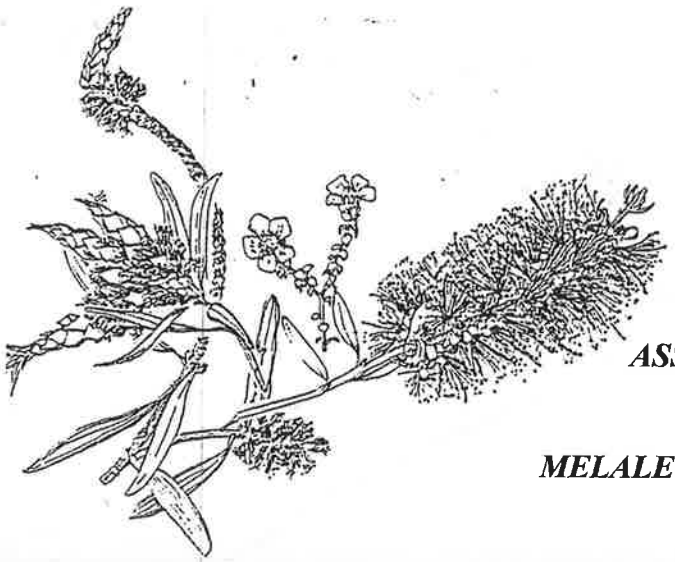

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ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS

MELALEUCA AND ALLIED GENERA STUDY GROUP

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NEWSLETTER NO. 19 -- January 2000

Dear member,

Welcome to the year 2000 which we seem to have reached without suffering any of the dire consequences predicted by some members of the community. I hope you had a good Christmas and that the New Year will be kind to you.

As you are aware, the study group has taken over study of the genera Calothamnus, Regelia, Beaufortia, Eremea and Phymatocarpus so , if you have any plants of these genera in your garden, please let me know what you have and the success or otherwise which you have achieved with them.

Plants of the genus Calothamnus are commonly known as Net Bush but I can find no reference to why that name was adopted. Is it a reference to the fine foliage? Did the one-sided flowers suggest a net shape? Should anyone have any information as to the origin of the common name I would be most interested to hear about it. Calothamnus is an exclusively Western Australian genus with some 25 species. All species share the narrow pine-like foliage though this can be hairy in some species and silky in others. The stamens are the colourful part of the flower and in all species the colour is red or a dark pink. They are reputed to be attractive to birds. Several species are cultivated and are reputed to be hardy and adaptible to a fairly wide range of conditions. Three of the more commonly cultivated species are :

Calothamnus quadrifidus (Net Bush) - an erect shrub which can grow to a height of some 4 metres with a spread of some 5 metres. The deep green fine foliage is complemented by the bright red flowers which are seen from November to February. This species requires a well-drained, acid soil but it is reputed to be fairly drought resistance and will withstand wind, light salt spray and light frosts . There is reputed to be a yellow colour form of this species. Steve Hibbert of Nudgee (a Brisbane suburb) grew a plant of C.quadrifidus in well drained red soil for a number of years and which flowered well for him each year. He pruned it lightly at regular intervals and it responded quite well until one year when he pruned it very heavily and it responded by dying.

Calothamnus rupestris (Cliff Net Bush) – this plant can reach a height of some 3 metres but spreads much wider than this. It is reported to exhibit similar tolerances to climate, soils,salt spray etc. as does C.quadrifidus. The fine, dark green foliage on this species is very dense and it forms a good screen. Flowers are dark pink and produced in spring .

Calothamnus gilesii (Giles Net Bush) – The foliage of this species is not so dense as the foliage of the species mentioned above. The fine needle-like leaves are tipped with black. This species grows to about 4 metres in height with similar spread and is reported to be a useful plant for harsh conditions. The red flowers are borne over a long period from late winter to late summer.

It is reported that all species of Calothamnus respond well to light pruning but , as the flowers are borne on old wood , don't get too heavy-handed. (see note above re C. quadrifidus)

Calothamnus species are not often seen in gardens in Brisbane but there is one garden to the south of Brisbane, owned by Jan Glazebrook, which is on a sandstone ridge with shallow soils and very good drainage where a fairly wide range of Calothamnus species are being grown . Further details of the plants being grown in this garden will be presented in a future newsletter. Calothamnus species appear to grow quite well in Toowoomba where the soils are very well drained and the humidity is lower than it is in Brisbane.

The genus Regelia contains 6 species, 5 of which occur in the south-western corner of Western Australia with 1 species on the sandstone escarpments in Kakadu National Park in the Northern Territory. Three of the Western Australian species grow on sandy , silty plains while the remaining 2 species occur on quartzite hills. Regelia species do not appear to be widely grown. There is a report of Regelia velutina growing and flowering well at Bateman's Bay in southern N.S.W. and a report of R. ciliata growing for a few years and flowering at Greenbank near Brisbane. R. inops was grown successfully by Ivan Holliday in Adelaide in limestone –based soils for a number of years

There is 18 recognised species in the genus Beaufortia with some, as yet, undescribed species. All species are confined to south - west Western Australia where the majority of species grow on sandy , well-drained plains with one exception being B.sparsa which is found in marshy, peaty soils. Flower colour on Beaufortia species is predominantly reddish or purplish with occasional white or yellow forms. Most of the Beaufortia species are woody, rigid,heath-like shrubs which can grow up to 3 metres but usually less.

There are some reports of Beaufortia species having been grown by members of the former Calothamnus Study Group but I am not sure of the location in which they were being grown. Species from this list are : B. macrostemon, B. elegans, B.schauerii, B. incana, B.orbifolia, B.sparsa, B.purpurea and B. heterophylla.

Ivan Holliday is growing B. schauerii which he describes as a ` lovely dwarf shrub massed in mauvish flower heads' This plant is being grown in a raised sandy bed about 800 mm high over a limestone marl subsoil and with a northern aspect. Ivan also has a

plant of B. squarrosa which is 10 years old and healthy but which has never flowered. Ivan further advises that, in general, he has found Beaufortia species difficult to grow.

Ralph and Margaret Hickling have tried two plants of Beaufortia squarrosa in well-drained granite soils on their property at Kilcoy north-west of Brisbane. One of these survived for 12 months and the other lasted for 14 months but produced no flowers.

There are 2 species in the genus Phymatocarpus which are both endemic to the south western corner of Western Australia. They grow on the sand plains and heath areas. Plants of this genus are small, woody shrubs with slender branches. Flowers are terminal and usually pinkish-mauve but occasionally cream. Steve Hibbert of Nudgee has had P. porphyrcephalus growing in his garden in well drained red soil for a number of years and, although it has grown well it has never shown any sign of producing flowers. Ivan Holliday has P. maxwellii growing very well in a couple of locations in soil which has been improved from a heavy alkaline clay to a loamy topsoil with a limestone-marl subsoil some 300 mm or so below. pH of this soil is slightly acid, no fertilisers have been used, drainage is fair and no problems with pests have been encountered. This plant produces prolific quantities of pink flowers.

The genus Eremea contains 15 recognised species with 3 subspecies and 5 varieties and occurs only in the south western corner of Western Australia. All species grow in sandy or lateritic soils in heath or woodland. Most species in the genus are small to medium shrubs which rarely exceed 1.5 metres in height but there are a couple of exceptions – E. beaufortiodes var. beaufortioides and E. dendroidea which may reach a height of 2.5 and 3.5 metres respectively. Ivan Holliday grew B.beaufortioides for a number of years but because the flowering period was so short and the plant generally unattractive it was removed and replaced by a better plant. Ivan's plant was grown in a raised bed. There are further reports of Eremea species being grown by members of the previous Calothamnus Study Group , possibly at Newborough in Victoria. Species listed as being grown are : E. fimbriata, E. violacea and E. beaufortioides.but , as these reports date back to 1992/93, it is not known whether or not these plants still exist.

We have had a considerable amount of wet weather in Brisbane this year – 1818 mm. of rain compared to our 1100 mm. average -- and whether or not this was the reason, but the Callistemons flowered on for a much longer period than usual. Some of the Callistemons which usually have only one flush of flowers produced a second , and sometimes, third flush of flowers. Both the fine-leaved and broad-leaved forms of Melaleuca leucadendra flowered heavily in spring and the fine-leaved form is flowering again now.

MEMBERS REPORTS

Jan Glazebrook runs a very successful nursery at Logan Village south of Brisbane. She carries out a considerable amount of grafting of plants from various genera. Her property is on a sandstone ridge with , generally, shallow soils and very good drainage and where

a large number of unusual plants are being grown quite successfully. Jan has forwarded a report on her experiences with Kunzea as follows :

Plants growing on their own roots are : K. affinis, K. ambigua (white), K. ambigua (pink), K. ambigua (prostrate), K. bracteolata, K, capitata, K. ericoides, K.flavescens, K. graniticola, K. obovata, K. opposita, K. parvifolia, K. pomifera.

Plants grown on grafts are : K. affinis, K. ambigua (pink), K. baxteri, K. ericifolia, K. micrantha, K. montana, K. obovata, K. opposita, K. pauciflora, K. pomifera, K. pulchella, K. villiceps. Grafted plants are on K. ambigua and K. flavescens rootstock..

Most of the plants listed above have flowered at an early age with the exception of K. bracteolata, K. ericifolia and K. pomifera which have had none or only a few flowers.

Jan recommends K. ambigua (pink), K. affinis, K. obovata, K. opposita, K. baxteri, K. pulchella and K. pauciflora for the Brisbane area, providing a well-drained site can be provided. Should there be any problem with drainage then grafted plants should be considered. An open, sunny position is preferred.

Leptospermum venustum is a fairly new plant on the market. It is a fairly dense foliaged plant which grows to about 2 metres and has rough bark. Deep pink flowers to about 20 mm in diameter are produced in winter and spring. L. venustum originates from the Eidsvold area of Qld which is some 240 kilometres north west of Gympie. The natural habitat of this plant is mainly comprised of gravelly ridges and creek banks so it will probably be best in a sunny, well-drained site in cultivation Grafted plants have performed well.

LEPTOSPERMUM ` APHRODITE' AND L. `RHIANNON'

In Newsletter no. 18 I mentioned that the plants referred to above flowered well in Brisbane but I received a few comments to the effect that they would not flower In Brisbane. To set the record straight I would advise that both of these plants on my son's property at Ormeau flowered heavily during September/October 1999 The L. `Aphrodite' plant is some 2.5 metres high by 3 metres wide and the L. `Rhiannon' plant is some 1.5 metres high by 1 metre high . The flower on L. `Aphrodite' is a deep pink and some 15 mm. in diameter while the flower of L. `Rhiannon' is a purplish/pink and some 20 mm. in diameter.

David Widdop of Corowa in N.S.W. borrowed the study group slide sets to use at an address he gave at Shepparton . He noted while he was there that the problems of nomenclature was evident. He saw 4 or 5 plants named as M. tricophylla and another 4 or 5 plants named as M. scabra but they were all different plants . He did see a very good specimen of M. glomerata whose natural habitat extends from Central Australia to the south west of Western Australia. (Editors note : we saw stands of M. glomerata growing in Central Australia, adjacent to the Tanami Track, in 1992. The area in which it was growing was bare of other vegetation and had the appearance of being slightly saline. The

plants were some 3 metres high but were not in flower at that time) David has just returned from the Australian Masters Games in Adelaide where he won a silver medal in table tennis. While he was in Adelaide he visited Ivan Holliday's garden which he described as having an incredible display of Melaleucas including M. nematophylla, M. coccinea, M. coccinea ssp eximea, M. smartiorum, M. smithiorum, M. megacephala etc. etc. David's Callistemons and Melaleucas have put on a good display this year including C. subulatus in various forms, the various colour forms of M. fulgens ssp fulgens and M. elliptica which is a pink flowering form . I haven't seen a pink form of this but then it is not widely grown in this part of the world and the only ones I have seen are red. Do any of the other members know of a pink form of this plant ? Callistemon ` Lavender Showers' and C. Greenbriar' have also provided a good show.

Steve Clemesha was a member of the Calothamnus and A. G. S. G.. . He advises that he has grafted quite a few Kunzea species with reasonable success. He has also tried grafting Beaufortia species on to Kunzea ambigua but , to date, without any success. He intends to carry out further trials with other rootstocks.

Trevor Gilbert of Dubbo in N.S.W. reports that his C. ` Injune and C. pachyphyllus continue to grow well. The C, pachyphyllus has flowered continually from autumn 1999 to the time his letter was written in Nov. 1999. (Editors note : The Qld Main Roads Dept. densely planted the green form of C, pachyphyllus in a triangular area adjacent to the Redcliffe- Brisbane road / Gateway Arterial Road junction . They have been flowering continuously for almost 2 years and have reached a height of some 2.5 metres) M. elliptica in Trevor's garden has flowered well from late winter to date. M. viminea flowered well in spring as it usually does M. radula did not appreciate a pruning to re-shape it and has flowered poorly. M. linophylla, which Trevor advises was easy to strike from cuttings, is ready to flower for the first time.

Derrick Arnall of Malawi continues to send his interesting letters about the plants he is growing. It is a pity that letters between here and there can take up to 4 weeks to get from one place to the other. Derrick has a vast number of Callistemons growing as well as many Melaleuca species and a large range of other species of Australian plants, including Acacias, Eucalypts, Brachychiton etc. but has not had any luck with trying to grow Grevilleas. Unfortunately, he is facing the situation which most of us come up against – his trees are getting larger and shade is increasing which , in turn, affects the amount of flowers produced.

Barbara Buchanan of Myrrhee in Victoria has Leptospermum ` Merinda' growing and when she wrote in Aug. 1999 it was well in bud and expected to flower around Oct./Nov. Up to the time of writing they had suffered a very dry season and as a result lost a number of plants in their garden including some 30 year old Eucalypts.

Jeff Irons , secetary of the Australasian Plants Society in England , writes to say that their Society participated in the Royal Horticultural Society flower show at Tatton Park in July 1999. They arranged for a number of cartons of flowers to be sent over from Australia with pleasing results. Jeff advises that the English public went overboard on red

bottlebrush (Callistemon spp), white Eucryphia and white Gentians (Gentianella spp.) so they will change the composition of their display in 2001 The site for the show covered 25 acres which was just as well as the R.H.S. expected a crowd of 70,000 and 130,000 turned up !

Liesbeth Uijtewaal-de Vries is a new member from Holland and we welcome her to the group. Liesbeth grows a large number of Australian plants , mostly in containers, which are kept in the open during the summer and moved into hothouses for the winter. Liesbeth starts her plants, seedlings or cuttings, in 70mm square pots and pots them on to the stage where, after 6 or 7 years, they end up in 35 litre pots which is about as far as she can go or they become too heavy to handle. The potting mix used is a commercial one with a peat base and pH of 5.0-6.5. Nutrients added are 1kg/m3 of 12-14-24 (Editors note ; this doesn't quite correspond to Australian analyses but I will check it further with Liesbeth) plus added trace elements. Dry matter is 20%, organic matter is 20%. The resulting soil structure is free-draining and takes up water readily even when dry. For Proteaceous species vermiculite, perlite and , occasionally, ferrous sulphate is added. Liesbeth used to pot the plants on each year with very little fertiliser added during the year but, for the past 12 months, she has been using `Osmocote for Natives ' which she obtained from Australia with , to date, good results. 18-6-12 Osmocote is available in Holland which would probably be suitable for most plants with the exception, perhaps, of Proteaceae species.

Species being grown by Liesbeth and which relate to this study group include : **Callistemon** `Perth Pink', C. brachyandrus, C. citrinus `Red Clusters', C. montanus, C. pachyphyllus, C. pallidus, C. paludosus `Pink ", C. pinifolius, C. pityoides ` Alpine Form', C. polandii, C. rigidus, C. salignus, C. sieberi (2 forms), C. glaucus, C. teretifolius, C. viminalis (4 forms), C. violaceus, C. viridiflorus. ; **Calothamnus** gilesii, C. quadrifidus. **Kunzea** ambigua, K. baxteri., K. parvifolia,, ; **Leptospermum** brachyandrum , L. rupestre, L. laevigatum, L. lanigerum, L. rotundifolium, L. scoparium, L. continentale , L.macrocarpum ; **Melaleuca** armillaris, M. bracteata, M. decussata, M. doismifolia, M. elliptica, M. ericifolia, M. fulgens, M. glabberima, M. hypericifolia , M. incana, M. linariifolia, M. nesophila, M. pentagona, M. pulchella, M.ringens , M. squamea, M. squarrosa, M. suberosa, M. thymifolia, M. uncinata, M. laterita, M. radula ; **Beaufortia** squarrosa.

Liesbeth is also growing a number of unnamed species of Callistemon.

Some of the other genera being grown include : Eucalyptus, Grevillea, Correa, Acacia, Banksia, Anigosanthus, Pandorea, Hakea and Chamelacium

TEA TREE - THE GENUS *MELALEUCA*

The article below has been reproduced from a paper written by Lyn Craven, a botanist with the Australian National Herbarium in Canberra and gives some information as to the studies which have been carried out on some of the species of this genus over many years.

THE GENUS *MELALEUCA*

Melaleuca was established as a genus by Linnaeus in 1767 with *M. leucadendra* as its only, and hence type, species. Linneaus based his genus on the pre-Linnaean *Arbor alba* that was described by Rumphius from plants growing on Ambon in present day Indonesia (Rumphius 1741). From 1767 until the mid-1800s , several further species were added to the genus but it was not until 1867that the first comprehensive treatment of *Melaleuca* was published in Bentham's account of Myrtaceae in his classic flora of Australia, *Flora Australiensis* (Bentham 1867). Within *Melaleuca,* Bentham recognised 97 species in 7 series. His series include some groupings of undoubtedly closely related species but overall the classification is artificial. This is not a reflection upon the general quality of Bentham's treatment but is an indicatoin of the difficulty inherent in classifying a large group of species that, while differing considerably in gestalt, is remarkably similar in essential structural details. To the present day Bentham's work has remained the most monographic account of *Melaleuca* available

Since 1867, many other species have been described in *Melaleuca* by botanists. These usually have been published as isolated descriptions of novelties or in accounts of flora collected by large expeditions ; it has only been in recent decades that studies of *Melaleuca* within large regoins have been undertaken and published. These more comprehensive studies include a revision of the broad-leaved paperbarks (Blake 1968) , a revision of *Melaleuca* in South Australia (Carrick and Chorney 1979) , a treatment of the northern and eastern Australian species(Byrnes 1984,1985, 1986) , treatments of several largely southwestern and eastern Australian species groups (Barlow 1987;Barlow and Cowley 1988; Cowley et al. 1990), and a revisionary level treatment of the New Caledonian species (Dawson 1992) . The genus *Asteromyrtus* , included in *Melaleuca* by Bentham (1867) and (Byrnes 1984,1985) was resurrected by Craven (1989) to accommodate a constellation of species most of which had been treated under *Melaleuca* but of which one had been placed in a monotypic genus *Sinoga* by Blake (1958) . *Asteromyrtus* is not closely related to *Melaleuca* ; its relationships lie with *Agonis* in the *Leptospermum* group of genera. In passing it may be noted that at least one species of *Asteromyrtus* , *A. symphocarpa,* has potential as a viable source of essential oil. Preparatory work towards an account of *Melaleuca* for *Flora of Australia* is in train and a precursory paper enumerating all the Australian species and providing identification keys is currently being completed by L. A. Craven and B. J. Lepschi.

According to the classification of Briggs and Johnson (1979) , the genera most closely related to *Melaleuca* are *Callistemon, Conothamnus,* and *Lamarchea* while *Beaufortia* , *Calothamnus, Eremea, Phymatocarpus* and *Regelia* are more distantly related. It seems that there is no especially close relationship with the genera clustered around *Leptospermum* , i.e. *Agonis, Angasomyrtus, Asteromyrtus, Homalospermum, Kunzea, Neofabricea* and *Pericalymma.* The conventional circumscription of *Melaleuca* given below may require amendment when research in progress by the author into the relationships of *Callistemon* and *Conothamnus* to *Melaleuca* is concluded. At least two species of Australian *Callistemon, C. glaucus* and *C. viminalis* , have their stamens grouped into 5 basally fused groups, one of the key generic characteristics of *Melaleuca* . Indeed, this was the basis for Byrne's transfer of the eastern Australian species, *C.*

viminalis, to *Melaleuca* (Byrnes 1984,1986). Similarly , the endemic New Caledonian species of *Callistemon* are very close to the endemic New Caledonian *Melaeluca,* several of them having stamens fused into groups, and they may be transferred to *Melaleuca* as a result of research in progress . (Editors note : this has occurred - see Newsletter No. 18)

As it is presently circumscribed, *Melaleuca* consists of about 230 species (Craven 1997). The great majority of the species , about 220, is endemic to Australia and Tasmania but several also occur in adjacent parts of Indonesia and Papua New Guinea and one species, *M. cajuputi,* extends from Australia northwards to the Asian mainland. There is one endemic species on Lord Howe Island, *M. howeana,* and three species in New Caledonia (8 including the *Callistemon* species) of which *M. quinquenervia* also occurs in eastern Australia and New Guinea. Within Myrtaceae, *Melaleuca* is characterised by possession of the following combination of features : Shrubs or trees; leaves spiral, decussate or ternate, small to medium-sized, the venation pinnate to parallel ; flowers in spikes or clusters or sometimes solitary, the basic floral unit being monad, dyad or triad; sepals 5 (rarely 0) ; petals 5 ; hypanthium fused to the ovary in the proximal region only; stamens few to numerous, the filaments fused for part of their length into 5 bundles. The anthers dorsifixed (or rarely basifixed) and versatile with two parallel cells that open via longitudinal slits; ovary 3-celled, the ovules few to numerous; fruit a ca[sulen within a usually woody to subwoody fruiting hypanthium; seeds with a thin testa, generally obovoid-oblong to obovoid, unwinged, the cotyledons planoconvex to obvolute.

TEA TREE

Tea tree, *Melaleuca alternifolia,* is very closely related to *M. linariifolia,* and it is not surprising that Maiden and Bteche treated the plant as a variety of that species when they described it in 1905. It belongs to the *M. linariifolia* species group of which there are five currently accepted species ; *M. alternifolia, M. dissitiflora, M.linariifolia, M. linophylla* and *M. tricostachya.* Maiden and Betche distinguished their variety *alternifolia* as having alternate leaves that are much narrower and usually shorter than those of *M. linariifolia* sensu stricto and having its flowers less densely arranged in the inflorescences. Cheel considered that the differences between the two, taken with their apparent geographic isolation , were insufficient justification for the variety to be raised to specific rank (Cheel 1924) .

The first described and, and best known, species of the group is *M. linariifolia* ; this was described by Smith in 1797 from specimens collected in the Sydney region in 1795. *M. linariifolia* is widely cultivated in Australia as it is hardy and forms an attractive large shrub or small tree with masses of pure white flowers.

The next described species is *M. tricostachya* , described by Lindley in 1848 from specimens collected by the explorer Thomas Mitchell in 1846 in subtropical Queensland. Bentham , however , reduced *M. tricostachya* to a variety of *M. linariifolia* in 1867. Of the recent taxonomists who have worked on *Melaleuca* , Bentham's placement was followed by Byrnes (1985) but Quinn et al. (1989), who studied the complex in more detail than did Byrnes, recognised *M. tricostachya* as a distinct species. The remaining two species of the group, *M. linophylla* and *M. dissitiflora* , were described in 1862 and 1863, respectively, by the 19 th Century Australian botanist , Ferdinand Mueller.

Geographically, the group is widespread and occurs in a correspondingly broad range of climates. Given the occurrence of terpinen-4-ol chemotypes in *M. alternifolia, M. dissitiflora* and *M. linariifolia* , it would seem that there is scope for a more intensive survey of the *M. linariifolia* group to gain a greater understanding of the chemotypes and their distributions . Then it would be possible to consider the prospects for expanding the tea tree oil industry, presently centred on *M. alternifolia* in NE New South Wales, by growing other terpinen-4- ol rich genotypes in regions to which they are suited climatically and edaphically, by introgressing novel genes into *M. alternifolia* and *M. linariifolia* for crop improvement with the NE New South Wales region , or by both means.

STUDY GROUP REPORT

Copies of the study group report are still available at $10.00 per copy which includes the cost of postage. The report comprises some 90 pages and details the information submitted by group members over the past 10 years and also includes details of rainfall and climatic conditions, geographic locations , soil types, drainage conditions, flower colour, fertiliser usage and incidence of frosts for the areas in which these plants are being grown

FINANCIAL STATEMENT

Receipts		Expenditure	
Balance at 14-6-99	$618.22	Petty cash	$99.55
Membership fees	$282.70	Prints from slides for display	$70.80
		Photocopy – S. G. report	$51.30
Total	$900.92	Photocopy- N.L. 18	$36.25
		Postage N.L. 18	$36.55
		Postage-slide set to D.Widdop	$13.35
Less expenditure	$ 391.90	Postage and stamps	$28.50
		G.D.T.	$3.60
		Rainfall records	$52.00
	$509.02		
		Total	$391.90

Balance as per bank statement 13-12 99 $509.02

A cheque to the value of $468.53 has been received, and deposited in the M.A.G.S.G. account, as the value of the assets of the previous Calothamnus and Allied Genera Study Group and this will appear on the next financial statement

SLIDE SETS

Slide sets with written commentary of 125 species of Melaleuca ,119 species of Callistemon and 40 species of Leptospermum are available for loan to groups or individuals. The study group will pay postage outwards and the recipient is expected to pay return postage.

Verna and I will be away in the United Kingdom and Europe from April 19 to June 6 2000 so , should you require any seed or other items or information, could you please get your requests in prior to that date . Any requests that arrive while I am away will be attended to as soon as I return.

Regards for now and good growing

Col Cornford

Col Cornford