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S.G.A.P. Fern Study Group

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CONTRIBUTIONS MOST WELCOME

Articles for publication in our Newsletter are always welcomed. We particularly seek items dealing with propagation or cultivation of ferns and feel sure that members would like to hear of the practical experiences of others. Our Secretary recently mentioned this in correspondence with Ray Best who is probably our most knowledgeable member.

Part of Ray's response follows:

"You mentioned New Guinea and some possible stories: I am reminded of one that applies here. The Major of our unit (The Sixth Australian Army Topographical Survey Company) quite a mouthful; suggested that we start our own Newspaper (we were a map printing unit). Two members were chosen as co-editors one being myself. The title of the paper was "TOPO TIMES". We decided that as editors we would publish most of the material as presented, only correcting grammatical errors or spelling errors. Being solely a masculine unit most of the writing took on a somewhat sexy approach. After a few publications the Major objected to the articles suggesting that we would have to lift the level of the material. So we nominated a number of titles that could be covered by the members. We then discovered that we did have several intellectuals who were quite capable of writing articles of a high standard. However this change did not reflect the general attitude and resulted in considerable criticism, and created a certain disinterest. Obviously we had to provide material that met with the general approval if our paper was to survive. Probably accounts for Mr. Murdock's seXcess with his newspapers.

The message here appears to be that a balance is necessary in any published work if it is to maintain a popular appeal and survive. Attempts to be sure that the material is ultimate and correct is impossible as no decision is ever final, but only within the limits of the information available or the mentality of the writer.

An article of mine recently submitted to The British Pteridological Society on Callipteris prolifera along with a black and white drawing was rejected by the editor; along with a statement including Mr. Holttum's amendments, that the editor considered to be well above the heads of his readers. My plant of Callipteris prolifera died some time ago, it was then called Athyrium accedens, it was from this plant that I made my drawings. Shall attempt if possible to obtain another plant.

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WHAT IS A FERN?

In a back to basics discussion at a recent gathering of Sydney members, the question was posed "But how do we know it is a fern?". It was a useful question given the great variety of differently shaped and sized ferns and the existence of a number of fern look-a-likes.

The following extract taken from the booklet "How to Identify Plants" by Gwen Harden and John Williams published by University of New England Department of Continuing Education (and available from S.G.A.P. Book Service) may help some members understand how ferns are categorised in the plant world.

CLASSIFICATION OF THE PLANT KINGDOM

All plants may readily be separated into two divisions, plants without seeds and plants with seeds. The former include the bacteria, seaweeds, pond-slimes, moulds, fungi, lichens, liverworts, mosses, club-mosses and ferns. The majority of such plants are not a conspicuous part of the vegetation and therefore often not considered to be of any great importance. However, each group plays an important role within the ecosystem. Little work has been done on many of these groups in Australia and so information is not readily available.

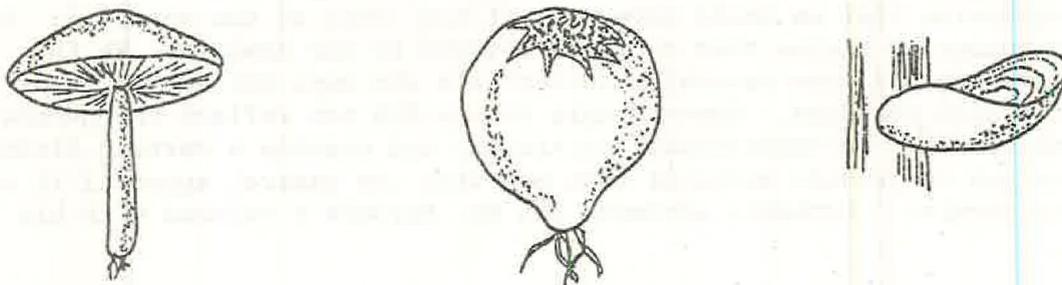
The most primitive plants are those which have not developed the capacity to live and reproduce on land. This is due largely to the reproductive structures being uni-cellular and not having any protective structures around them. Also the plant body is not differentiated into true vegetative structures as in the higher plants.

Such primitive plants with chlorophyll (green pigment) are called *algae* and those without chlorophyll *fungi*.

Algae are plants of wide distribution, mainly in fresh or salt water, but also in damp soil. They may be single-cell organisms, in filaments, or form colonies. The seaweeds, such as kelps, can have very large plant bodies but they do not have roots, stems or leaves.

Fungi lack chlorophyll and so are unable to manufacture their own food. They live either as parasites on other living organisms or as saprophytes which obtain their food requirements from dead organic matter. Fungi, together with bacteria are the decomposers within the ecosystem.

Fungi consist of microscopic filaments which grow by elongating and branching and which often form a solid mesh of threads. The most obvious parts are usually the spore producing organs, as in mushrooms. The most conspicuous fungi are toadstools, puff balls and bracket fungi, which are often brightly coloured.

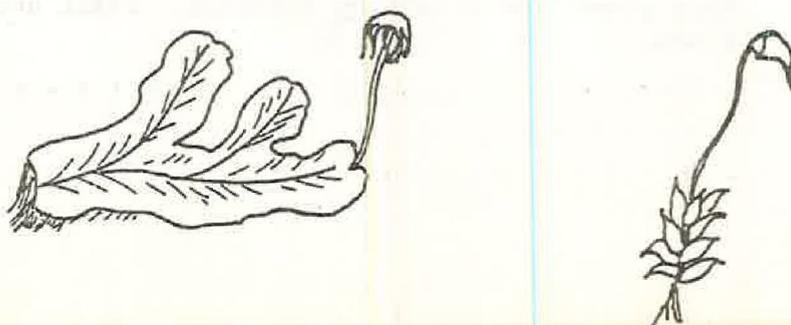


Lichens are a unique group of plants in which two completely different organisms form one composite body. The organisms are an alga and a fungus, both of which are essential, closely associated in a mutually beneficial union. Lichens are important pioneering organisms since they are the first conspicuous plants to colonize bare rock surfaces. Small crustaceous lichens appear first, etching the rock surface with acid excretions. Particles of dust gather around the lichen enabling larger lichens, mosses and eventually higher plants to be established.

The first group of plants which are specialised to live on land are the *bryophytes*: the liverworts, hornworts and mosses. These plants are small in size and have no vascular tissue and instead of roots have simple rhizoids. They are usually found growing in masses in moist areas such as along moist banks and on rocks.

Liverworts are usually flattened structures, which branch dichotomously, and are attached to the ground by rhizoids.

Mosses usually have an erect stem which bears small leaves. The spore bearing capsule can often be seen at the end of the stem. Mosses shrivel up during dry periods but readily recover after rain. Large areas of *Sphagnum* moss can form bogs.



The *ferns* are the first major group in the plant kingdom which have vascular tissue for conducting water and nutrients throughout the plant body. They, in common with higher plants, have roots, stems and leaves. Most ferns are shade-loving plants of relatively small size, their upright leaves or *fronds* generally being the most prominent feature. The fronds vary greatly in form, texture and size, from a few centimetres and membranous in *Hymenophyllum* to 3 metres long and leathery in the tree fern *Cyathea*. They differ from leaves of flowering plants in that spores are frequently borne on the lower surface. Most ferns have an underground rhizome with fronds and adventitious roots at the nodes.

Reproduction in ferns may occur in one of the following ways.

I. *Vegetative* reproduction by the death and decay of older portions of the rhizome and subsequent separations to give new plants. In some species the development of leaf-borne buds which become detached and grow into new plants.

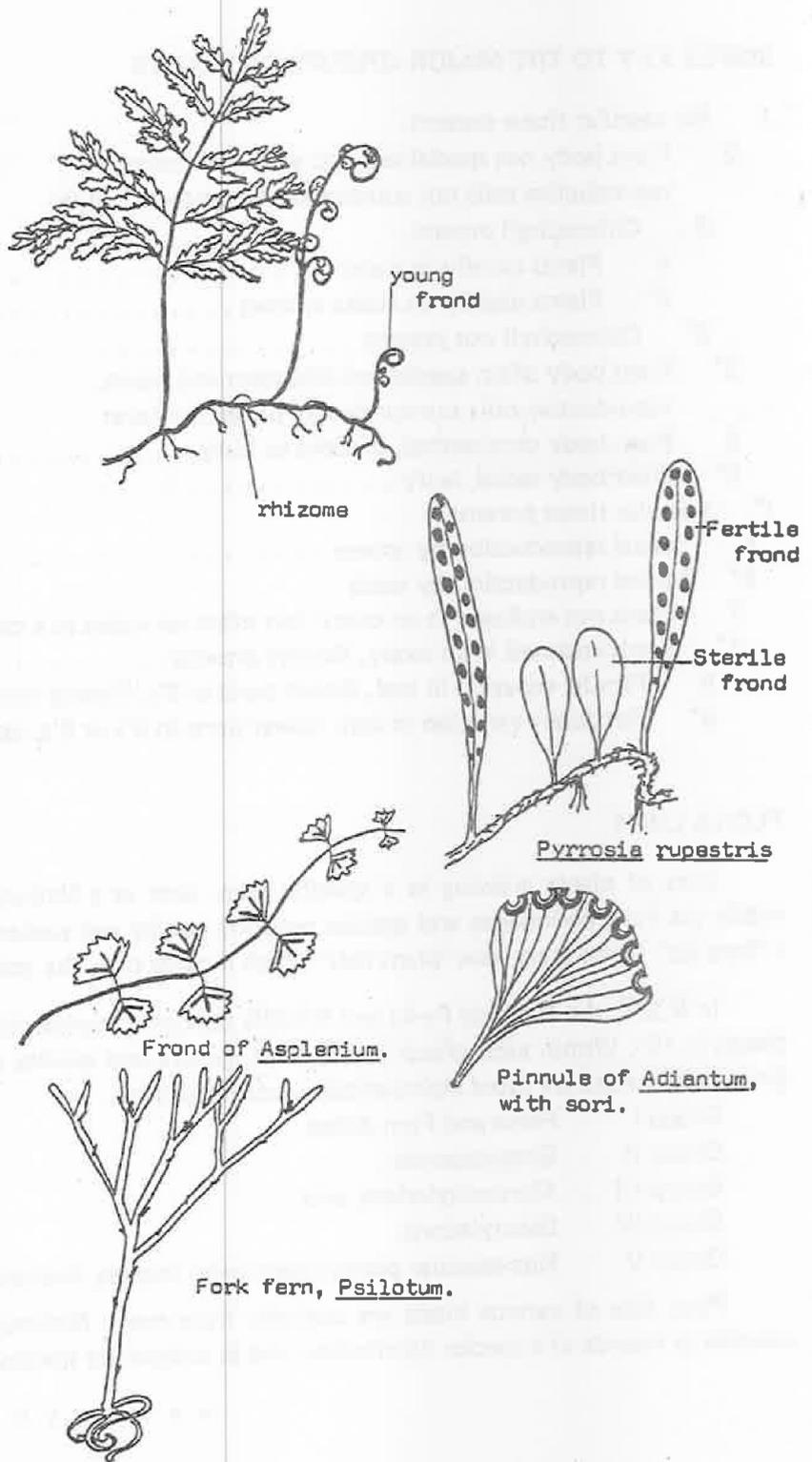
II. *Sexual* reproduction by spores. The *spores* are borne in *sporangia* which usually develop on the lower surface of fronds. Not all fronds are fertile (i.e. spore producing) and they may not be the same shape as the sterile (non-spore producing) fronds. The distribution and the shape of the sporangia varies considerably and is used in the classification of ferns. Sporangia may cover much of the surface of the frond or be grouped into *sori* which develop in definite relationship with the veins or margins of the frond. Sori may be protected by a flap of tissue — the *indusium*.

Fern Allies is a heading to include the most primitive vascular plants which are closely related to ferns, but differ mainly in their reproductive and leaf structures. This includes the skeleton fork-fern, *Psilotum*; adder's tongue, *Ophioglossum*; club-mosses, *Lycopodium*; and species of *Selaginella*.

The second major group of the plant kingdom, the *seed producers*, is the one which gives the most conspicuous plants in the vegetation. These plants have developed the most extensive and effective root and stem systems which have enabled many to become very large trees. These plants can be readily divided into the *Gymnosperms* and the *Angiosperms*, on the position and protection given the ovule and seed during development.

The *Gymnosperms* have seeds which are not enclosed in an ovary but naked on seed leaves, or scales, which are usually spirally arranged in cones. This group includes the *cycads* and the *conifers*.

The *cycads* millions of years ago formed extensive areas of the earth's vegetation, today only a few genera remain in widely separated areas of the world. Cycads have large pinnate leaves, usually coming from an underground trunk, as in the Burrawangs (*Macrozamia* species) found in N.S.W.. Large male and female cones are formed singly, on separate plants.



Macrozamia heteromera with male cone.

SIMPLE KEY TO THE MAJOR GROUPS OF PLANTS

- 1 No vascular tissue present.
 - 2 Plant body not specialised into stem and leaves, reproductive cells not surrounded by protective layer.
 - 3 Chlorophyll present.
 - 4 Plants usually in waterAlgae
 - 4* Plants usually on rocks or treesLichens (also some algae)
 - 3* Chlorophyll not presentFungi
 - 2* Plant body often specialised into stem and leaves, reproductive cells surrounded by protective layer.
 - 5 Plant body dorsiventral, thalloid or leafy Liverworts
 - 5* Plant body radial, leafy Mosses
- 1* Vascular tissue present
 - 6 Sexual reproduction by spores Ferns
 - 6* Sexual reproduction by seeds
 - 7 Seeds not enclosed in an ovary, but often on scales in a cone. Gymnosperms
 - 7* Seeds enclosed in an ovary, flowers present (Angio ms)
 - 8 Parallel venation in leaf, flower parts in 3's, fibrous root system. Monocotyledons
 - 8* Reticulate venation in leaf, flower parts in 4's or 5's, taproot. Dicotyledons

FLORA LISTS

Lists of plants growing in a specific area, such as a National Park, usually includes all the species known to occur within the Park boundaries and species occurring nearby and suspected of growing within the Park itself. Such a list is called a 'flora list'. Some areas have 'plant lists' which include only the species known to occur within the area.

In N.S.W. the National Parks and Wildlife Service is standardizing all flora lists, with vascular plants being listed in four groups (I-IV). Within each group the families, genera and species are listed alphabetically, except in Group I, where all the genera and species are listed alphabetically, not in families.

- Group I Ferns and Fern Allies
- Group II Gymnosperms
- Group III Monocotyledons, and
- Group IV Dicotyledons.
- Group V Non-vascular plants listed under mosses, liverworts, lichens etc. alphabetically by genera.

Plant lists of various kinds are available from many National Parks, Reserves and other areas of interest. These are valuable as records of a species distribution and in comparing species growing in one area with those in another.

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RED CARPET

A warm welcome is extended to the following new members:

- Mr. B. Morrison 94 Mississippi Road, Seven Hills 2147
- Mr. & Mrs. M. Frecher "Malabar" Young 2694
- Mr. & Mrs. P. Akkersdyk 206 Prices Circuit, Woronora 2232
- Moir and David Brown Burrendong Arboretum, Mumbil 2820
- Mrs. A. Phipps 62 Scylla Road, Oyster Bay 2225

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REMINDER SUBSCRIPTIONS DUE

Subscriptions cost \$3 per year and the fee for the 1988 calendar year is now due. If you have already renewed your subscription please disregard this notice.

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THE SPORE BANK

Jenny Thompson

Welcome to 1988. The spore list remains much the same as listed in our June 1987 Newsletter, with the addition of a special Cyathea australis collected from Burrendong's new shade area in November last year. The fronds have a blue colouration along the stipe and are quite attractive.

Any donations for the spore bank are very welcome as I like to replenish the spore to ensure its viability. In return I will try and supply any spore requested - provided I can get a hold of it.

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LIFESTYLE GOING NATIVE

Have you seen the recently published magazine titled as above, at your local newsagency? It contains lots of colour plates and advice on all facets of growing native plants. Of special interest is an article by one of our members Keith Ingram of Mt- Tomah titled "Ferns for Fun".

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TWO FERNS FOR BEGINNERS

Culcita dubia and Dennstaedtia davallioides are hardy ferns found in all Eastern States of Australia. They grow readily in sheltered shady situations with some moisture.

Although unlikely to be included on the fern connoisseur's most wanted species list and because of their size and spreading habit not really suitable for pot culture, both make very attractive displays in the garden and the bush. They spread by fast growing underground rhizomes. In garden situations as well as preventing the ferns from becoming a nuisance by creeping into the adjoining garden beds, they make better displays if confined somewhat. This can be achieved by placing rocks or other solid material as a border around the bed from just above the level of the soil to about 30 cm deep.

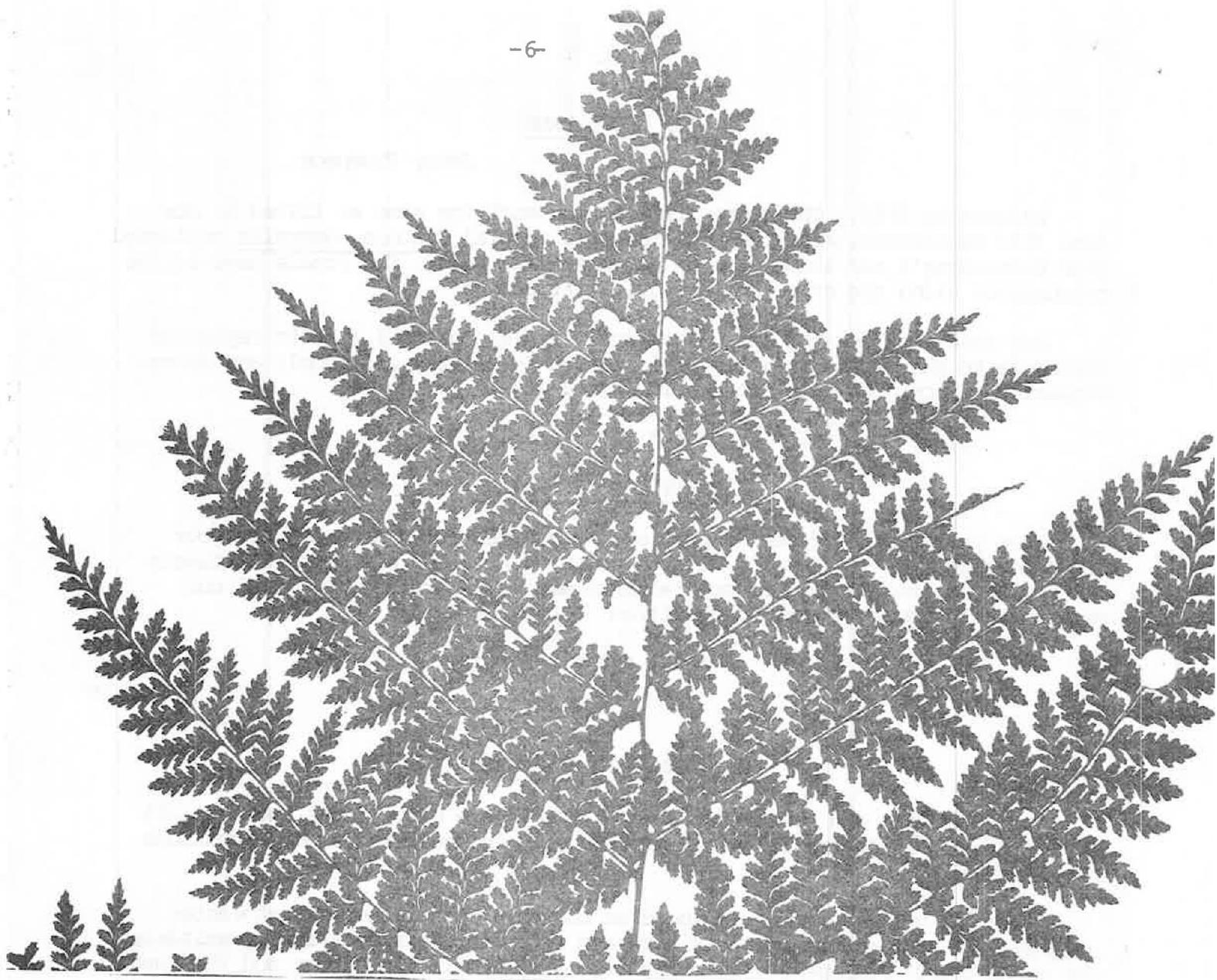
Both can withstand quite moist conditions and should be kept well mulched. They are relatively free of diseases but Dennstaedtia davallioides is sometimes attacked by small green caterpillars. If you have a good eye the caterpillars can be controlled by simply removing them, otherwise Carbaryl is effective.

Propagation is fairly easy from spore but quicker results are obtained vegetatively as they are easily grown from well rooted pieces of rhizomes about 15 to 20 cms long.

A list of simple identification features follows:

<u>FEATURE</u>	<u>CULCITA DUBIA</u>	<u>DENNSTAEDTIA DAVALLIOIDES</u>
Rhizome	tough long creeping and branched with soft grey and reddish/brown hairs	tough long creeping with short stiff brown hairs
Stipes	pale above, dark and hairy at base.	reddish/brown and shiny
Fronds	0.5 to 1.5 m upright with drooping tip and a wide based triangular shape, pale green and soft tripinnatifid	0.5 to 1.5 m upright with drooping tip and a wide based triangular shape, dark green, very lacy and soft tripinnate to quadripinnate to
Pinnules	to 1 cm l. with revolute margins	to 1 cm l. with a few blunt lobes
Sori	marginal, spherical and often covered by folded leaf margin, indusium small and scale-like	spherical and small, well developed cup-like indusium on lobes

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TOP: *CULCITA dubia*
BOTTOM: *DENNSTAEDTIA davallioides*
(portion of frond)



REPORT ON OUTING TO DHARUG: SUNDAY 15 NOVEMBER 1987

Dharug National Park just north of the Hawkesbury River was visited by 9 members. The day was fine and warm.

Before lunch the walk was from Mill Creek Picnic Area through wet sclerophyll forest. In patches close to the creek the overhead canopy was dense and our leader Peter was called on to identify many rainforest trees and climbers as well as adjudicating regarding ferns. Pteridium esculentum, Blechnum cartilaginum, Culcita dubia and Adiantum aethiopicum were abundant and represented no problem to the identifiers. Doodia aspera with bright pink fronds was also widespread and no problem to identify until Peter called for closer inspection indicating that there might be plants of D. maxima - the latter distinguished by dimorphic fronds and single rows of elongated spore on each side of the mid-rib.

Two small ferns Cheilanthes siberi and Lindsaea microphylla were noticed, both are generally easier to identify than cultivate. Then near the water were Sticherus flabellatus and Todea barbara as well as numerous small ferns clinging to moist rocks.

Adiantum hispidulum (5 Finger Jack) and the taller A. formosum were found. It was observed that while the overhead canopy was not rich in species, the forest floor contained many small shrubs, herbs and mosses. Grammitis billardieri and Hymenophyllum cupressiforme literally covered rocks and Platynerium bifurcatum as well as orchids and other epiphytes were noticed in the trees.

Earlier Pellea falcata had been seen, now a Pellea sp. was located with heart-shaped pinnae. Was it P. paradoxa? Then more plants were found unmistakably P. paradoxa with broad bases and petioles longer than 2 mm.

Only one Lastreopsis, L. decomposita was seen. Sightings of Polystichum australiense, scales dull papery brown and without pale border, Pteris tremula and Blechnum nudum completed the list of ferns identified and not a single tree fern. A final highlight was the lengthy viewing of the spectacular King Parrot feeding closeby.

After lunch in the attractive picnic grounds and a short drive back to the Wisemans Ferry - Spencer Road there was a second walk on this occasion through more open woodlands adjacent to a wide swampy area. Ferns were numerous but only a few species were sighted, Hypolepis muelleri which was in abundance being the only species additional to those seen on the earlier walk. Certainly the presence of a large black snake discouraged some members from thoroughly examining the swamp.

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REPORT ON MEETING 6 DECEMBER 1987

Fifteen members attended our final get-together for 1987 at the home of Jenny and George Thompson at Engadine. We were delighted Hazel and Peter Althofer from Burrendong were able to spend the day with us.

After discussing the year's activities, we inspected the magnificent bush block where the Thompsons grow an extensive range of native plants. Jenny has devoted a shady area at the side of the house to the cultivation of ferns and here we found Blechnum nudum, B. minus, B. cartilagineum and B. fluviatile. Doodia caudata and D. media. Pellaea falcata and P. falcata var nana. Todea barbara and tree ferns Dicksonia antarctica and Cyathea cooperi, C. australis and C. woollsiana growing happily beneath the shade of specially planted rainforest trees such as Buckinghamia celsissima and Acmena smithii and Tristania laurina. Both Dictymia brownii, growing in a long and Blechnum wattsi are thriving beside a small pond and a bank of cascading Gleichenia dicarpa completes the picture of tranquility. Nestling into a secluded corner is a triangular shaped log shade house where hanging baskets and a suspended log house ferns such as Vittaria elongata, Asplenium polyodon, Pyrrhosia longifolia and P. dielsii, Schellolepis sibauriculatum, Platynerium bifurcatum and Blechnum penna-marina. Our illustrious leader, Peter, was able to supply names for a few ferns suffering from an identity crisis!

It was a most congenial atmosphere in which to enjoy our last function for the year and we thank our hosts for their hospitality.

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FORIHCOMING EVENTS (SYDNEY REGION)

SUNDAY 27th MARCH 1988: MEETING BLACKTOWN

To be held at the home of Tess and Les Taylor, 4 Prospect Street, Blacktown. Meet from 10 a.m. with formal meeting to commence at 11 a.m. The main topic of the day is Peter's recent trip to New Zealand and he will show slides and discuss some of the fern species seen there - many are familiar to us. Bring lunch and afternoon tea. Contact the Taylors on 621.5840 if you have any enquiries regarding directions.

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SATURDAY 23rd APRIL 1988: OUTING MT. TOMAH

A Saturday outing in order to avoid the hassle of the Sunday afternoon slow traffic going back to Sydney. Meet at 10.30 a.m. at the Visitors Centre inside the Mt. Tomah Botanic Gardens. Note that there is an admission fee of \$2 per car. The morning will be occupied by inspecting the Gardens. After lunch we plan a short drive to a nearby fern gully. Any enquiries to Peter 625.8705.

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SUNDAY 22nd MAY 1988: MEETING AT WARRIMOO

At the home of Betty and Sam Jack, 16 Railway Parade, Warrimoo. Meet from 10 a.m., formal proceedings from 11 a.m. with meeting and study completed before lunch leaving time to inspect the Jack's award winning garden. Bring lunch and afternoon tea, Betty advises that she will supply hot water. Any enquiries for directions phone Betty or Sam on (047) 536491.

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SUNDAY 19th JUNE 1988: OUTING GOSPERS CREEK

Meet at 9.30 a.m. for 10 o'clock sharp start from Mountain Lagoon. Directions from Sydney, turn right just as you reach Bilpin on the Bells Line of Road and proceed along Mountain Lagoon Road which is sealed most of the way. Moderately easy walk to Gospers Creek, carry lunch in back pack. Any enquiries for directions phone Peter 625.8705.

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SOUTH EASTERN QUEENSLAND REPORT

The first get-together of the Group is scheduled this month (March). Irene Cullen has advised that an active year is planned. We hope that all functions are well attended. The following meetings have already been arranged:

SUNDAY 6th MARCH 1988: 9.30 a.m. STUDY: Pellea, Doryopteris, Paraceterach and Pleurosorus. Venue: Gwen and Ray Norris^T, 32 Oakridge Street, Burbank

SUNDAY 10th APRIL 1988: 9.30 a.m. meet Joyce and Alan Wards, Fahey Road, Mt. Glorious for excursion to Joyner's Ridge Road.

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DEADLINE FOR CONTRIBUTIONS

We are always pleased to received items for inclusion in our Newsletter. For our June 1988 issue contributions are required by no later than 15th May 1988.

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POLYSTICHUM PROLIFERUM (R.Br.) Presl.

Geoff Butler



Family: Aspidiaceae

Derivation: *Polystichum* from Gk. *polus*, many; and *stickhos*, a row or line; (referring to the arrangement of the sori). *Proliferum* from *prolificus*, meaning to bear progeny as offshoots (referring to the plantlets on the tips of fronds).

Common Name: Mother Shield Fern

Varieties and Forms: Very consistent over its range.

Growth Habit: A coarse, leathery fern of tufted habit with a very vigorous rhizome which becomes trunk-like with age.

Height: 20cm - 1m.

Spread: Usually around 30-40cm. Individual fronds can reach up to 1m long by 30cm wide.

Natural Distribution: Basically on the tablelands and ranges of Eastern NSW, Victoria and Tasmania. Reports for Qld and SA are dubious.

Habitat: Forests at higher altitudes and in sheltered sites in more open situations eg around the bases of rocks and in protected crevices in alpine areas.

Climatic Tolerance: Will tolerate very cold temperatures and frost in an open situation.

Propagation: Spores can be used with some difficulty. The easiest method is to peg down the young plantlets that form on the ends of the fronds. Once roots develop they can be detached from the parent plant, grown on and then planted.

Additional Comments: This fern is very hardy and adapts to most soil types. Soil should be moist and it will do well in full sun to heavy shade. Large colonies of plants can form due to the plantlets that form on the ends of the fronds. The fronds are a light green when young and turn a very dark green. There are brown hair-like scales on the frond stems that contrast with young fronds.

(The above description of the Mother Shield Fern taken from S.G.A.P. Canberra Newsletter).



Helga

Our thanks to Helga Alcock of S.G.A.P. Mackay Branch for this fine sketch of Blechnum cartilagineum var tropica. Found in North Queensland this is a diminutive form of the common Gristle Fern. At least one Sydney member is known to have it growing well in a pot.