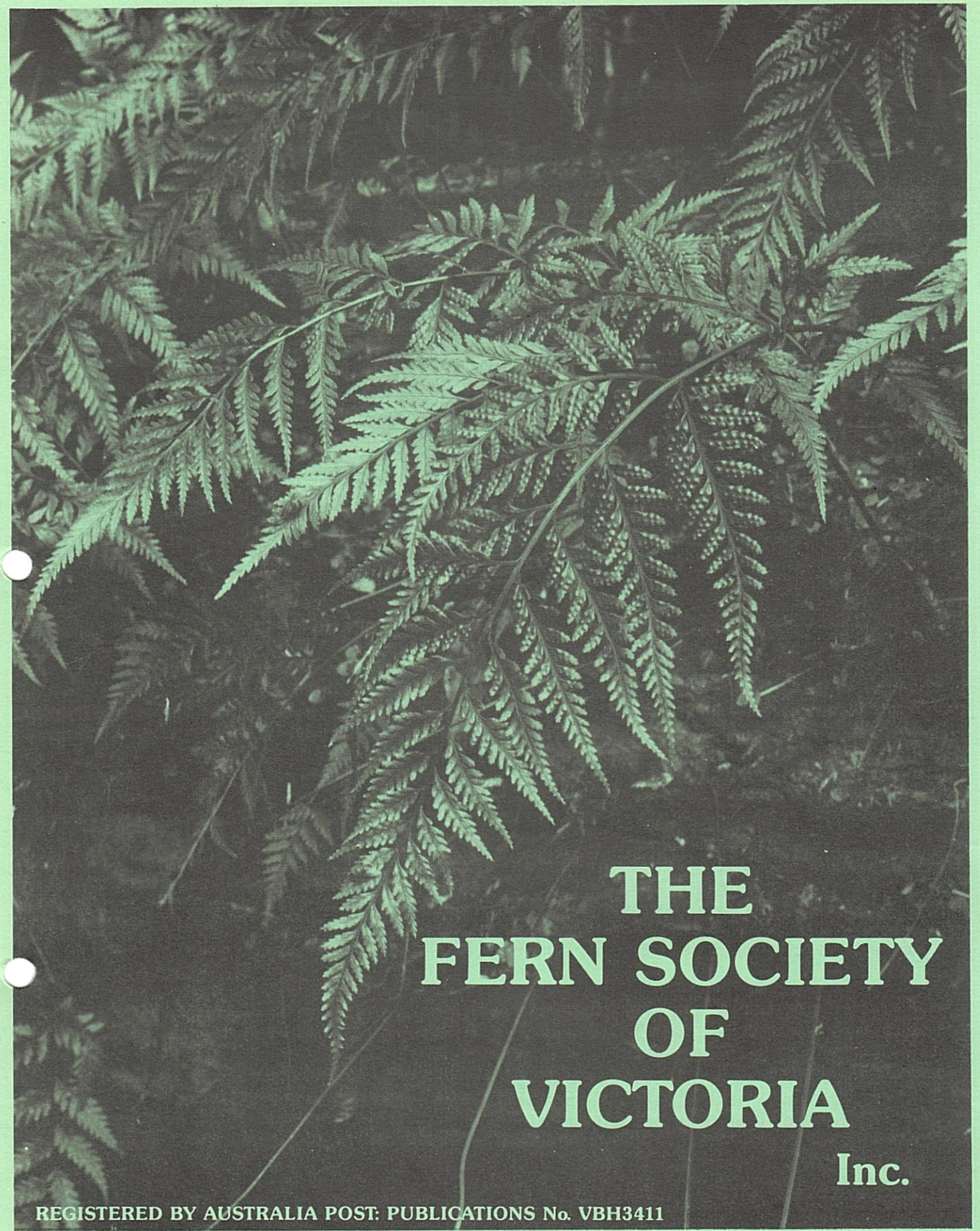

THE FERN SOCIETY OF VICTORIA Inc.

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NEWSLETTER

VOLUME 15, Number 4, May 1993

FERN SOCIETY OF VICTORIA Inc.

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PRESIDENT'S MESSAGE:

Last month's meeting went very successfully. Don Fuller gave a well-prepared and well-presented talk on the ferns of Lord Howe Island with a good selection of slides. Thank you Don; we will keep you in mind for future talks. The special fern sale session was also quite successful. Seven members brought along ferns for sale and turnover for the evening was $458 with about $68 commission going to the Society. Thank you to all the sellers and buyers who both contributed to the success of the evening.

I would remind all that any member can bring along ferns for sale to any of our meetings - there is no need to wait for a special sale night. The more people offering ferns for sale the better; it all adds to the value of the evening. Persons bringing along ferns for sale will normally be responsible for handling their own sales, and the 15% commission to the Society still applies.

Our meeting this month will feature Chris Goudey, who will talk about climbing ferns, an interesting topic which we have not covered before. This group of ferns is the fern competition category this month. There are quite a few ferns which will climb, some of which we do not normally think of in this category. The obvious ferns are the Lygodiums, but just looking at the trunks of my Dicksonia antarcticas I note the following ferns climbing either up or down - *Rumohra adiantiformis*, *Polypodium formosanum*, *Pyrrosia confluens* and *P. rupestris* , *Davallia mariesii*, *Nephrolepis cordifolia*, *Microsorum diversifolium* and *M. scandens*. Other climbing ferns which come to mind are *Arthropteris tenella* and *A. beckleri*, some Blechnums, *Stenochlaena palustris*, *Selaginella wildenovii*, *Asplenium prolongatum*, and filmy ferns - and you may think of some others. Please bring along any you think may fall into the category of a climbing fern.

It has been decided to alter the fern competition slightly. Certificates will still be awarded to the ferns adjudged first, second

(continued opposite)

NEXT MEETING

DATE: Thursday, 20th May, 1993.

TIME: From 7.30 p.m.

VENUE: The National Herbarium, Royal Botanic Gardens, Birdwood Avenue, South Yarra. (Melway Directory Ref. 2L A1)

TOPIC: **CLIMBING FERNS**

SPEAKER: **Chris Goudey**

MEETING TIMETABLE

7.30 p.m.	Pre-Meeting Activities:- Sales of Ferns, Spore, Books and Special Effort Tickets ; Library Loans.
8.00 p.m.	May General Meeting
8.20 p.m.	Topic of the Evening
9.30 p.m.	Fern Competition Judging Fern Identification and Pathology Special Effort Draw
9.45 p.m.	Supper
10.00 p.m.	Close.

FERN COMPETITION: The category for this month is a climbing fern (see President's Message for suggestions on species).

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PRESIDENT'S MESSAGE: (continued)

and third. However, all persons bringing along a fern will receive a ticket in a special draw with the winner presented with a fern from Chris Goudey's table. The main aim of the fern competition is to encourage members to bring along ferns and the special draw will give all participants an equal chance of winning a fern. Please give it your support.

There have been no ferns brought along for the Fern Table segment of the last few meetings. Everyone is welcome to use this service which is provided for the identification of unknown ferns, diagnosis of problems and for display and discussion of ferns which may be of interest to other members.

Neither have we received any contributions to the Suggestion Box for some months. This is available at all meetings to receive suggestions on ways to improve any aspect of the Society's operations and members who cannot attend meetings are invited to send contributions by mail.

Regards, Barry White

SPEAKER REPORT - GENERAL MEETING - 18TH MARCH, 1993

(Continued from April Newsletter)

HANGING BASKETS

by Doug Thomas

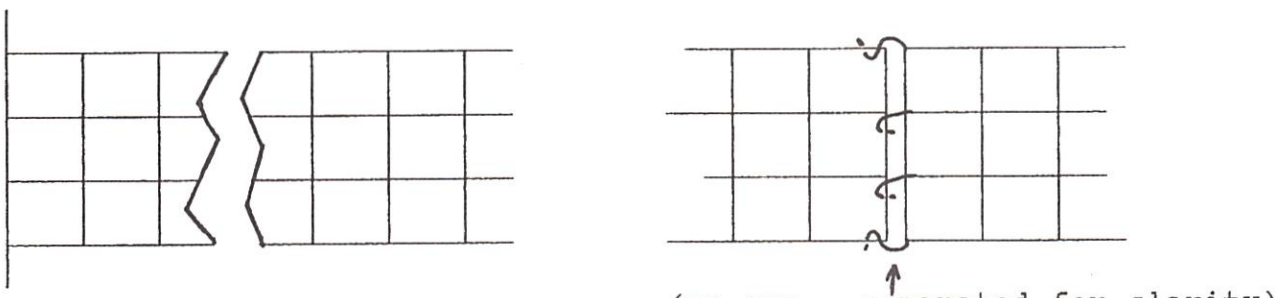
Doug demonstrated for us a novel method of making hanging baskets from welded wire mesh. This method was developed some years ago by the late Albert Jenkins, a foundation member of our Society and later an Honorary Life Member, who delighted in experimenting with all aspects of fern culture and sharing the knowledge gained with his fellow members. Doug has not purchased a single wire basket since he began using this method himself.

The grade of weld-mesh wire used is governed by the size of basket required: 25 mm square mesh is appropriate for the average 250-300 mm diameter basket, with 13 mm square for smaller sizes and 50 mm square for large ones. This material is readily available at most hardware stores in rectangular as well as square mesh.

The first step is to cut a rectangular strip of the mesh with length equal to the top circumference of the finished basket and width sufficient to form the curved "sides" (a flat bottom is fitted later). The actual length should be counted off in mesh openings to give a number divisible by three. This will ensure that the basket is in balance when it is later fitted with three hanging wires.

At one end of the piece the last crosswire is allowed to project about 15 mm past the lengthwise wires on both sides, and at the other end the lengthwise wires are cut to protrude a similar distance past the cross wire (see diagram below). All other cross and lengthwise wires are trimmed off flush.

The ends of the strip are then brought together to form a cylinder and the protruding lengthwise wires bent around the cross wire of the opposite end to hold the two end crosswires snugly together without overlapping. The protruding cross wires are then bent around the adjoining lengthwise wires of the opposite end to hold the lengthwise wires in alignment at the join. The bent wires are then brushed with spirits of salts and the joins soldered.

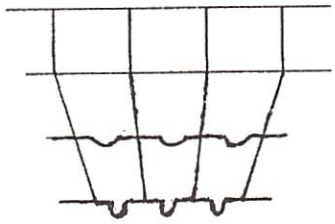


(no gap - separated for clarity)

The next step is to form the curved shape of the basket by progressively shortening the lengthwise wires with a crimping tool. Doug used a tool made by adapting an old leather-punch pliers but ordinary pliers could probably be adapted successfully.

Start with the bottom wire and crimp every second mesh downwards; then continue and crimp the alternate meshes on that wire. The crimping

tool alone will not close the mesh up sufficiently for the lowest parts of the basket. Side cutters or other small pliers can be used to squeeze the crimped sections more tightly. Move up the rows, crimping the lengthwise wires as required to develop the desired shape for the basket.



At the top of the basket, first select the places where the three hanging wires will be fitted and crimp the wire here upwards to locate the hangers. Then crimp the rest of the top wire lightly to shape it slightly inwards.

For the bottom, cut a disc of mesh of an appropriate size, fasten it in place by bending the protruding wires around the lowest of the crimped wires and then solder.

Old wire coat-hangers are perfect for making the hanging wires and also the hook at the top (form it around a piece of pipe and solder to hold in place). A useful tip is to solder the hook to the hanging wires after they have been lined up, so that the hook remains vertical. This makes it much easier to guide the hook when hanging the basket up with one hand or overhead.

Doug prefers coconut fibre for lining baskets. After the fibre is placed in position a disc of plastic onion bag is fitted at the bottom and up the sides of the basket; the fibre is turned in lightly over the top of the onion bag to make sure the soil does not wash through. The onion bag helps to improve the spread of water through the mix when the plant is watered rather than have it run off down the sides or all come out at the centre of the bottom. It also retains the growing medium when the coconut fibre eventually rots at the bottom.

The potting mix Doug uses for baskets consists of
- 3 parts well-rotted leaf mould (Oak, Pin Oak and Liquidambar, shredded after collecting)
- 2 parts Cymbidium potting mix from Propine (contains a fair bit of coarse sand)
- 1 part tree-fern fibre (makes his own by shredding old trunks)
- 1 part sandy loam
- 1 part sifted well-rotted fowl manure (from fowls that are kept on straw).

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A report on the talk and slide show to the April meeting by Don Fuller will be included next issue.

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PROTECTION OF SPOROPHYTES

In the article on growing from spore by Debbie Lamb of the San Diego Fern Society, which was published in the last Newsletter, reference was made to the use of a product called 'Cloud Cover' to protect newly transplanted sporophytes from dehydration.

Les and Rosemary Vulcz of 'Mr Fern' Nursery at Beech Forest have phoned to advise that this product or an equivalent is available here

and is sold under the trade name 'Envy' (*how did they dream that one up?*) by Fertool Distributors.

Les and Rosemary have obtained some of this product for trial on sporophytes and will let us know their results in due course.

Fertool advise that they have been distributing this product for about six months to the nursery trade, where it is used for such purposes as protecting newly-propagated cuttings (to assist root development), shifting deciduous trees when in leaf, frost protection and shipping plants. It is sold almost exclusively as a commercial product but is available retail from Dingley Fern Market (see back cover). Price should be around $18 for a 1-litre bottle. The liquid is diluted about 20:1 and applied with an atomising spray.

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MURRINDINDI EXCURSION

The Society will be holding an excursion to the Murrindindi area, just north of Melbourne, on Sunday 30th May.(The only AFL football that day is the Bears versus the Crows at the Gabba - of no interest to parochial Victorians.).

We will meet at the Toolangi store, Melways Directory Map 282, ref. R12, at 10 am. The easiest route to Toolangi is through Yarra Glen, but it may also be reached through Healesville or Kinglake or down through Glenburn.

It is proposed to go via Sylvia Creek Road to near the junction with Hardy Creek Road, where there is a special fern walk which I am informed is very nice. We will then proceed on to the Murrindindi Cascades picnic area. From the picnic area a track leads down and across a series of footbridges over the river at the base of the cascades. The scene is framed by beautiful trees including Myrtle Beech and Sassafras, as well as ferns and mosses. The return walk is about 600 metres and normally takes about 20 minutes.

The next stop will be the Wilhelmina Falls picnic area. The walk to the Falls is along a well-graded track, rocky in places, and will take about two hours for the 3km return trip. There are fewer ferns in this area but the walk is through attractive bushland and I am told that there are some good patches of *Sticherus* at the top of the 75-metre falls.

From the Wilhelmina Falls you may wend you own way home. The easiest route would be to continue along to Devlins Bridge and down through Glenburn. Those going near Kinglake should take the opportunity to call in at Kevin and Gloria Tinker's nursery which is about 1km west of the turnoff to the Kinglake National Park and Masons Falls, and is on the right hand side as you head towards Kinglake West.

It is proposed that the Society build up information on the fern species in the various areas of the State. Therefore, we will be endeavouring to get as accurate information as possible on the ferns observed during the trip. A copy of Duncan and Isaac "Ferns and Allied Plants of Victoria, Tasmania and South Australia" and a hand lens will be useful tools.

Barry White

The following article from "Austrobaileya" 2(4): 360-364 (1987) is that mentioned in the footnote to the March report of Bill Taylor's talk on Adiantums. It is copied by kind permission of the Editor. While the technical language of the paper requires careful reading, it gives an interesting insight into the methods used in deciding the classification of a fern, in this case between a separate species or a variety.

REDISCOVERY AND STATUS OF *ADIANTUM WHITEI* BAILEY (ADIANTACEAE)

P.D. Bostock

Botany Department, University of Queensland, St Lucia, Qld 4067

Summary

***Adiantum whitei* Bailey (Adiantaceae), formerly recorded from a few localities in south-eastern Queensland, is now known to have a wider range in north-eastern Australia. The receptacle of this taxon bears thick-walled trichomes, a condition not previously reported for the genus. *A. whitei* is reduced to varietal status under *A. hispidulum* Sw.**

The original collections of *Adiantum whitei* were from Kenmore, a western suburb of Brisbane. Other contemporary collections came from the nearby suburbs of Indooroopilly and Enoggera, Lawnton (One Mile Creek) *ca* 16 km north of Brisbane and Maryborough *ca* 215 km north of Brisbane. The last collection (other than cultivated specimens) appears to have been from Kenmore in December 1931 (AQ142926, BRI).

Recent collections of *Adiantum* taxa include a robust tripinnate fern collected 9 km SW of the type locality (State Forest 494 Moggill, Bostock 190, BRI) which matches one of the syntypes of *A. whitei* (Kenmore, May 1915, White AQ24496 (BRI). A collection from *ca* 6 km NE of the type locality was subsequently propagated from its spores (R.Hill, pers.comm.). The descendants have been distributed under the horticultural names *Adiantum* aff. *whitei* and *Adiantum* sp. 'S.E. Qld'. More recently *A. whitei* has been found to be common along creeks in the southern and western parts of Brisbane and specimens now in cultivation in Brisbane are reputed to have come from as far afield as Mt Spec *ca* 1500 km north of Brisbane (C.Ritchie, pers. comm.).

A revised description of *A. whitei* is given here, based on specimens examined by the author.

Rhizome short-creeping, semi-erect, stoloniferous; scales concolorous, with entire margins and acuminate apex. Fronds approximate, occasionally remote, to 60 cm long. Lamina to 30 cm long, 20 cm broad, triangular, 2- to 3-pinnate, herbaceous to coriaceous. Rachides invested with antrorse red-brown hairs. Pinnae numerous, narrow-triangular, simply pinnate in their apical half. Ultimate segments symmetric and cuneate-flabellate becoming dimidiate and rectangular to trapeziform towards apices of pinnae and lamina; distal margins shallowly lobed, dentate when sterile; segment surfaces invested with numerous short pale trichomes (to *ca* 0.4 mm long) and a few similar but longer ones, denser abaxially. Indusia crowded, 1 to 4 per lobe, oblong to subrectangular, joining the segment margin proper at a narrow sinus, bearing on their outer surface numerous dark brown uniseriate thick-walled trichomes, which are also scattered among the sporangia. Spores with minutely granulate perine adhering rather loosely to the exine. **Fig. 1.**

Recent authors (Jones & Clemesha 1981, Elliot &.Jones 1982, Goudey 1985) have speculated that *A. whitei* is a hybrid. Jones and Clemesha (1981) and Goudey (1985) proposed *A. hispidulum* Sw. and *A. formosum* R.Br. as putative parents. Little evidence is offered in support of this statement, although Goudey (1985) lists a number of morphological characters of *A. whitei* which are common to one or other of these species.

In his original description and accompanying illustration, Bailey describes the rhizome of A. whitei as 'creeping'. Investigation of the new collections has shown that the 'creeping' rhizome is a stoloniferous branch that on occasion bears fronds spaced a few centimetres apart. The apices of mature stolons bear a tuft of fronds indicating reversion to a short-creeping rhizome. In this respect, the rhizome ramification of *A. whitei* is similar to that of both *A. hispidulum* and *A. aethiopicum* L., another taxon

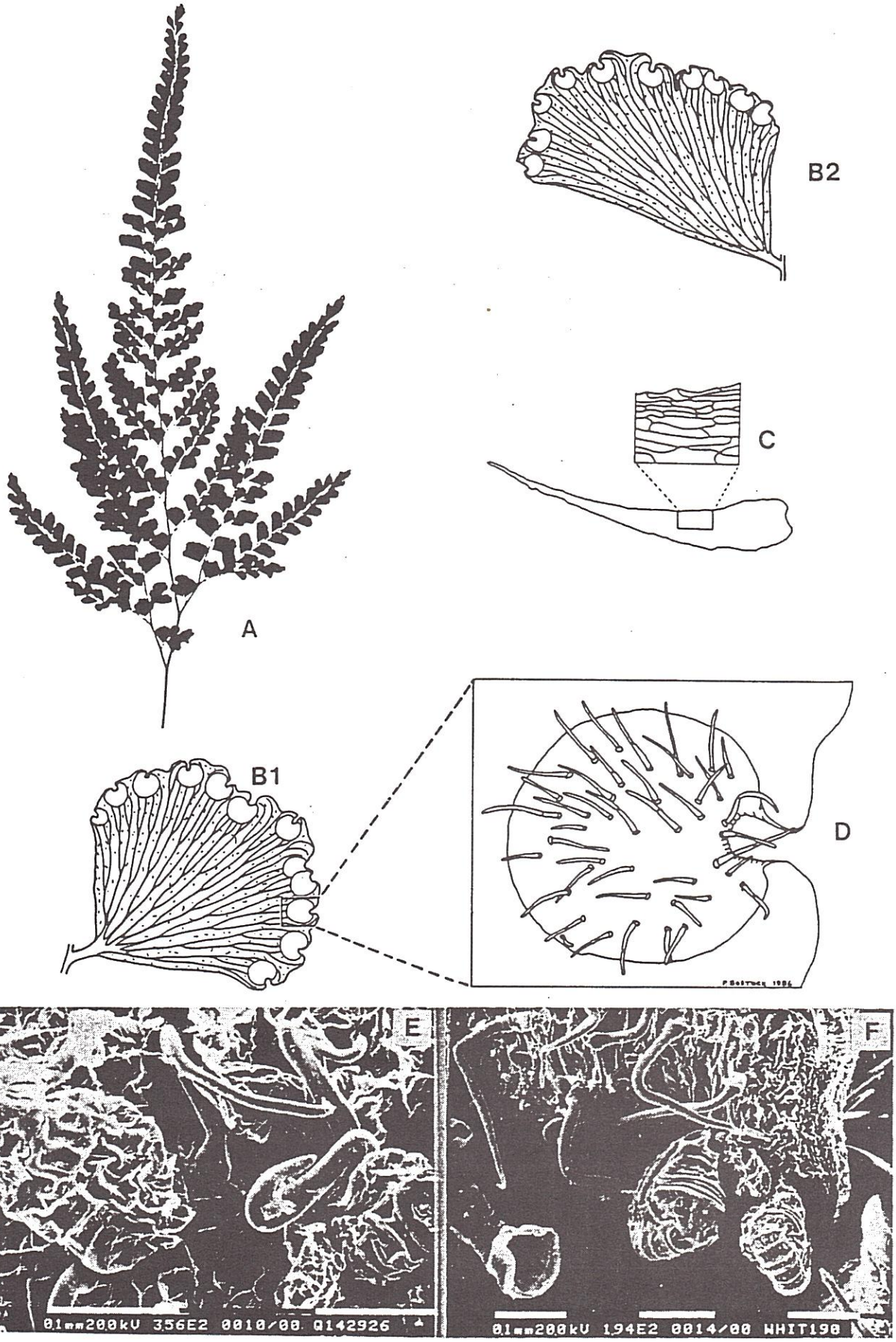

Fig. 1. *Adiantum whitei*: A. silhouette of frond (Bostock 218) × 0.4. B. ultimate segments (middle of frond) (Bostock 190) × 3.5. C. indusium (Bostock 190) × 40. D. rhizome palea (Bostock 246) × 35. E & F. scanning electron micrographs of abaxial indusial surface. E. Blake, Dec 1931, AQ142926. F. Bostock 190. (scale for E and F indicated on plates.)

widespread in eastern Australia, but differs markedly from the robust much-branched system of *A. formosum*. The symmetric and cuneate-flabellate ultimate segments of *A. whitei* are reminiscent of those of *A. formosum* and *A. aethiopicum*. However, *A. hispidulum* also bears segments of a similar form, as in the small accessory pinnae between the major bifurcations of the rachides in pedate forms, or in many (sometimes the majority) of the ultimate segments in pinnate forms. *A. hispidulum sens. lat.*, which is found from eastern Africa, through India and Malesia to Australia and the western Pacific (Parris 1980), is a variable taxon. The form which occurs in drier areas in north-eastern Australia has pedate, sub-pedate or pinnate-bipinnate fronds, with texture and indumentum of the lamina as described above for *A. whitei*. It is this form which occurs in areas where *A. whitei* has been collected, and which is referred to in the remainder of this discussion. The range of frond forms which occur in *A. whitei* and *A. hispidulum* are shown as silhouettes in **Fig. 2.**

Indusia of *A. whitei* (**Fig. 1C**) are morphologically identical to those of *A. hispidulum* in shape, location on the segment and nature of the trichomes investing the outer surface. Additionally, most specimens of *A. whitei* have been found to possess hook-shaped trichomes among the sporangia (**Fig. 1E–F**). Indusia of *A. hispidulum* occasionally bear trichomes just under their margins but trichomes have not been found to arise from receptacular tissue. The genus *Adiantum* is usually recorded as non-paraphysate (e. g. Tryon & Tryon 1982), although Nayar (1961) recorded club-shaped paraphyses for material identified as *A. tenerum* Sw. The observation of receptacular trichomes reported here is the first for the genus, and may be regarded as diagnostic of the taxon regarded as *A. whitei*.

A. whitei and *A. hispidulum* cannot be separated by using any of the following characters: rhizome scales (*A. whitei*, **Fig. 1D**); lamina texture; rachis indumentum or texture; spore ornamentation; rate of spore germination (tested at room temperature (12–24°C) with indirect natural lighting). They have similar ecological requirements, and are generally found in close proximity, although *A. whitei*, which grows mainly in the vicinity of watercourses appears to be less tolerant of dry conditions than *A. hispidulum*, which is often found in relatively sheltered places considerably distant from streams.

On the basis of the above evidence, *A. whitei* Bailey is here reduced to the status of a variety of *A. hispidulum* Sw.

Adiantum hispidulum Sw. var. **whitei** (Bailey) P.Bostock **stat. nov.**

Adiantum whitei Bailey, Queensland Agric. J., n.s. 4: 39 & t. 5 (1915). **Lectotype** (designated here): Kenmore, Qld, May 1915, *White* AQ24496 (lecto: BRI; isolecto: NSW).

Specimens Examined. Queensland. MORETON DISTRICT: Kenmore, May 1914, *White* AQ142924; Kenmore, Jul 1914, *Young & White* AQ142928; Enoggera, May 1916, *White* AQ142927; Brisbane R., Indooroopilly, Feb 1916, *Young & White* AQ142929; One Mile Ck, Lawnton, *Blake* AQ142925; Kenmore, Dec 1931, *Blake* AQ142926; Maryborough district, *Young* AQ142923; University Bushhouse [Brisbane], Dec 1937, *Goy* AQ142930; S.F.494 Moggill, Brisbane, *Bostock* 159, 184, 189, 190, 218, 246, 252; garden plant, The Gap, Apr 1986, *Bostock* 225; cultivated plant ex Mt Spec, NNW Townsville, Apr 1986, *Ritchie* s.n.; cultivated plant ex base of Mt Petrie, Brisbane, Apr 1986, *Peach* s.n. (all BRI).

Agamospory in the *A. hispidulum* complex

The source of taxonomic confusion in many fern species may be shown to result from agamospory. Thus the spores contain the unreduced parental chromosome complement and sporophytes arise directly from gametophytic tissue. Archegonia are absent from the gametophytes although functional antheridia are usually present (Walker 1983). This is the situation with *Adiantum caudatum* L. *sens. strict.*, which is a member of a complex consisting of at least seven taxa (Lovis 1977).

Agamospory has also been reported as the normal state in *A. hispidulum* (Manton & Sledge 1954, Abraham et al. 1962, Ghatak 1977, Bidin 1983). The sole exception is Brownlie (1957, 1965) who reported only meiotic chromosome counts. At least 4 cytotypes have been identified in *A. hispidulum* (Walker 1983), but detailed studies linking morphology and cytology in the taxon are not available.

Fig. 2. Silhouettes (not to scale) showing frond forms in *Adiantum whitei* and *A. hispidulum* in Queensland: A–C. *A. whitei sens. str.* A. Bostock 190. B. Bostock 218. C. cultivated ex Mt Spec, NNW of Townsville, Richie s.n. D–H. *A. hispidulum sens. lat.* D. Bostock 235. E. Bostock 251. F. Bostock 245. G. Bostock 250. H. Bostock 151.

In all investigated cases of hybrids between apomicts and sexual species (where the apomict must be the male or antheridial parent), the offspring have been apomictic (Walker 1979, 1983, 1985). The production of fertile spores by *A. whitei* is not unexpected, even if the taxon should prove to be a natural hybrid between *A. hispidulum* and another (sexually reproducing) *Adiantum* taxon. Walker (1985) commented on the ability of agamosporous taxa to build up extensive agamic complexes in this manner and the possibility that *A. whitei* has its origins in such an event (or events) cannot be discounted.

The numerous morphological similarities between *A. hispidulum* and *A. whitei* indicate a common ancestry, but the latter taxon is sufficiently distinguished by virtue of its frond dissection and receptacular trichomes to be given varietal status.

Acknowledgements

I wish to thank the Society for Growing Australian Plants, Queensland Region, Inc. (SGAP) for publishing a request for material of *A. whitei*; the Queensland SGAP Fern Study Group for their donations of cultivated specimens; Rod Hill of Frankston, Victoria for his invaluable field observations and freely offered information; the Director of the Queensland Herbarium for permission to study the *Adiantum* collection; the Queensland Department of Forestry for permission to collect in forestry reserves, and Prof. H.T. Clifford and Mr. P.I. Forster (University of Queensland) for commenting on drafts of this paper.

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APRIL FERN COMPETITION

The category for the fern competition for the April Meeting was a fern endemic to Lord Howe Island. Only three plants were entered and they were declared equal first. Congratulations to

Barry White	*Asplenium milnei*
Don Fuller	*Asplenium australasicum* - Lord Howe form
Dorothy Forte	*Lastreopsis nephrodioides*

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SPECIAL EFFORT WINNERS

April General Meeting

Joy Horman

John Hodges

Mavis Potter

Ray Harrison

Jean Trudgeon

* * * * *

Opinions expressed in articles in this Newsletter are the personal views of the author and are not necessarily endorsed by the Society.

BUYERS' GUIDE TO NURSERIES

VICTORIA:

Andrew's Fern Nursery / Castle Creek Orchids - Retail.
Goulburn Valley Highway, Arcadia, 3613. (20 km south of Shepparton).
Large range of ferns and orchids for beginners and collectors.
Open daily 10 am - 5 pm except Christmas Day. Ph: (058) 26 7285.

Austral Ferns - Wholesale Propagators. Ph: (052) 82 3084.
Specialising in supplying retail nurseries with a wide range of hardy ferns; no tubes.

Dingley Fern Market - Wholesale and Retail. Ph: (03) 551 1868.
233 Centre Dandenong Road, Dingley, 3172.
Specialising in Ferns, Palms, Indoor Plants, Orchids and Carnivorous Plants. Open daily except Christmas Day.

Fern Acres Nursery - Retail.
Kinglake West, 3757. Ph: (057) 86 5481.
(On main road, opposite Kinglake West Primary School).
Specialising in Stags, Elks and Bird's-nest Ferns.

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

R. & M. Fletcher's Fern Nursery - Retail.
62 Walker Road, Seville, 3139. Ph: (059) 64 4680.
(Look for sign on Warburton Highway, 300m east of Seville shopping centre). Closed Tuesday, except on public holidays.

Ridge Road Fernery - Wholesale and Retail.
Weeaproinah, 3237. Ph: (052) 35 9383.
Specialising in Otway native ferns.

Viewhaven Nursery - Wholesale and Retail.
Avon Road, Avonsleigh (near Emerald), 3782. Ph: (059) 68 4282
Specialists in Stags, Elks, Bird's-nests and Native Orchids.

NEW SOUTH WALES:

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

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

Marley's Ferns - Retail.
5 Seaview Street, Mt. Kuring-gai, 2080. Ph: (02) 457 9168.

QUEENSLAND:

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