
But sometimes the conjectures went too far. The early herbalists, for example, claimed that the fern seed had to be invisible because no one had ever seen it. Furthermore, they asserted that it conferred invisibility to the bearer; if you held the fern seed, you walked invisible. They also specified that the seed could only be collected at midnight on St. John's Eve (Midsummer's Night Eve, June 23), the exact moment it fell from the plant. You could catch

it by stacking 12 pewter plates beneath a fern leaf; the seed would fall through the first 11 plates and be stopped by the l2th. If you came up empty-handed, it was because goblins and fairies, which were allowed to roam freely that one night of the year, had snatched the seed as it fell.

Of course, not everyone believed all this about invisibility, but they did believe that ferns had seeds. The only problem was, what was the fern seed? Many early botanists suspected it was the dust liberated from the dark spots or lines (the sori) on the underside of the fern leaf (Fig.1). Other botanists thought that this dust was not seed, but instead equivalent to pollen that impregnated a female organ somewhere on the plant.

The first person to scientifically investigate fern dust Marcello Malpighi, the famous Italian anatomist. In the late 1600s, he focused his microscope on the curious, dark spots or lines on the undersides of fern leaves. These resolved into hundreds of tiny "globes" or "orbs" (the sporangia), each encircled by a thick, segmented band (the annulus; Fig.2). Inside the orbs sat the dust, which appeared as round or bean-shaped bodies. He noted that the dust was hurled out of the orb by the catapultlike action of the annulus. Nearly half a later, Malpighi's observations confirmed and elaborated by Nemiah Grew, an English microscopist. But the observations of neither man solved whether the dust was equivalent to pollen or seed.

Fig. 2. A typical fern sporangium.



Even the great Swedish botanist Carl Linnaeus, the Father of Botany, was puzzled about the nature of fern dust. In a letter written in 1737 to fellow Swedish botanist Albrecht von Haller, he said that "this powder seen under a microscope, exactly agrees with the dust of the anthers in other plants". But one month later he said

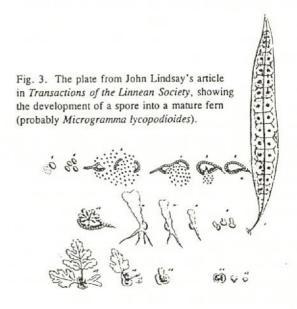
"[I know] nothing about the imperfect tribes of plants [mosses and ferns) and must confess my ignorance whether what I see is seed, or dust of the anthers." In 1751, however, he changed his mind and asserted that the dust was the true fern seed. Despite his flip-flopping, Linnaeus was sure about one thing: ferns had seeds.

Uncertainty reigned until 1794 when John Lindsay, an British surgeon, showed that ferns reproduced from their dust. He discovered this while stationed in Jamaica, where he noticed hundreds of young ferns arising on freshly exposed soil after rains. With a microscope, he searched the soil in the hope of finding a fern seed, but was unsuccessful. Undaunted, he decided to sow some of the dust - which he suspected as the true fern seed - and keep it in his room for observation.

Lindsay gathered the dust from several weedy ferns and sprinkled it over soil in a flower pot. He placed the pot in a window of his room, watered it daily, and every day or two examined a small portion of the soil with his microscope. Here he describes what happened (the illustration he refers to is reproduced in Fig. 3):

I could always readily distinguish the dust or seeds from the mould, but observed no alteration till about the 12th day after sowing, when many of the small seeds, represented at 6 in the annexed plate, had put on a greenish colour, and some were pushing out their little germ, like a small protuberance, the rudiment of the new fern, as at 8. This little protuberance gradually and successively put on enlarged, appearances at 9, 10, and 11. They had acquired small roots, and the remains of the little seeds were still discernible where the roots of the infant plant commenced. Although the young ferns were now very conspicuous by the microscope, the naked eye could see nothing but a green appearance on the surface of the mould, as if it were covered with some very small moss: this was the numberless young plants from the quantity of the seed sown. In some weeks this moss began to appear to the naked eye like small scales, as at 13, which gradually enlarged, as at 14: they were generally of a roundish figure, somewhat bilobate, but sometimes more irregular; they were of a membranous substance, like some of the small lichens or liverworts, for which they might readily be mistaken, and of a dark green colour. At last there arises from this membrane a small leaf, different from it in colour and appearance, as at I5, and shortly after another still more different, as at 16. Now each succeeding leaf grows larger than the last, till they attain the full size, and are complete in all the parts and discriminating characters of their respective species.

Clearly, Lindsay thought he had seen a full-sized fern develop from a mote of fern dust. He therefore felt certain that the dust was the true fern seed.



A busy medical practice kept Lindsay from making further observations, until one day he received a letter from Sir Joseph Banks, president of the Royal Society of London and scientific adviser to the Royal Botanical Gardens, Kew. Banks asked Lindsay to collect Jamaican plants, especially ferns, and send them to England for cultivation. Lindsay wrote back that given the risk of transporting green ferns over such a great distance, he would send some of their seeds instead. Banks must have been flabbergasted that Lindsay claimed knowledge of the true fern seed. He wrote back that if Lindsay could furnish the means of making ferns grow from seed, he would be given the credit of having made a valuable discovery, one that he (Banks) would communicate to the Linnean Society of London.

Lindsay sent Banks the seeds along with instructions for their sowing. The result was pteridological history. Thanks to Lindsay's information, gardeners in England learned to propagate ferns from spores, and they passed this knowledge to colleagues in other countries. Ferns began to enrich greenhouses, gardens, and parks around the world. Furthermore, the horticulturists at Kew began raising ferns sent from far corners of the British Empire. They amassed the world's largest and most species-rich collection of living ferns-a distinction held to this day (the Kew collection is important scientifically as well as horticulturally). James Edward Smith, a

pteridologist and one of England's leading botanists, commemorated Lindsay for his discovery by naming a genus of tropical ferns after him: *Lindsaea*.

Yet Lindsay's observations raised more questions. Were the "membranes" or "scales" he observed equivalent to the seed leaf or cotyledon of flowering plants? If the dust was equivalent to the seed, where were the pollen-producing anthers? (The pollen, of course, was necessary to "stimulate" the development of the seed.) How and when did pollination take place?

We smile at these questions today, knowing that they are completely misguided, but they were valid questions to botanists in the 1700s and early 1800s. It wasn't until 1844 that Karl von Nägeli, a German botanist, steered questions about the fern seed in the right direction. By focusing his microscope on the undersurfaces of the prothalli (the membranes or scales that Lindsay originally reported), von Nägeli saw globose papillae containing dark, spiral filaments. He noticed that the papillae, when wet, burst at the tip and released the spiral filaments, which then began to wiggle and swim away (Fig. 4). He knew that similar papillae and filaments had been found in mosses and liverworts, where they were called antheridia, in allusion to the "male" anther of the flower. Thus, von Nägeli adopted the name antheridia for the papillae he saw on fern prothalli. But where did the spiral filaments swim to?

This question was answered in 1848 by Michael Jéróme Leszczyc-Suminski, a Polish count with a botanical bent. He found that the spiral filaments swam to another kind of papilla also located on the undersurface of the prothalli. This type of papilla, which we now call an archegonium, was flask-shaped with a long neck and a single, large cell at the base (Fig. 4). When the sperm swain to the archegonium, they wiggled downwards between the neck cells and penetrated the large basal cell. After penetration, this cell (now known to be an egg cell) developed into an embryonic fern with roots, stem, and leaves. This baby plant eventually grew into a mature fern with spore-bearing leaves.

What developed from Leszczyc-Suminski's observations was the picture of fern reproduction still taught today. In a series of quick nutshells this is it: The spores (fern dust) are produced on the undersides of the leaves in sporangia. They are liberated from the sporangia, land on a suitable substrate, and germinate. They grow into prothalli that bear the sex organs-archegonia and antheridia-which produce egg and sperm, respectively (the prothalli of some ferns produce only one kind of sex

organ). The sperm are released from the antheridia when water is present and swim to the archegonia and fertilize the egg. The resulting cell, the zygote, develops into an embryo with stem, roots, and leaves. This embryo grows by widening its stem and producing larger and larger leaves until a sporebearing leaf eventually appears. At this point the process is complete.

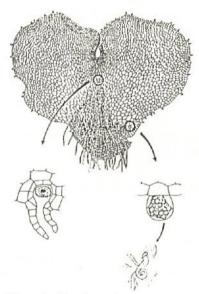


Fig. 4. The underside of a typical fern gametophyte. Lower left, an archegonium with an egg cell (shaded) at its base. Lower right, an antheridium releasing coiled sperm.

This sequence of events is known as the fern life cycle - the bugbear of many Introductory Botany students. It has two distinct phases, or generations. The first is called the gametophyte generation because it produces the gametes or sex cells. The second is called the sporophyte generation because it produces the spores. The gametophyte consists of the prothallus, and the sporophyte consists of the "nominal" fern plant we typically think of-the one with roots, stems, and leaves. Each generation develops from a single cell: the gametophyte from a spore, the sporophyte from a zygote.

One point must be made about these two generations, a point often dimly understood: The gametophyte is the sexual generation because it produces the sex cells, egg and sperm. In contrast, the sporophyte is the asexual generation because it produces asexual spores; it does not produce sex cells. Remember this the next time you spot a leafy fern luxuriating in the wild. What you are looking at is an asexual being, one that does not and cannot engage in sex. This point is difficult to grasp because we tend to equate, erroneously, our own bodies with that of the fern sporophyte. But unlike plants, humans and other animals produce their gametes directly by meiosis; we have no intervening gametophytic (sexual) stage that produces gametes

by mitosis.

But to return to the fern-seed. Botanists today realize that spores and seeds are completely different structurally. A spore consists of a single cell and contains no preformed embryonic parts. In contrast, a seed (typically) consists of hundreds or thousands of cells and contains stored food (the endosperm) and an embryo. Moreover, spores and seeds differ in what they give rise to. A fern spore gives rise to the prothallus of the gametophyte generation; a seed, to the baby plant of the new sporophyte generation.

These differences between spores and seeds seem so great that most of us are astonished when we learn that early botanists once seriously considered spores were seeds. But our astonishment is only proof that botany has progressed. Nowadays, it is the belief in the fern seed that walks invisible.

Selected References and Notes.

The history of ideas about sexual reproduction in plants and animals, especially how it reflects prevailing social attitudes about sex, is treated by John Farley, *Gametes & Spores, Ideas about Sexual Reproduction*, 1750-1914 (Baltimore: The Johns Hopkins University Press, 1982).

John Lindsay described his observations on fern reproduction in "Account of the Germination and Raising of Ferns from the Seed," *Transactions of the Linnean Society 2:* 93-100 (1794).

The life of Leszczyc-Suminski is documented by Cezary W. Domanski in "M.J. Leszczyc-Suminski (1820-1898), an Unknown Botanist-Discoverer, " *Fiddlehead Forum* 20: 11-15 (1993).

The following item, which was gleaned from a bulletin board service and published in the December, 1995 edition of "PC Update" magazine has absolutely nothing to do with ferns

EFFICIENT USE OF ENGLISH

The EEC (now officially the European Union, or EU) has chosen English as the preferred language in the European Parliament and commissioned a feasibility study in ways of improving efficiency in communication between Government departments.

European officials point out that English spelling is unnecessarily difficult; for example: cough, plough, rough, through and thorough. Clearly, what is need is a phased program of changes to iron out these anomalies. The program would, of course, be administered by a committee staffed at top level by all participating nations.

In the first year, for example, the committee would suggest using "s" instead of the soft "c." Sertainly, sivil servants in all sites would resieve this news with joy.

Then the hard "c" could by replaced with "k" sinse both letters are pronounsed alike. Not only would this klear up konfusion in the minds of klerical workers, but typewriters kould have one letter less.

There would be growing enthusiasm in the sekond year; it was anounsed that the troublesome"ph" would henseforth be written "f". This would make words like "fotograf" twenty persent shorter in print.

In the third year, publik akseptance of the new spelling kan be expekted to reash the stage where more komplikated shanges are possible. Governments would enkourage the removal of double leters which have always been a deterent to akurate speling.

We would all agree that the horible mes of silent "e"s in the languag is disgrasful.

Therefor we kould drop thes and kontinu to read and writ as though nothing hapend.

By this tim it would be for years sins the skem began and peopl would be receptiv to steps sutsh as replasing "'th" by "z". Perhaps zen ze funktion of "w" kould be takn on by "v", vish is, aftr al, half a "w". Shortli aftr zis, ze unesesary "o" kould be dropd from words kontaining "ou". Similar arguments vud of kors be aplid to ozer kombinashuns of leters.

Kontinuing zis proses yer aftr yer, ve vud eventuli hav a reli sensibl riten styl.

Aftr tventi yers zer vud be no mor trubls or difikultis and evrivun vud fin it ezi tu unastan ech ozer. Ze drems of ze Guvmnt vud hav kum tru!

NIGHTCAP NATIONAL PARK

Bob Lee

On the return leg of our trip to Queensland last August, Val and I visited some friends who live near the Terania Creek entrance to Nightcap National Park, which is located in north-eastern NSW, 25 km north of Lismore and about 10 km east of Nimbin. We had limited time but followed the track through the Park along the bed of Terania Creek as far as Protestors Falls. The area had a great variety of ferns and, though still showing the effects of the drought of the past few years, was a delight to walk through. I would recommend the necessary detour for a visit to anyone who is in the region. Note that the route we took was via The Channon and then the gravel road beside Terania Creek; there is no road access to this part of the Park via Nimbin.

The daughter of our hosts, who is a botanist and has established a local nursery for rainforest plants, provided us with a list of the ferns of the area which is reproduced below.

PTERIDOPHYTES OF TERANIA CREEK BASIN, NORTHERN NEW SOUTH WALES

(Nomenclature and arrangement of taxa follow the Flora of New South Wales, Vol. I, 1990, ed: G. Harden.)

PSILOTACEAE Psilotum nudum Tmesipteris ovata

LYCOPODIACEAE

Lycopodium cernuum

Lycopodium deuterodensum

OSMUNDACEAE Todea barbara

ADIANTACEAE
Adiantum diaphanum
Adiantum formosum
Adiantum hispidulum
Adiantum silvaticum

SINOPTERIDACEAE Pellaea falcata var. nana

VITTARIACEAE Vittaria elongata

PTERIDACEAE Pteris tremula Pteris umbrosa

HYMENOPHYLLACEAE Hymenophyllum australe Macroglena caudata Selenodesmium elongatum

GLEICHENIACEAE Gleichenia dicarpa Gleichenia rupestris Sticherus flabellatus Sticherus lobatus

POLYPODIACEAE
Dictymia brownii
Microsorum scandens
Platycerium bifurcatum
Platycerium superbum
Pyrrosia confluens
Pyrrosia rupestris

GRAMMITACEAE Grammitis billardieri

CYATHEACEAE

Cyathea australis

Cyathea cooperi

Cyathea leichhardtiana

DICKSONIACEAE Dicksonia youngiae Calochlaena dubia

DENNSTAEDTIACEAE
Dennstaedtia davallioides
Histiopteris incisa
Hypolepis glandulifera
Hypolepis muelleri
Pteridium esculentum

LINDSAEACEAE Liindsaea linearis Lindsaea microphylla

THELYPTERIDACEAE Christella dentata **ASPLENIACEAE**

Asplenium australasicum Asplenium flabellifolium Asplenium polyodon

ATHYRIACEAE
Diplazium assimile
Diplazium australe
Diplazium dilatatum
Lunathyrium petersenii

DRYOPTERIDACEAE
Arachniodes aristata
Lastreopsis acuminata
Lastreopsis decomposita
Lastreopsis marginans
Lastreopsis microsora
Lastreopsis munita
Lastreopsis smithiana

DAVALLIACEAE
Arthropteris beckleri
Arthropteris tenella
Davallia pyxidata
Nephrolepis cordifolia

BLECHNACEAE
Blechnum cartilagineum
Blechnum nudum
Blechnum patersonii
Blechnum wattsii
Doodia aspera
Doodia caudata

Members of the Society of longer standing will have fond memories of Dr Jim Willis, whose talks to us were notable both for their content and the vitality of the presenter. Dr Willis passed away late in 1995. The following obituary appeared in the Melbourne "Age".

Science and the Garden: seeds for a rich life

Dr James Hamlyn Willis

Botanist.

Born: 28 January 1910.

Died: 10 November 1995, aged 85.

In any discussion on the "greats" of 20th-century botany in Victoria, the name Jim Willis will invariably come to the fore.

Dr James Hamlyn Willis gave 60 years of service to professional botany, horticulture and natural history. That he was known simply as "Jim" to all from international scientists to home

gardeners - is an indication of the respect and affection felt towards him.

He retired in 1972 from the National Herbarium of Victoria (Royal Botanic Gardens, Melbourne), where he was assistant Government botanist. He was recognised for his taxonomic research and publication on native flora with the Royal Society of Victoria's Research Medal, and a doctorate of science from Melbourne University, among others.

Dr Willis had a high standing internationally, with links to European herbaria, but he was also involved in many community organisations, using his knowledge and talents to promote an understanding and appreciation of nature.

Dr Willis acquired his exploratory skills and love of nature as a boy growing up in Stanley on the northwest Tasmanian coast.

After his secondary schooling at Melbourne High School, he entered the Victorian School of Forestry, Creswick, and in 1930 became a Forests Commission field officer.

With his transfer to Melbourne in 1937, he



Dr James Willis, a distinguished botanist

completed a science degree and went on to show many of the same characteristics in his botanical work at the National Herbarium as its founder, Baron von Mueller. An energetic field explorer, he collected and classified thousands of specimens to augment the Herbarium's collection of more than a million specimens.

He produced more than 800 published items. Most notable was his *Handbook to Plants in Victoria*, which in two volumes (1962 & 1972) provided the definitive reference for the state's

3000-plus species, and which only now is being superseded by the new multi-authored *Flora of Victoria*.

Dr Willis's botanical achievements were exceptional, but it was his personal qualities that really distinguished him, particularly his humility and generosity.

Dr Willis's principal association was with the Field Naturalists Club of Victoria, which he joined in 1932. He became one-time editor of and a regular contributor to *The Victorian Naturalist*, and a leader of countless expeditions.

For his contributions to natural history, Dr Willis received the Australian Natural History Medallion in 1960. Other honours were bestowed by the Australian Institute of Horticulture, the Society for Growing Australian Plants, the Australian Conservation Foundation and the National Trust of Australia. This year he was made a member of the Order of Australia.

He is survived by his wife, Mavis, three daughters and two sons.

- Leon Costermans

NEWSLETTER EDITIONS

Until further notice, the Newsletter will be published six times a year, as follows:

No. 1 January/February

No. 2 March/April

No. 3 May/June

No. 4 July/August

No. 5 September/October

No. 6 November/December

No. 1 will be published early in February and the others in time for the first general meeting of the

period specified.

The decision to reduce the number of issues was taken by the Committee in mid-1995 because of lower availability of editorial time and the need to reduce Newsletter production and mailing costs.

It is hoped to make all of them 16-page editions subject to sufficient copy being available. Allowing for the reduction in duplication of the cover and third pages, this should give only a minor reduction in actual reading matter.

FERN BOOKS IN PRINT

Ivan Traverso

(continued from November/December 1995 issue)

Ferns & Fern Allies of Meghalaya State (India). A. K. Baishya and R. R. Rao. 1988 State Mutual Book & Periodical Service Limited Trade Cloth ISBN 0-685-18859-0 (Scientific) \$ 40.00

A Handbook of Ferns for Australia & New Zealand. Christopher Goudey. 1988 International Specialized Book Services Trade Paper ISBN 0-85091-282-2 Lothian Books A\$ 24.95

Encyclopedia of Ferns. Vol. 1 David Jones. 06/1987 Timber Press Incorporated Trade Cloth ISBN 0-88192-054-1 350p. \$59.95

Gray's Manual of Botany: A Handbook of the Flowering Plants & Ferns of the Central & Northeastern U. S. & Adjacent Canada. Merritt L. Fernald. 10/1987 8th ed. Timber Press Incorporated Cloth Text ISBN 0-931146-09-7 (Dioscorides Press) Reprint 1632 p. \$59.95

Liebmann's Mexican Ferns. J. T. Mickel, R. McVaugh, S. V. Karrel and H. B alslev. 1987 New York Botanical Garden Orig. Lang: Danish Trade Paper ISBN 0-89327-324-4 350p. \$ 27.75

A Nomenclatural Guide to R. H. Beddome's Ferns of South India & Ferns of British India. Subhas Chandra and Surjit Kaur. 1987 Scholarly Publications
Trade Cloth ISBN 1-55528-076-5 (Today & Tomorrow's Printers & Publishers (II)) 140p. \$ 15.00

Fern Flora of the Palni Hills (S. India). V. S. Manickam. 1986 ScholarlyPublications
Trade Cloth ISBN 1-55528-072-2 (Messers Today & Tomorrow Printers & Publishers) 200p. \$27.00

Field Guide to Ferns & Other Pteridophytes of Georgia. Lloyd H. Snyder Jr. and James G. Bruce. 08/1986 University of Georgia Press Trade Paper ISBN 0-8203-0847-1 272p. \$ 12.50

The Fern Herbal: Including the Ferns, the Horsetails, & the Club Mosses. Elfriede Abbe. 03/1985 Cornell University Press Trade Cloth ISBN 0-8014-1718-X 120p. \$ 39.95

A Field Manual of the Ferns & Fern-Allies of the United States & Canada. David B. Lellinger. Illustrated by A. Murray Evans 11/1985 Smithsonian Institution Press
Trade Paper ISBN 0-87474-603-5 446p. \$ 29.95

Maidenhair Ferns in Cultivation. Christopher J. Goudey. 1985 International Specialized Book Services Trade Cloth ISBN 0-85091-175-3 Lothian Books 336p. A\$ 75.00

Atlas of New York State Ferns: Contribution to a Flora of New York State, Checklist II. Richard S. Mitchell. 1984 New York State Museum (Bulletin Ser.) (No. 456)
Trade Paper ISBN 1-55557-002-X \$ 2.50

Ecological Studies on the Fern Flora of the Palni Hills (S. India). V.S. Manickam. (International Bioscience Ser.) (No. 5) 1984

Trade Cloth ISBN 1-55528-103-6 Scholarly Publications 76p. \$19.00

The Phylogeny & Classification of the Ferns: Supplement No. 1 to Botanical Journal of the Linnean Society, Vol. 67, 1973. Edited by A. C. Jermy, J. A. Crabbe and B. A. Thomas. 1984 Koeltz Scientific Books, U. S. A. Trade Cloth ISBN 3-87429-218-5 Reprint xiv 284p. \$118.00

Types & Special Collections (Flowering Plants & Ferns) of the Herbarium of the Academy of Natural Sciences of Philadelphia: Indices to the Microfiche. Compiled by James A. Mears. 1984 Chadwyck-Healey Incorporated Trade Cloth ISBN 0-930466-87-X 274p. \$ 370.00

Chromosome Numbers & Evolutionary Status of Ferns & Fern Allies: Pachmari Hills. S. M. Vasudeva and S. S. Bir. (International Bioscience Monographs) (No. 14) 1983 Scholarly Publications
Trade Cloth ISBN 1-55528-023-4 (Messers Today & Tomorrow Printers & Publishers) viii, 66p. \$7.00

The Ferns & Fern Allies of Southern Africa. W. B. Jacobsen. 1983 Butterworth-Heinemann Cloth Text ISBN 0-409-09836-1 542p. \$89.95

Ferns & Allied Plants: With Special Reference to Tropical America. Rolla Tryon and Alice F. Tryon. 12/1982 Springer-Verlag New York Inc. Trade Cloth ISBN 0-387-90672-X 896p. \$ 299.00

Fern Finder. Anne E. Hallowell and Barbara Hallowell. 1981 Nature Study Guild Trade Paper ISBN 0-912550-11-2 \$ 2.50

Fern Flora of Mussoorie Hills. K. K. Dhir and A. Sood. (Bibliotheca Pteridologica Ser.) (Bd. 2) 01/1981 Lubrecht & Cramer Limited Paper Text ISBN 3-7682-1232-7 \$ 24.00

Pacific Coast Fern Finder. Glenn Keator and Ruth M. Heady. 1981 Nature Study Guild Trade Paper ISBN 0-912550-13-9 \$ 2.50

The Ferns of Minnesota. Rolla Tyron. 05/1980 University of Minnesota Press Trade Paper ISBN 0-8166-0935-7 Revised 165p. \$ 9.95

Ferns, Fern Allies & Conifers of Australia. H. T. Clifford and J. Constantine. 11/1980 International Specialized Book Services
Cloth Text ISBN 0-7022-1447-7 (University of Queensland Press (AT)) 150p. \$ 29.95

Ferns & Fern Allies. John T. Mickel. 03/1979 Wm. C. Brown Publishers Spiral ISBN 0-697-04771-7 256p. UK pounds 14.45

Ferns of the Northwestern Himalayas. K. K. Dhir. (Bibliotheca Pteridologica Ser.) (Bd. 1) 01/1979 Lubrecht & Cramer Ltd Paper Text ISBN 3-7682-1222-X \$ 24.00

The Pteridophytes of Kansas, Nebraska, South Dakota & North Dakota. A. J. Petrik-Ott. 1979 Lubrecht & Cramer Limited Library Binding ISBN 3-7682-5461-5 \$ 50.00

The Ferns of Maine. Edith B. Odgen. 1978 University of MainePress Trade Paper ISBN 0-89621-016-2 Reprint 128p. \$6.95

(to be continued)

SPORE LIST

Ordering: The following spore is now available - free to those who donate spore, otherwise 20 cents each sample for members and 50 cents for non-members, plus \$1.00 to cover packing and postage. Available at meetings or by mail from Barry White, 24 Ruby St., West Essendon, VIC. 3040 - Phone (03) 337 9793. There is no charge for overseas members, but to cover postage two International Reply Coupons would be appreciated.

A booklet on spore collection and cultivation is available for 40 cents (free to spore donors).

Actinopteris semiflabella 9/95

Adiantum concinnum 1/96

Adiantum hispidulum 4/95

Adiantum polyphyllum 5/95

Adiantum radd. 'Legrand Morgan' 1/96

Adiantum radd. 'Triumph' 1/96

Adiantum tenerum 'Fergusonii' 10/95

Adiantum trapeziforme 10/95

Anemia mexicana 7/94

Anemia tomentosa 10/95

Arachniodes simplicior 05/94

Asplenium flabellifolium, lge pinnae 09/94

Asplenium oblongifolium 7/94

Asplenium scolopendrium 1/96

Asplenium varians 11/95

Athyrium filix-femina 4/95

Blechnum ambiguum 5/95

Blechnum chambersii 5/95

Blechnum fluviatile 5/95

Blechnum glandulosum 9/95

Blechnum minus 5/95

Blechnum occidentale 4/95

Blechnum patersonii 5/95

Blechnum sp.(West of Newcastle) 9/94

Blechnum wattsii 5/95

Calochlaena dubia 5/95

Cheilanthes austrotenuifolia 4/95

Cheilanthes distans 5/95

Cheilanthes multifida 1/96

Christella parasitica 1/94

Cibotium glaucum 11/95

Cibotium scheidii 09/94

Cibotium splendens /94

Coniogramme fraxinea 1/96

Coniogramme intermedia 5/95

Cyathea albifrons 3/95

Cyathea australis 4/95

Cyathea brownii 4/95

Cyathea cooperi (Blue form) 11/94

Cyathea cooperi 4/95

Cyathea felina 11/94

Cyathea medullaris 1/95

Cyclosorus interruptus 4/95

Dicksonia antarctica 11/95

Diplazium assimile 5/95

Diplazium australe 5/95

Doodia aspera 4/95

Doodia caudata 4/95

Doodia maxima 1/94

Doodia media 2/95

Doryopteris pedata 10/95

Dryopteris affinis 'cristata' 1/94

Dryopteris atrata 11/95

Dryopteris carthusiana 11/95

Dryopteris dilatata 10/94

Dryopteris erythrosora 4/95

Dryopteris sieboldii 4/95

Gleichenia dicarpa 5/95

Gleichenia microphylla 5/95

Hypolepis rugosula 5/95

Lastreopsis acuminata 11/95

Lastreopsis microsora 09/94

Lastreopsis velutina 2/95

Lindsaea microphylla 5/95

Llavea cordifolia 4/94

Lygodium japonicum 11/94

Mixed spore ex N.Z. 2/95

Notholaena sinuata 1/96

Pellaea falcata nana 4/95

Pellaea falcata 11/95

Pellaea intramarginalis 4/95

Pellaea quadripinnata 4/95

Pellaea viridis macrophylla 4/95

Pityrogramma austroamericana 3/95

Platycerium bifurcatum 4/95

Platycerium superbum 12/94

Pneumatopteris pennigera 1/95

Polystichum australiense 4/95

Polystichum formosum 1/96

Polystichum lentum 4/95

Polystichum proliferum 11/95

Polystichum richardii 2/95

Polystichum tsus-simense 11/95

Polystichum vestitum 2/95

Pteris argyraea 8/94

Pteris comans 2/95

Pteris cretica 'Albo-lineata

Alexandrae' 6/95

Pteris macilenta 7/94

Pteris quadriaurita 1/95

Pteris sp. (Nepal) 1/96

Pteris tremula 2/95

Pteris umbrosa 11/95

Pyrrosia angustata 05/94

Pyrrosia rupestris 5/95

Rumohra adiantiformis 4/95

Tectaria decurrens 6/95

Tectaria heracleifolia 9/95

Thelypteris navarrensis 4/95

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COMPETITION RESULTS

Congratulations to the following winners of the Fern Competition and the Special Effort draw for the November meeting. The Competition was judged by Barry White.

FERN COMPETITION: (Category - Adiantum)

First:	Chris Goudey	Adiantum	raddianum	'Brillantelse'
Second:	Chris Goudey	"	**	'Kensington Gem'
Third:	Anne Bryant	"	"	'Triumph'
Competitors'	Draw: Jean Boucher			

SPECIAL EFFORT: Gay Stagoll, Angela Milligan, Reg Kenealy, Fran Harrison

Opinions expressed in articles 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.

BUYERS' GUIDE TO NURSERIES

VICTORIA:

Andrew's Fern Nursery / Castle Creek Orchids - Retail. Phone (058) 26 7285. Goulburn Valley Highway, Arcadia 3613 (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 (052) 82 3084. Specialising in supplying retail nurseries with a wide range of hardy ferns; no tubes.

Coach Road Ferns - Wholesale. Phone (03) 9756 6676. 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 (057) 86 5481. Kinglake West 3757. On main road, opposite Kinglake West Primary School. Specialising in Stags, Elks and Bird's-nest Ferns.

Fern Glen - Wholesale and Retail. Phone (056) 29 2375. D. & I. Forte, Garfield North 3814. Visitors welcome.

Kawarren Fernery - Wholesale and Retail. Phone (052) 35 8444. Situated on the Colac - Gellibrand Road, Kawarren (20 km south of Colac).

The Bush-House Nursery - Wholesale and Retail. Phone (055) 66 2331. Cobden Road, Naringal (35 km east of Warrnambool). Ferns - trays to advanced. Visitors welcome.

NEW SOUTH WALES:

Jim & Beryl Geekie Fern Nursery - Retail. Phone (02) 484 2684. 6 Nelson Street, Thornleigh 2120. By appointment.

Kanerley Fern Exhibition and Nursery - Wholesale and Retail. Phone (049) 87 2781. 204 Hinton Road, Osterley, via Raymond Terrace 2324. Closed Thursdays and Saturdays. Groups of more than 10 must book in advance, please.

Marley's Ferns - Wholesale. Phone (02) 457 9168. 5 Seaview Street, Mt. Kuring-Gai 2080. All Fern Society members welcome. By appointment.

QUEENSLAND:

Moran's Highway Nursery -Wholesale and Retail. Phone (074) 42 1613. Bruce Highway, Woombye (1 km north of Big Pineapple; turn right into Kiel Mountain Road). P.O. Box 47, Woombye 4559.



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