



ASSOCIATION OF SOCIETIES FOR
GROWING AUSTRALIAN PLANTS

RAINFOREST STUDY GROUP

GROUP LEADER

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SGAP NSW ANNUAL SHOW - CAN WE HELP?

Betty Rymer writes

"This year the SGAP show will be held on Sept. 17th - 23rd as part of Spring in the Gardens at the Royal Botanic Gardens Sydney. Displays will be set up on Sept 15th & 16th. We will be selling rain forest plants and want to mount a small display of more mature plants to try to encourage people to buy them. I wondered whether your members in the Sydney area could assist us in providing suitable plants for display. Any help your group can give during the show to talk to the public about growing these plants would be appreciated. I would be happy to display any information about your study group".

Would members able to help either advise me, or Betty directly on (02) 654-1831. As we may sell plants to add to group funds, anyone who has suitable surplus plants to donate please let me know ASAP. The venue is unavailable to private vehicles, so plants for sale will need to be in tubes or small pots as buyers have to carry them to public transport.

GROUP LEADER'S REPORT

I've received much correspondence from you over the past few months. Some has been answered direct, others are quoted further on, and for the balance, mainly expressions of appreciation of the Group's activity, thank you very much indeed. If I had realised this amount of enthusiasm, I'd have endeavoured to become involved much earlier. Some early members have either lost interest or are unable or unwilling to pay the current subscription. After much deliberation I decided to be tough and prior to Newsletter 8 regretfully deleted 22 very unfinancial, mainly Sydney members. This issue has another 25 removed leaving a core of 79 members to build on. We could do with a few more people for financial viability though.

FINANCIAL SUMMARY

Despite the statement in Newsletter 5 "groups bank balance is presently pretty healthy as our outgoings have been fairly limited over the past few months", there doesn't seem to be any money available. I asked the two previous leaders to sort out any problem but they have to date not given me the courtesy of a reply. Very disappointing. On this basis, transactions from 6th February 1990 to date are:-

INCOME	\$	EXPENDITURE	\$	***
Subscriptions - current	221	Printing & Stationery	287	A special thank you to the 28 members who included a donation with their subscription. This has really added to our funds and is deeply appreciated.
Subscriptions - in advance	10	Postage	125	
Collections from D. Thomas	40	Sundry	16	
*Members donations	115			
From March meeting	70			
SGAP NSW subsidy (promised)	<u>456</u>		<u>428</u>	

Balance of \$28. is deposited with State Bank of NSW, Eastwood

NEW MEMBERS

A warm welcome to the following people who have joined since March. Carol Bentley - Lindfield

Mal Cullen - Tullymorgan	Alanna Moore &	Janet Price - Tullymorgan
Tom & Pip Gibian - Dural	John Blatch - Nimbin	Helen Tranter - Robertson
Sam Jack - Warimoo	Alex Palmer - Drummoyne	Evan Weatherhead - Blaxland
Neil Marriott - Stawell, Vic.	Jan Parkin - Bellingen	Shona Sadlier - Epping

SEED BANK CURATOR is DAVID THOMAS, 9 Miriam Rd., Denistone, 2114.

To date there has been little activity in seed exchanges, so we need a few ideas on getting this off the ground. Possibly we need some sort of register of people who can supply particular species, tied to a list of requests from members. Bear in mind that much seed must be sown fresh so it won't be possible to always maintain reserves. A method of defraying postage costs will be required.

OUR MARCH MEETING

A pleasing result with 18 people attending, six of them being new members. Ideas on our future direction were discussed. These suggestions should broaden our horizons, so lets try them!

Meetings in the Sydney area will be held three or four times a year, with adequate notice to allow non-local members the opportunity to plan ahead and so join us on these activities.

It was again urged that district meetings be arranged where a group of members is concentrated e.g. Melbourne, northern NSW, Brisbane, maybe Rockhampton. Someone from those areas might organise an appropriate venue using the membership list enclosed, advising the editor of this for publicity in the newsletter, and the outcome of meetings held.

Maybe Christmas or Easter would be a suitable time for a campout in an appropriate location in northern NSW to bring together Queensland and southern group members and other interested people for a wider exchange of ideas, and as an educational/social gathering.

MEMBERS' CORRESPONDENCE

Dave Vance of Redlands Bay has about 7 acres and is currently converting a small area of scrub to rain-forest species and is glad that the group is going again.

Margaret Smith has recently had a major operation and we all wish you a complete and speedy recovery. An article on her experience in growing rainforest species is promised in the near future.

One of our senior members - Mary Zillman - wrote some very kind words in appreciation of the previous newsletters. Mary is not very active now, but still enjoys the shorter walks, particularly around Cairns and is keeping her eye in by identifying the bush plants. She reads all the material on plants and rainforest areas that she can obtain. (I hope that the list of available publications can give you some more ideas). Mary has been establishing her own small rainforest over the years and last Spring was thrilled when more than 20 varieties flowered. That's a great effort and very satisfactory.

Ralph Woodford advised that a workshop on regeneration was held at Coffs Harbour on 7th and 8th April and will send in a report on this later on. He will also keep us advised of the results of some rain-forest regeneration in northern NSW.

Peter Thompson of Seaforth is the National Parks ranger for Cape Hillsborough and several smaller parks nearby. If members visiting the area contact him, he can provide some interesting places to visit. (We were there in mid 1988, thoroughly enjoying our stay in that most picturesque area, and were absolutely enthralled with the plants and scenery at "Hidden Valley" where a self guiding walk is established). I will ask Peter if he will send a description of his area for publication.

Jan Parker and Ross MacLean are both involved in rainforest regeneration on Bellingen Island and will send more information on this later. (A brief description of this work was in newsletter No. 6, and an update would be much appreciated).

Alanna Moore and John Blatch are restoring the remaining rainforest on the edge of Nightcap National Park on the southern slopes of Blue Knob, north of Nimbin. They are studying, propagating and estab-lishing local "bush tucker" species, also researching riverine rainforest regeneration strategies with Wilson River Landcare Group's river care project, studying Lismore's Big Scrub remnants, identifying wildlife attracting species and much more! (Good on you two, sorry we were unable to make it to your place in April).

A new member from Tullymorgan, Mal Cullen, has a small nursery specialising in rainforest and other natives of the Grafton district.

Ex Sydneyite, Colleen Warner from Birdwood, has moved even further west into very wild country on the Forbes River and close to Werrikimbe National Park, a magnificent world heritage listing. Colleen has a deep interest in all aspects of rainforest ecology and is certainly in the right place to research this.

Sue Quinnell has also left suburbia and its associated pollution problems and is settling in at Yugar outside Brisbane, a priority being to re-establish rainforest on part of their property. Sue has pre-viously done work on re-establishing urban gallery rainforest and will send information on this later.

Another member with a rainforest nursery is Dave Bray of Elands, 2 hours inland from Taree. Visitors are welcome anytime and some interesting patches are on the property and nearby. Phone ahead for directions on 065 - 504596. Could be difficult after heavy rain. See separate item on Dave's exper-iences in growing at higher altitudes away from the coast.

Well known member, Lloyd Bird of Ipswich has wondered ever since he retired how he managed to find time to work for a living! He is presently flat out working with botanist friends on a World Wildlife Fund project and to date recording plant species presently growing in over 200 Dry rainforest sites in SE Qld, noting flowering and fruiting times and listing rare species. His main interest is locating and growing rare and endangered species to pass on cuttings and seed for others to propagate and so ensure survival by cultivation. He also collects rainforest material for overseas medical research. Keep up the good work Lloyd.

Very glad to regain contact with Norm McCarthy who forwarded details of setting up his original rain-forest, reprinted further on. Some of those plants are now 30 ft or more high with dense canopy. He recently established another 65 species nearby, these will be listed in our next newsletter. His local SGAP group has about 140 members, what a great place for rainforest enthusiasts with such a handy loca-tion to many forested areas.

REMNANT RAINFOREST OF ROBERTSON (NSW SOUTHERN HIGHLANDS) FROM HELEN TRANTER

The Robertson area was once covered by rainforest - known as the Yarrowa Brush. Most of this has been cleared but there are patches left on many properties and there is a 5 ha Nature Reserve near Robertson. Quite a few people around here are interested in the rainforest, in getting together a group of people to learn more and provide information to others in the community.

My interests are in propagating local rainforest plants so they can be available to others, planting specimens of local species on our own place and helping care for the Nature Reserve. A group of us, based on the local branch of the National Parks Association, have been removing Ivy from the Reserve under the supervision of a NPWS Ranger from Minnamurra Falls. We plan to learn enough so we can event-ually continue this on our own. We are getting together a "Field Herbarium" of pressed specimens of local species and weeds. Because of the cold winters there are not as many species here as are found in the Macquarie Pass National Park or at the base of the escarpment.

We have some trees left on our place - *Acacia melanoxylon*, *Doryphora sassafras*, *Acmena smithii*, *Nedycar-ya angustifolia*, *Pittosporum undulatum*, *Rapanea howittiana*, *Hymenanthera dentata*, tree ferns and several vines. We have planted one each of *Quintinia sieberii*, *Stenocarpus salignus*, *Backhousia mystifolia*, *Elaeocarpus kirtonii*, *E. holopetalus*, *Eucryphia moorei*, *Synoum glandulosum* and a few Coachwoods.

PROBLEM CORNER - Joyce Ward writes on *OREACALLIS PINNATA*

A magnificent tree, 20 ft high, 9 years old, gradually died last year. It had flowered prolifically annually. After its demise, I contacted another SGAP member, some 50 km away on the same range and wasn't surprised to know her two trees, also, had died. Year 1988, rainfall was 84½ inches, 1989 - 87½ inches. Prior to these two wet years, SE Qld. went through drought years. Several folk suggested parasitic fungi could be the cause of them dying but here it is not evident. The conclusion, therefore, that stress must have been the cause. It would be interesting to know the fate of other trees grown from seed. Probably life of a tree, subject to stress is why it is a problem to mature to old age. Grafting onto *Oreacallis wickhamii* might be the answer. I live on Mt. Glorious on D'Aquilar Range, Alt. 2400 ft, a basalt cap surrounded by rainforest, much the same habitat as the species natural distribution. McPherson Range to Dorrig

FUTURE EXCURSIONS/DISCUSSIONS/TOURS

24th June at Sam Jack's property, 16 Railway Pde., Warrimoo (ph. 047 536491) from 10.30 a.m. Bring your lunch, barbecue facilities are available. Railway Pde. is on the right hand side of the highway, immediately after crossing the railway line travelling west and is shown on the NRMA holiday map "Blue Mountains". Sam's property is called "Gurawin" and we should park at the end of his driveway. We will have a bumper raffle, so could you bring any spare plants?

11th August at Askania Park, Ourimbah. Margaret Olde has organised an outing for the new Menai SGAP Group and we have been invited to join them on the day. For further details and where to meet phone Margaret or Peter at 543 2242.

14th October at Carol and Trevor Deane's, 18 Coolabah Cres., Forestville from 11 a.m. (phone 451 9132) Take your lunch, afterwards we will look at remnant rainforest along Middle Creek on the Wakehurst Parkway. Maybe another swap/sale day.

A RAINFOREST TOUR IN 1991?

I'd enjoy organising something along these lines for 4 to 6 weeks. Interested members should let me know as soon as possible so that we can arrange a date convenient to the majority. The itinerary would allow people to join and leave at will, a rough outline would be a Sydney start heading north at a leisurely pace, probably averaging only about 100 K a day. There are lots to see, much mountain forest, littoral areas and even remnant lowland reserves. Overnight stops mainly in State Forests or National Parks with an occasional night in a camping ground - hot showers and general clean up. We'd probably reach the Nambour/Kingaroy area to give Queensland people an opportunity to join our convoy. Children are welcome, also interested friends of members. Birdos and botanists especially eligible.

We should travel quite cheaply - the best of both worlds - free accommodation in first class areas on most stops. Anyone not wishing to rough it can join us, renting lodgings at nearby centres and meeting us for daily excursions. Alternatively, camper vans could be hired. Late autumn is a good time for comfortable temperatures and the best seed collection opportunities, but may be wet. Early spring is a good time climatically (hopefully) and for flowering in non rainforest communities.

Anyway, don't delay, reply today.

CURRENT MEMBERSHIP

Robin Alley, PO Box 89 Kurrajong 2758	Alex Palmer, 126 Lyons Rd., Drummoyle 2047
J & M Bailey, 36 Finlayson St., Lane Cove 2066	Jan Parkin, PO Box 153 Bellingen 2454
Carol Bentley, 2 Drovers Way, Lindfield 2070	Robert Payne, 15 Mountain Ash Way Umina Beach 2257
Jo Benyon, PO Box 193 Milton 2538	Maria Pesavento, PO Box 538 Atherton Qld. 4883
Lloyd Bird, 4 Ann St., Bundamba, Ipswich Qld. 4304	Janice Price, RMB 6 Tullymorgan via Maclean 2463
David Bray, Doyles River Rd., Elands 2429	Dean Fryke, 15 Matson Cres., Yowie Bay 2228
Thomas Carlsson, Sweden.	Sue Quinnell, 8/1 Rossleigh Ct. Yugar v Samford 4520
Rod Cook, 16 Buckleys Rd., Winston Hills 2153	Geoff Rice, 21 Doreen Cr., Baulkham Hills 2153
Peter Cousens, 133A Baptist St., Redfern 2016	Shona Sadlier, 84 Chelmsford Ave., Epping 2121
Mal Cullen, RMB 6 Tullymorgan via Maclean 2463	Patricia Shearston, "Grey Gums" Fosterton Loop Rd
Phyllis Dadswell, 10 Duffield St., Gawler S.A. 5118	Jan Sked PO Box 41 Lawnton Qld.4501 Duncraig 2420.
C & T Deane, 18 Coolabah Cr., Forestville 2087	Margaret Smith, 71 Oak St., Bellbird Park 4300
Gilbert Drury, 11 Parker St., Collaroy 2097	J Stewart, 39 David St., Hampton Vic 3188
Harry Franz, MS 652 Goomeri Qld. 4601	Trevor Symons, 31 South Rd. Airport West Vic 3042
T & P Gibian, 37 Carters Rd., Dural 2158	David Thomas, 9 Miriam Rd., Denistone 2114
Lisl Grossman, 406 Blaxland Rd., Ryde 2112	P Thompson, Lot 2 Forest Hill Est. M/3895 Seaforth Q.
B & M Hacobian, 26A Emu Rd., Glenbrook 2773	Helen Tranter, 12 McGuinness Dr. Robertson. 2577.
Michael Hansford, 20 Bernborough Ave., Balwyn 3103	Dr. Beryl Turner, c/- PO Bungella Qld. 4757
Elwyn Hegerty, 5 Jenkinson St., Indooroopilly 4068	David Vance, Lot 18 Zipf Rd., Redland Bay Q.4165
H & D Hoy, 12 Anderson St., Rockhampton Qld. 4700	Graham Walters, 14 Boronia Pde., Lugarno 2210.
Sam Jack, 16 Railway Pde., Warrimoo 2774	J Ward "Reevesdale" Fahey Rd. Mt. Glorious 4520.
D & B Jenkinson, 18 Skenes Ave., Eastwood 2122	E. Weatherhead, 63 Bellbird Cres. Blaxland 2774
N Jimmieson, 55 Foxglove St., Mt. Gravatt Qld 4122	Colleen Werner, "Frog Hollow" Birdwood 2446
Ken Jones, 9 Wyarama St., Beacon Hill 2100	J & E Wilton, 34 Buttenshaw Pl., Austinmer 2515
T & P Jupp, 51 Deborah St., Kotara South 2289	Ralph Woodford, c/- P.O. Duncraig via Lismore 2480
Marian Kearns, 22 Tarrants Ave., Eastwood 2122	Mary Zillman M/S 204 Laidley Qld 4341
Ian Kirwan, 5 Curtis Rd., Emerald Vic. 3782	Nat. Botanic Gardens, PO Box 1777, Canberra 2601
Garry Lawton, 18 Wells St., Bundaberg Qld. 4670	Belltrees Nursery, PO Box 3 Dural 2158
Dr. Geoff Long, 23 Fowler St., Camperdown 2050	WA Wildflower Soc. PO Box 64 Nedlands WA 6009
Norm McCarthy, 68 Holberton St., Toowoomba Qld. 4350	SGAP Blue Mountains PO Box 23 Glenbrook 2773
Connie McPherson, 219A Gynea Bay Rd., Gynea Bay 2227	SGAP Canberra Region PO Box 207 Civic Square 2608
Neil Marriott, Box 107 PO Stawell Vic. 3380	SGAP East Hills, 3 Baumans Rd., Riverwood 2210
A. Moore & J. Blatch "Blue Springs" Box 159 Nimbin	SGAP Foothills, PO Box 65, Boronia Vic. 3155
Ann Moran, 30 Cunningham Cr., Nambour Qld. 4560	SGAP Geelong, PO Box 387 Belmont Vic. 3216
Leonie Morgan, 13 Allens Rd., Montmorency Vic 3094	SGAP Pine River, PO Box 41 Lawnton Qld.4501
A (Tony) Morris, 9 Hampstead Rd., Dulwich Hill 2203	SGAP Qld. Inc. PO Box 586 Fortitude Valley 4066
John Mundle, PO Box 529 Hermit Park Townsville 4812	SGAP Vic. 4 Homebush Cr. Hawthorn East 3123
H & N Nicholson, Terania R/forest Nurs. The Channon	SGAP N.S.W. Region.
P & M Olde, 138 Fowler Rd., Illawong 2234	

PLANT OF THE MONTH - EUODIA MICROCOCCA, FAMILY RUTACEAE (The first of a continuing series)*

A small to medium sized tree with a fairly open crown, found in most rainforest types, from the NSW Illawarra to Maryborough Qld. Leaves trifoliate on long petioles. Masses of white flowers in dense axillary panicles in summer. Fruits, ripening autumn/winter, are capsules of 4 carpels. Each may contain a small glossy black seed, but this year we collected only about 1 seed per 8 or 10 carpels.

Cultivation Notes - A fast growing species that does best in fairly sunny situations. Our specimen thrives in an open northerly aspect, reaching 4½ m in 4 years. Flowers attract many insects, colourful beetles and wasps in daylight, but I omitted to check for night feeding species. Seed took between 6 and 8 months to germinate.

David Thomas has a quantity of fresh seed (picked mid April) for those interested. Send him your request and a small stamp addressed envelope.

* Your contributions to this segment would be most appreciated, together with the inclusion of a batch of seed for distribution, where applicable. Another theme of importance would be a comparison of distinguishing characteristics between similar species to help us to identify plants in the field. A prize of an opal chip to the next contributor on this subject!

RED CEDAR, TOONA AUSTRALIS - A HISTORY OF EXPLOITATION

The early settlers soon realised the utility of these trees and commenced an onslaught on the then plentiful supply. The timber is light in weight, deep red in old trees although often pinkish coloured in younger ones. The few trees available today are extremely valuable - \$7,000 for a quality log ensures that its use is only in high value products. It has always been prized for furniture and interior woodwork because of its rich colour, attractive finish, ease of work and durability. Many early structures have extensive cedar joinery and beautiful furniture, particularly the grand public buildings constructed by government, churches and banks. Mansions of the wealthy contained a lot of cedar, but ordinary houses used it too. In our earliest days even barns were constructed of cedar, as were fences.

The tree was generally found near the coast, from Ulladulla in southern NSW to north Qld and into New Guinea. Their strongholds were the rich alluvial soils of the lower reaches of the big rivers, but also grew on basalt soils and sheltered gorges in mixed rainforest stands.

Large scale exploitation started on the upper Hawkesbury River in 1790, export commenced in 1795. The Hunter River system was being logged in 1801, the Shoalhaven and Illawarra in 1811, Port Stephens 1815, Hastings 1828, Wyong 1830, Macleay early 1830's, Clarence 1835, Nambucca Bellingen and Richmond 1842, Dorrigo 1857, the Tweed and some bypassed inland stands in the 1860's. It took just 80 years for the then small population to decimate the resource that had taken many millenia to develop in NSW. Not to worry - plenty more further north but alas, they cut out the last big stand, on the Daintree in far north Qld in 1873. There was spasmodic production for the next 60 years or so as access to isolated forests in difficult rugged terrain was gained. Odd trees are still taken today with the aid of helicopters. When will it end?

Fortunately, there are survivors to be seen in many locations. The NSW Forestry Commission lists these places where numbers still remain and their beauty admired.

Bellingen-Dorrigo Rd - On the river flats & In Dorrigo National Park

Kempsey - Armidale Rd - the small Dyke State Forest on the Macleay river has many trees

On the Richmond River Bank - opposite Roseberry Forestry Nursery near Kyogle

Whian Whian State Forest near Lismore - Big Scrub Flora Reserve

Wyong State Forest near Wyong - In Little Jillyby Forest Reserve

Hawkesbury & Hunter Rivers - As isolated or scattered trees.

Other NSW National Parks, Nature Reserves and Forestry areas. Complete listing in the next Newsletter.

Cedars were some of the largest trees found in the rainforests of the time. Records tell of one giant near Natural Arch "Pocket Handkerchief" National Park in SE Qld that was so huge a special saw had to be imported to fell it. The 4 men involved were able to erect their tent on the stump and still had room for their fireplace on it. There they camped for the many weeks it took to cut the tree into sections small enough to transport. It was reputedly the largest Toona existing. An early NSW specimen was measured as 120 feet high, with a girth of 21 feet, 10 feet from its base. Almost 7 feet across!

Further Reading - Forestry Commission of NSW - "Red Cedar" - Govt Printer 1979 (Pamphlet No. ES-6)

FROM THE SITE OF A BRICKWORKS TO A RAINFOREST AT IPSWICH

Some of you would have seen the story in "The Australian" of 14/3/90 of member, Lloyd Bird's efforts over 30 years in creating his own 800 sq m rainforest on a steeply sloping block of clay soil. Topsoil was brought in and the trees have flourished to such an extent that some are now 30 m high and tower over his cottage. About 40 rare and endangered species are being grown. Lloyd's interest in rainforests began in the 1930's when as a boy he holidayed on the coast of sth Qld. He became very concerned when he realised that the pace of development was fast destroying large areas and many patches of rainforest, and became involved in research and protection quite a few years ago. "Gardening in Qld", March 1990 also reports on the site, with a greater emphasis on conservation.

REDISCOVERY OF AN "EXTINCT" TREE

Again, some of the group would have read in "The Australian" of 5/1/90 the excitement of finding 40 plants of *Triunia robusta* in the Sunshine Coast hinterland. They are related to the Macadamias and had not been sighted since 1900. Even 1894 it was fairly common, but in those few short years it was apparently wiped out by the needs and greed of agriculture that was barely economic for a very short time indeed. *Triunia* was found in an 18 ha patch of complex Notophyll vine rainforest, a "living museum" containing 240 species, including 14 now listed as rare or endangered. Yes, Lloyd was involved in this find also. Those who have not read the items should research filed copies of the papers, as they are quite in depth and of great interest to rainforest enthusiasts.

NOTHOFAGUS CUNNINGHAMII - MYRTLE BEECH IN VICTORIA

Although Western Tasmanian cool temperate rainforests where it frequently dominates and forms a dense single layer canopy (unlike tropical and sub tropical rainforests where multi layered structures are usual) is its stronghold, in Victoria there are a number of widely separated locations where the species has survived (or migrated?)

The Otways in the west, Tarra Valley, Wonangatta-Moroka and Baw Baw National Parks, protect the main stands. All these areas suffered badly from the bushfires of 1939, and it is only in recent times that the rainforest communities are again invading the surrounding Eucalypt forest. Typically, ancient and gnarled trees are found in gullies of blackwood, *Acacia melanoxylon*, often with an understory of native mulberry, *Hedyecaria angustifolia*, and banyalla, *Pittosporum bicolor*.

REAFFORESTATION AT DOYLES RIVER (VIA WINGHAM) FROM DAVE BRAY

Our site is at 600 m altitude with average temperatures cooler than the coast, between 10-20 frosts each winter. The rainfall is 1200 mm but very erratic, being often dry for 9 months of the year. The ground is very poor sedimentary soil. The following species have survived in the open with virtually no assistance: *Acmena smithii*, *Hymenoporum flavum*, *Backhousia myrtifolia*, *Backhousia citriodora*, *Alphitonia excelsa*, *Glochidion ferdinandi*, *Guioa semiglaucula*, *Pittosporum undulatum*, *Polyscias elegans*, *Syzygium oleosum*, *Tristaniaopsis laurina*, *Brachychiton acerifolium*, *Callitris macleayana*, *Gmelina leichardtii*, *Rhodospaera rhodanthema*, *Toona australis* and (surprisingly), *Agathis robusta*, *Alectryon subinereus*.

Species which have consistently failed here include: *Acradenia euodiformis*, *Arohirhodomyrtus beckleri*, *Synoum glandulosum*, *Pittosporum rhombifolium*, *Acacia elata*, *Syzygium luehmannii*. These failures were probably due to poor drainage.

In cultivated gardens near the house the following have been fast growers: *Hymenoporum*, *Hibiscus heterophyllus*, *Omalanthus*, *Pittosporum undulatum*, *Polyscias elegans*, *Waterhousea floribunda*, *Backhousia myrtifolia*, *Rhodamnia ribescens*, *Rhodomyrtus psidioides*, *Cordyline stricta*. The following have been quite slow in cultivation: *Trochocarpa laurina*, *Cassine australe*, *Stenocarpus sinuatus*, *Stenocarpus saligna*, *Caldcluvia paniculosa* (fast in a pot, allergic to our soil), *Sarcopoterix stipitata*.

(I have also found these to be slow in Sydney - Ed.)

WHERE DID RAINFOREST ORIGINATE?

Last century the English botanist, Joseph Hooker, considered that the "Indo Malesian" type was merely an outlier of the extensive SE Asian rainforests because of their similarity. Subsequent findings seemed to confirm his theory, from evidence of the lowering of sea levels on a number of occasions in the last 10 million odd years; allowing species migration. "Antarctic elements" including *Nothofagus* and *Araucaria* found as fossils in the Antarctic but still surviving in South America as well as here were thought to have migrated northwards.

However research by Dr. L. Webb and Mr. G. Tracey indicates different results. Australia could have well been a centre where primitive flowering plants evolved and subsequently spread to other countries that then were part of the ancient Gondwanaland before it broke up. They would have then been transported in situ on the continents as they drifted apart and only then be subjected to separate evolutionary processes. These must have been very slow because climax rainforests are said to be the most stable and diverse ecosystem on the planet hence the obvious similarity even today. Indications are that Asian and Australian rainforests are too similar to have resulted through long distance seed dispersal or from land-bridge migration. Dr. Webb found that the Western Ghats in India and our Cooktown/Ingham region share 47 genera. The distance of this separation is 8000 km, but even New Guinea has only 41 of these genera even though it has been connected with us in recent times and is close enough for genetic exchange by accepted methods of transportation. It is thought that rainforests can migrate only as a community due to the interdependence of the vegetation and its closed environment. Therefore, the actions of animals or natural processes being able to transfer the full spectrum of seeds from mature and successional species over long, or even medium distances is most unlikely.

Fossil records reveal that the previously termed Indo-Malesian group were present in Australia 80 million years before the continent approached SE Asia. Also those determined to be Antarctic species were actually here 15 to 30 million years before we separated from Antarctica. A growing number of scientists now consider the previous divisions of Australian flora into indigenous, Indo-Malesian, and Antarctic elements is not correct, and that they all in effect evolved in the same location, and there is strong evidence pointing to Australia being that source.

THE GROWING AWARENESS OF THE IMPORTANCE OF RAINFOREST

In view of this I should not have been surprised when two Jehovah's Witnesses offered me some of their tracts, one of which, "Awake" of 22/3/90 has as its leading item "Rainforests under Siege" covering 14 of the 32 pages. Coverage included "rate of loss", "who is doing it and why", "why rainforest should be saved", "effects of deforestation", "do forests have a future" and "the bounty from the rainforests".

This last segment is most revealing, it states that fully half of the world's food products are based on plants that came from rainforests. Some of these are - rice, corn, sweet potatoes, manioc (cassava or tapioca) sugar, bananas, oranges, coffee, tomatoes, chocolate, pineapples, avocados, vanilla, grapefruit, many nuts, spices, tea. Then there are numerous medicines, plus rubber, resins, waxes, acids, alcohol, dyes, fibres, gums, bamboo, rattan. Yet, less than one percent of the plant species have been examined by scientists! As one botanist was quoted "We are destroying things we don't even know exist".

Maybe other even more influential religions will alert their followers to the dangers of our current policies.

WE ARE AWARE BUT HAVE WE LEARNED?

The reason for abandoning Angkor Wat in Cambodia was because of laterisation. This happens when rainforest growing on poor quality soils that contain large proportions of iron and aluminium oxides of low nutrient value is cleared for agriculture. Initially, good harvests are obtained until the little available nutrients are exhausted by constant cropping, causing the exposed soil to become infertile, leached by the monsoon rains and eventually baked hard to form barren laterite wastelands.

About the 12th century Angkor Wat was the centre of the Kmer civilisation which constructed many magnificent temples and other buildings. A large population was supported for a time and it relied on over-intensive agriculture to survive in its isolation. This led to laterisation causing local famine and the Wat had to be abandoned within a few centuries. Disaster on a larger scale is happening in Equatorial Africa and the Amazon through the massive clearances that commenced in the 1960's.

Our own tropical sugar cane farmlands would have been affected long ago, except that uneconomic (and unsustainable) amounts of artificial fertilizer and constant mechanical cultivation are temporarily maintaining production.

"HAWKESBURY FLORA" - PUBLICATIONS OF HAWKESBURY NSW SGAP GROUP

Robin Alley has surplus copies of five 1984/85 issues and very kindly offers a set to those of us interested in general botany and related subjects. The Hawkesbury district extends from the outskirts of Sydney to the Blue Mountains, covering the catchment of a major coastal river system, of sandstone and alluvial formation with some volcanic zones. Excellent little magazines of wide interest, including items on local rainforests. If you would like these, write to Robin at P.O. Box 89, Kurrajong 2758. Postage costs are local \$1.80 and interstate \$2.50, which you would, naturally, reimburse her.

A RAINFOREST GARDEN IN THE MAKING

Norm McCarthy, Toowoomba.

A little more than 12 months ago I decided to establish a rainforest area in the garden. I had gradually collected plants from various friends and nurseries. I had even grown some from seed. The area I had available was approximately 20 metres by 30 metres and, because of knowledge gained and a greater variety of plants now procurable, it could grow appreciably larger in the future.

How would I go about it and when would I start? Now, of course, was the best time. So I did!

With very little knowledge of their requirements, but with a great love of plants and a determination to succeed, I set about planting out. For each plant I dug holes double the width of the garden fork and to fork depth. The soil I broke up finely after good rain fell and each plant was copiously watered after setting out. There was an existing framework of native trees to provide some shade from hot sun and protection from heavy winds.

The situation is high and well drained on a gentle slope. The soil is deep, ex-volcanic red loam with a P.H. of 5.6. Being surrounded by other trees, it is safe from frosts, but partly open to the east and morning sunlight.

The winter of 1981 was comparatively mild. However, it was extremely windy and the cold south-westerlies did penetrate and cause some wind-burn to leaves of the more susceptible species. Earlier in the year there was also some debilitation in the form of sunburnt leaves. By adding lots of mulch, including old logs, I feel I have helped establishment by conserving moisture and so apparently improving the growth rate of the young trees.

1981 in south-east Queensland, and especially in Toowoomba, was a year of high rainfall. I personally recorded 1312.5 mm (or 52½ inches) for the year. Except for August, September and October, when collectively only 72 mm (or 285 points) fell, the rest of the year had obligingly supplied good consistent falls. At the time of writing, in late January 1982, I note that the rainfall for November 1981 was 137.5 mm or 5½ inches and for December 247 mm or 988 points - almost 10 inches. So far in January 1982 I have recorded 159½ mm or 677 points (nearly 7 inches).

This has created ideal conditions for rainforest subjects and something we cannot hope to emulate by artificial watering, no matter how we hose and hope. With such good fortune and a wonderful growing situation, many of the trees have put on unbelievable growth with such ideal conditions. Some species have added as much as two metres to their height. To date, only two plants have been lost, out of a total of 52 planted. All of them appear to be strong and healthy.

I feel I have been most fortunate weather-wise and this has probably restricted greater losses. It has been a great experience to start a

A RAINFOREST GARDEN IN THE MAKING (continued).

new venture within the bracket of native plants and I thoroughly recommend rainforest subjects to everyone.

A list of species planted follows:-

Alocasia macrorrhiza (Cunjevoi)
Asplenium australasicum (Birds Nest Fern)
Asplenium simplicifrons
Barklya syringifolia (Crown of Gold Tree)
Brachychiton bidwillii (Little Kurrajong)
Brachychiton populneum (Kurrajong)
Cissus antarctica (Kangaroo Vine)
Coelabogyne ilicifolia (Native Holly)
Commersonia bartramia (Brown Kurrajong)
Cryptocarya laevigata var. *bowiei* (Glossy Laurel)
Cryptocarya triplinervis (Brown Laurel)
Davidsonia pruriens (Davidson's Plum) (2)
Dendrobium kingianum (Pink Rock Orchid)
Dendrobium speciosum (King Orchid)
Denhamia pittosporoides (Orange Boxwood)
Diospyros fasciculosa
Diospyros pentamera (Black Myrtle)
Elaeocarpus grandis (Blue Quandong) (3)
Elaeocarpus reticulatus (Blue Berry Ash) (2) pink and white
Emmenospermum alphonseoides (Yellow Ash)
Eugenia brachyandra (Red Apple)
Eugenia moorei (Rose Apple)
Eugenia wilsonii (3)
Eugenia sp.
Euodia elleryana (Pink Doughwood)
Euodia micrococca (White Euodia)
Harpullia hillii (Tulipwood)
Hernandia bivalvis (Cudgerie)
Hymenosporum flavum (Native Frangipani)
Lagerstroemia archeriana (Native Crepe Myrtle)
Linospadix monoatachya (Walking Stick Palm)
Livistona australis (Cabbage Tree Palm)(3)
Livistona decipiens
Macaranga tanarius (Nasturtium Tree)
Mackinlaya macrosciadia
Micromelum minutum
Oreocallis pinnata (Tree Waratah)
Oreocallis wickhamii (Pink Silky Oak)
Phalaris clerodendron (Rosy Apple)
Pithecellobium lovellae
Pittosporum venulosum
Planchonella australis (Black Apple)
Platynerium bifurcatum (Elkhorn)
Platynerium superbum (Staghorn)
Psychotria depnoides
Randia chartacea
Randia fitzalanii
Stenocarpus salignus (Scrub Beefwood)
Sterculia quadrifida (Peanut Tree)
Symplocos stawellii (White Hazelwood)
Tieghemopanax murrayi (Pencil Cedar)
Toona australis (Red Cedar)

RAINFOREST PIGEONS

In Australia, 2 groups of pigeons are recognised. There are 13 different ground feeding grain eaters that mainly inhabit the inland. None are found in rainforest for obvious reasons, other than the brush bronzing which is sometimes seen in dense forests. Ten species, mainly fruit eaters are found in Australian rainforests and a brief description follows.

Torres Strait Pigeon. (*Ducula spilorrhoa*) A migrant from New Guinea that breeds in Northern Australia. Large, mostly coloured white with slate grey flight feathers and tail tip. It ranges as far south as Katherine and Mackay.

Black Banded Pigeon. (*Ptilinopus cinctus*) A seldom seen bird of very restricted habitat. Confined to patches of monsoon and gorge rainforest on the western Arnhem Land escarpment from Oenpelli to South Alligator River. Considered sedentary, local and scarce. The first nest was discovered only in 1971.

Wonga Pigeon. (*Leucosarcia melanoleuca*) Medium sized, predominately grey coloured, with broad white "V" on upper breast. Also ranges into moist and dry coastal forests. Unfortunately, it has been shot out of many areas. Feeds on seeds as well as fruit.

Green Winged Pigeon or Emerald Dove. (*Chalcophaps indica*) Also eats seeds and fruit. Mainly frequents rainforest edges but can be found in trees emergent from lantana thickets and heaths, but it does require dense cover for nesting and roosting. Colour purplish brown with green wings and has a fast, low flight. A small bird, very inconspicuous when at rest and feeding. Ranges from the Kimberleys through the North East to the NSW-Vic border and is common.

Brown Pigeon. (*Macropygia amboinensis*) Frequently seen and often heard calling with its distinctive 2 syllable note, from Nth Qld to NSW. It prefers rainforest edges and clearings and eats much fruit from understory secondary growth, particularly the berries of rubus, inkweed and wild tobacco. Bleeding Heart seeds are relished. Of medium size with a long tail. Seen much more often than other species.

White Headed Pigeon, (*Columba leucomela*) This one seems to be adapting from virgin rainforest to more open situations since white settlement. A larger bird with distinctive white head and throat commonly seen in small flocks. The endemic Cinnamomum sp. were an important food supply but the birds learned to eat Camphor Laurel (*C. camphora*) fruits which they are, unfortunately, spreading extensively. From Nth Qld to central NSW. Nomadic.

Wompoo Pigeon. (*Ptilinopus cinctus*) Large, strikingly coloured with grey, green, purple and yellow markings, found from New Guinea to central NSW becoming scarcer in the south of its range due to its need for relatively large stands of virgin forest. It was common in the Illawarra district until those forests were cleared. Its strongholds in NSW are the inaccessible scrubs of the Border Ranges. Diet is solely of fruits mainly of the upper canopy, with a lesser reliance on forest edges and lower canopy. Has a number of calls, the wom-poo sound being the best known. Another species whose numbers are wantonly reduced by illegal hunting, due to its large size and tendency to remain in one place for long periods.

Red Crowned Pigeon. (*Ptilinopus regina*) A small bird best identified by rich yellow-pink underparts and broad yellow tail tip. The call is loud, explosive, accelerating and then falling, quite long and somewhat like the Pheasant Coucal. Found from Timor, Kimberleys to Arnhem Land, and Cape York to central NSW. Nomadic and most often seen in northern NSW where the numbers fluctuate markedly. They are birds of the lower levels of the strata but also feed in the canopy. Important food sources are Lauraceae and Araliaceae as well as small fruited figs.

Purple Crowned Pigeon or Superb Fruit Dove. (*Ptilinopus superbus*) The beautiful plumage of the sexes is quite different but predominately green. Another small species, common from Cape York to central Qld, somewhat uncommon on the NSW north coast and only occasionally seen further south where it is termed a vagrant.

Topknot Pigeon. (*Lopholaimus antarcticus*) One of the largest pigeons with an obvious backswept ginger and black crown, ranging from Cape York to Southern NSW but sometimes found in Victoria and Tasmania. Again, numbers fluctuate seasonally, also from year to year, possibly closely following particular food sources that vary in quantity over time. They eat large numbers of bangalow palm seeds and fig fruits as well as other species, but again, Camphor Laurel is an important part of their diet. A pleasing sign is that after a 50 year absence from the "Big Scrub" following almost complete clearance, they are now common, but only for a few days each year.

Pigeons are generally inconspicuous in the forests, because of their secretive habitats, quiet manner of feeding, and long periods without calling. Their most common giveaway though is the rain of fruit falling from the canopy as they are rather messy eaters. Glimpses of moving birds are seen as they fly between patches of forest, but patience is needed for close observation.

Green winged and Wonga Pigeons lay 2 eggs in their nest usually but the other 8 species mentioned have only 1 egg at a time. This makes it very difficult to build up populations following a fall in numbers for any reason. It is imperative that much more of their habitat is given permanent protection to ensure the long term survival of this important group of birds, and other restricted interesting species, some of which were listed in an earlier newsletter.

Dietary Habits/Seedling Regeneration. Generally, larger pigeons have thin walled gizzards that do not contain grit, they therefore have light digestive systems which need to rely on large quantities of fleshier fruits for nutrition. Laurels, palms, lilly pillies and quandong are important food sources, having a relatively large quantity of flesh surrounding the actual seed. This flesh is very quickly digested and the seed excreted almost immediately. This generally ensures that seed is spread within a radius of only a couple of kms from the point of consumption, and is sown with its own little package of fertilizer. The smaller pigeons have thick walled gizzards with grit. This system digests the flesh but also grinds up all seeds consumed, so there is no spread of seed, either of endemic species or weeds. We can only hope that these particular pigeons learn to consume privet, camphor laurel, lantana and wild tobacco fruits, to result in a decrease of the rate of spread of these problem weeds.

Further reading - "Rainforests" 1987 Reprint from Parks & Wildlife Vol.2 No.1 .NSW NP & WS.
 "Readers Digest Complete Book of Birds". 1976.Readers Digest.
 "Field Guide to the Birds of Australia" Pizzey.1983.Collins.
 "Field Guide to the Birds of Australia" Simpson & Day.1986.Viking O'Neil.
 "Field Guide to Australian Birds" Slater.1986.Rigby.

TRUNKETABELLA GARDENS AND NURSERY - 6 km north of Bodalla NSW, on Princes Highway.

A pocket of rainforest conserved by dedication and hard work with a protective surrounding garden of natives and exotics. There is a picnic area with tables, an admission charge of \$1 for entry to rainforest and gardens. A birdwatcher briefly stopping over in January 1989 saw many expected bush birds, but also Cicadabird, Channel Billed Cuckoo, Rufous Fantail and Black Faced Monarch. The report did not list the plant species. I assume that the vegetation is warm temperate but extensive cool temperate stands are found in the district.

PUBLICATIONS ON RAINFOREST AND ASSOCIATED SUBJECTS.

It occurred to me that members who would be interested in furthering their knowledge may not be aware of where to find relevant information on particular aspects. The following list (in no particular order) is a start. There is much more printed matter, members who are able to nominate further titles should let me know for listing in future newsletters.

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| AUST. R.F. TREES Francis | TROPICAL ORCHIDS OF AUST. Lavarack & Gray |
| AUST. TROPICAL RAINFORESTS Kikkawa & Webb | TROPICAL R.Fs. OF NTH QLD (not known) |
| TOP END NATIVE PLANTS J. Brock | RAINFORESTS OF AUST. P. Figgis |
| CLIMBING PLANTS OF AUST. Jones & Gray | ORNAMENTAL R.F. PLANTS IN AUST. D. Jones |
| COMMON AUST. FUNGI T. Young | FOREST TREES OF AUST. Boland et al |
| DISCOVERING NSW RAINFORESTS Total Env. Centre | R.F. PLANTS FOR INDOORS (not known) |
| GREENING OF GONDWANA M. White | TREES OF THE CENTRAL ILLAWARRA Fuller |
| NORTH QLD NATIVE PLANTS (not known) | NATIVE TREES OF WOLLONGONG (not known) |
| PALMS Blomberry & Rodd | RAINFORESTS W. Goldstein/NP & WS |
| PALMS IN AUST. D. Jones | WILDFLOWERS OF KAKADU K. Brennan |
| RAINFOREST OF TASMANIA (not known) | AUST. BUTTERFLIES P. Wilson |
| RED CEDAR Vader | BUTTERFLIES OF AUST. Common & Waterhouse |
| BUSH FOOD HANDBOOK Cherikof & Isaacs | BETTERFLIES OF AUST. T Hawkeswood |
| WILD FOOD IN AUST. A. & J. Cribb | BRINGING BACK THE BUSH J. Bradley |
| WILD MEDICINE IN AUST. A. & J. Cribb | RAINFOREST OF AUST. Serventy & Raymond |
| AUST. FERNS & FERN ALLIES Jones & Clemesha | AUST. TROPICAL R.F. LIFE C. & D. Watson |
| A WILDERNESS IN BLOOM - WILDFLOWERS OF TROPICAL QLD. Hinton | |
| VEGETATION OF THE HUMID TROPICAL REGION OF NTH QLD. Tracey | |
| R.F. TREES OF MAINLAND S.E. AUST. A. Floyd | |
| AUST. R.F. PLANTS PARTS 1 & 2 H. & N. Nicholson | |
| NATIVE PLANTS OF QLD VOLS 1, 2, & 3 K. Williams | |
| R.F. LEGACY: AUST. NATIONAL R.F. STUDY VOL 1 Aust. Heritage Comm. | |
| PLANT LIFE OF THE GREAT BARRIER REEF & ADJACENT SHORES A. & J. Cribb | |
| R.F. CONSERVATION STATUS IN WORONORA CATCHMENT D. Thomas/NWS & DB | |
| NSW R.F. TREES, VOLS 1 TO 12, INDEX & KEY A. Floyd/Forestry Comm. | |
| CONSERVATION OF R.F. PLANT SPECIES ILLAWARRA REGION K Mills/NP & WS | |
| A GUIDE TO R.F. OF FAR N.E. NSW Ritchie & Pugh | |
| NSW R.F. NOMINATION FOR WORLD HERITAGE LIST P. Adam/NP & WS | |
| FLORA OF NEW ENGLAND NATIONAL PARK | } Harden & Williams |
| VEGETATION & FLORA OF BRUNSWICK HEADS | |
| GUIDE TO COMMON TREES & SHRUBS IN R.F. DORRIGO NAT. PARK | |
| R.F. CLIMBING PLANTS Harden & Williams | |
| TREES & SHRUBS IN R.F. OF NSW & SOUTHERN QLD. Harden, Williams & McDonald | |
| FERNS & ALLIED PLANTS OF VIC, TAS & SA Duncan & Isaac | |
| FERNS IN COLOUR AUST. NATIVES & EXOTICS D. Jones | |
| KEYED GUIDE TO AUST PALMS, FERNS & ALLIES Cronin | |

And generally most books or field guides on birds, mammals, reptiles, amphibians and fish have some relevance to the subject.

BOOK REVIEW - BRINGING BACK THE BUSH BY JOAN BRADLEY, Lansdowne Press 1988 ISBN 07018 20063

This book gives the background to the development of the Bradley method of bush regeneration and a step by step direction on how to carry out this proven way of restoring areas of bushland suffering from various degrees of deterioration. There are three basic principles:-, 1. Work from areas of native plants towards weed infested areas. 2. Make minimal disturbance. 3. Let native plant regeneration dictate the rate of weed removal.

Following on from these extremely important requirements are sections dealing with such matters as planning the work, rules for working in the bush, knowing the plants, equipment used, the art of weeding and appropriate techniques for differing situations, etc. Use of poisons is briefly discussed with a strong warning against their indiscriminate use. There are 4 arguments used to justify the need for caution.

1. Poisons are not truly selective.
2. Poisons can have long term detrimental effects on the environment.
3. Poisons are often dangerous to the user.
4. Poisons do not always work.

It would be difficult for anybody to refute any of these points. The book gives a good basic grounding on how to achieve effective bush regeneration. It explains the need for patience, you can't obtain instant results. Those who try for this end up overclearing, which in turn leads to instant weed replacement, sometimes with species much worse than those originally and too hastily removed. Effective use of small tools is explained as is the needless use of heavy physical activity where "Bradley" is used.

To summarise, the book gives a basic and clearly explained description of how to go about remedying our past abuse of the bush by making subtle but long lasting improvements to remnant areas of naturalness.

Copies can be purchased from Bower Bird Books, P.O. Box 104, Winmalee 2777 for \$13.45 plus postage.