Association of Societies for Growing Australian Plants

GREVILLEA STUDY GROUP

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Newsletter Nº 55

Welcome to Year 2000

by Peter Olde

This is just a short editorial to welcome the Study Group members to the last year of the 20th Century, the last opportunity you will have in this millennium to make a contribution. Of course, there is always the opportunity to start the new millennium next year with some article that is really challenging, like Richard Tonkin's latest contribution on the real age of plants (Newsletter 54). This has caused much inconclusive discussion among a wide range of Study Group members. Thank you Richard for this and many other controversial contributions

I have some sad news to report - the recent deaths of two members of the Grevillea Study Group in New South Wales, both from cancer.

The first was Klaus Engelhard (22/11/1940-28/1/2000), a German-born enthusiast from Sydney, who took a keen but somewhat jaded view of the genus. Most of the grevilleas he planted in his heavy soils died. Klaus was very useful to me during the writing of the Grevillea Book, translating some 19thC German gardening and botanical magazine articles for me. He had risen to become the Manager Director of Osram Lights in Australia after coming to Australia as a teenager and working for six years on the Snowy Mountains scheme.

He was deeply attached to the Snowy Mountains and was also a keen bushwalker in and around Sydney. He was a migrant who truly embraced his new country, its environment and its people.

He joined Siemens in his early twenties and undertook a concentrated period of University studies, obtaining a degree in Electrical Engineering and a Diploma in Illuminating Engineering Design from Sydney University.

One of his idiosyncracies that always made me smile was that for a man who spoke English extremely well, he continued to pronounce 'and' as 'und'.

He had a hungry mind that needed intellectual food even to his last days. Until quite recently he was still abseiling and canyoning. Our deepest sympathies go to his 3 daughters and wife Elaine.

Many of you will have known Phillip Strong (29/4/1948-3/2/2000), from Charmhaven, who has also died, from brain tumour. Until quite recently Phil worked in the State Electricity Industry, first as an electrician and ultimately as an Instrument Technician.He was part of the Phil & Mick team. Mick Allibon & Phil, friends from schooldays, often seemed inseparable, sharing a love of bushwalking and propagation. Phillip was a keen grafter, supplying plants to nurseries in Newcastle and some friends, including me. I particularly treasure the *Phebalium whitei* he grafted for me. Throughout his illness, he remained positive and an inspiration to his wife Vivian, his son and daughter. To these and his two infant grandchildren we extend our sincerest sympathy.

I would like to remind all members, especially those around Sydney, that we need helpers at the Mt Annan Autumn Plant Expo. Study Group members who spend at least two full days at the show can purchase their plants at wholesale rates. Please give me a call with the times of your availability. This year the show has been expanded and will include more exhibitions and side attractions

I recently saw grafted plants of *Grevillea petrophiloides* broad leaf form at a large Sydney nursery, retailing for $150 each.

NSW MEETING

Sunday March 5 - 10.00am

Kim & Deidre Tronson
21 Eaglecreek Rd, Werombi
(02) 4653 1430

Subject: Australian Plants for Cut Flowers

INSIDE...

ACTIVITY REPORTS and NOTIFICATION
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IN THE WILD *G. rosmarinifolia*, Durrakoppinen Reserve,
HISTORY Charley Fraser, first to cultivate Australian plants
TAXONOMY *G.banksii* colour forms, SMOKE and more…

Autumn Plant Expo 2000

To all members - we need your help, especially on the plant sale checkout. All Sydney members are requested to be available at least on one of the days.
Friday 31 March (set-up) Saturday April 1 or Sunday April 2**.**
Please contact Peter Olde 9543 2242 with any offers of help.

Members who make themselves available for two days will be able to purchase plants at wholesale prices.

Below please find a tentative programme for our much expanded Sale - more of an Expo than a Plant Sale now.

Talks Programme

Kyrill Taylor	Ferns and the Home Garden
Paul Nixon	Waratahs- some secrets for their cultivation
Tamara Cox	Christmas Bells in pots
To be advised	Flannel Flowers - their cultivation; value as a cut flower
Phil Vaughan	Grafting demonstration
Neil Marriott	Birdscaping Your Garden
Neil Marriott	Grevilleas for the Home Garden
Angus Stewart	Smoke in Propagation
"	Small Eucalypts for the Home Garden
Mark Wolfe	Weeds and their control in the Garden
Brian Roach	Hardy Native Plants for the Home Garden
Malcolm Johnston	Setting Up a Rainforest Garden
Lothar Voigt	Attracting Frogs to the Garden
To be advised	Using Native Plants as Cut Flowers for the Home.
To be advised	Cooking with Wildfood.
Brian Roach	Propagation by Cuttings & Seed.
Tim Pickles Hardy	Australian Plants for the Home Garden.
Noel Summerell	Australian Plants for Bonsai
Brian Walters	Australian Plants Society - Interactive Web Site

Static Displays

Australian Plant in bonsai
Sutherland SGAP
Waratah Interest Network
Aust.Native Flower P & G
(Cut Flower Group)
Frogs
Grevillea Study Group
Cut Flowers
Children's Education Display (Allan Powell)
Cumberland Bird Observers
Horticulture Development,
University of Sydney (Camden) Peter Abel
Eucalyptus Study Group
Grevillea Park
Home Propagation Set Up

Expanded Hot and Cold Food outlets.
Displays of Stock Plants by Mt Annan Garden Nursery displays.

Guided Walks of Mt Annan Botanic Gardens
Guided Tours of the Propagation Areas of Mt Annan

Enjoy this much expanded event.

GSG IN VICTORIA

Thanks to members who paid additional subs in 1999 to defray costs of telephone calls and newsletters. Vic Subs are not required for year 2000.

Communications will proceed as far as practicable through this NL, although additional details of excursions or information on changed arrangements will be mailed to previous subscribers and to other GSG members on request.

Excursions in 2000: (members of Boronia & Correa Study Groups also welcome)

Study group members might like to bring 1-2 plants for the hosts - grevilleas, if possible. Excursions and APS Vic quarterly meetings are good opportunities for cutting and plant swaps. Please label each bunch or spray of cutting material with brief description of mature plant and provenance, where known.

Contact Max & Regina McDowall (03) 9850 3411 if you plan to participate, to receive maps and other details.

Sunday May 14th:
Two garden visits near Ballarat and field trip in Enfield State Forest. Meet 10 a.m. at home of Vance and Judith Lewis, 1 Mt Helen Avenue (opposite No 12) Mt Helen, 5341 3895 via Eddy Avenue from Geelong-Ballarat Road.

After morning tea and garden visit, proceed to Enfield State Forest (approx 11.15-11.30 a.m.) for lunch and to look for *Grevillea bedggoodiana* and good forms of *Correa reflexa*. Approximately 2.p.m. visit garden of Peter and Gill Bothe, Wongerer Lane (2nd house past Albert St., Smythes Ck, 5342 5393, 2 km from Glenelg Highway. We also hope to visit Brian and Tricia Dempsey's Blooming Aussie Nursery at 20 Rill Court Haddon 5342 4053.

Sunday August 6th:
Two garden visits east of Mt Dandenong and visit bushland in the area to look for Grevillea alpina. Meet 10 a.m. at "Cheveley Park" (Melway 308 F6) home of Merele Webb, 2425 Healesville-Koo-Wee-Rup Rd Yellingbo 5964 8288 - parking near stables 1 km along drive. (Travel 5.3 km south toward Cockatoo from Yellingbo Central at Parslows Rd corner - Melway 306 A8).

Lunch at Silvan Dam, then proceed to garden of Bob and Dot O'Neill, 45 Hunter Rd, Wandin North 5964 4523 (Melway 121C3).

November 4th-10th: see details on ***The FJC Rogers Seminar***

ACTIVITY REPORT

Field Trip 1999 Blue Mountains and Beyond.

P. Olde

G.rosmarinifolia
Type form, Royal Botanic Gardens, Sydney (P.Olde)
Grevillea Book III

Ten people attended. The field trip started with much promise and anticipation, achieving considerable success but with some disappointments. On Day 1 we travelled firstly to **Glenbrook Gorge** where plants of *Grevillea sericea ssp. riparia* were examined in full flower along the creek around the weir.

This subspecies has a lignotuberous habit, longer leaves and deeper pink flowers than other forms seen elsewhere (except those at Blue Mountain).

Other frequent plants in the area were *G. sericea subsp. sericea* (seen along **RidgeOaks Fire Trail**) *G. phylicoides* in full flower and a form of *G. mucronulata*. A search for the small flower form of *G. laurifolia* in the **Valley Heights** area was abandoned due to road closure. However, Peter Olde advised that he had collected it recently off **Greens Rd**. and along the track to **Martin's Lookout, Springwood**.

He also indicated that a suckering form of *G. sericea subsp.sericea* was present in this area as well as *G. mucronulata* and *G. phylicoides*.

We then headed further west to **Lawson** in search of the dark purple form of *G. sericea*, which we duly found on a knoll north of **Blue Mountain Trig**. It was concluded that this population represents a colour form only of the Blue Mountains form of *G. sericea*, which is probably a distinct subspecies.

The pink and purple forms grow sympatrically but do not appear to represent two distinct species. Nearby, **south of Blue Mountain**, we also examined beautiful plants of the small-flowered form of *G.laurifolia*. It was concluded that this taxon represents a definite subspecific element within *G. laurifolia* because of its smaller flowers and longer/broader leaves. I believe that this is the plant that Gandoger described as *G. amplifolia*.

From here we travelled to **Kings Tableland** in search of *G. oleoides*. Apart from the regeneration of a few plants beside the track, the species appears to have largely disappeared from its former haunt after relatively recent fires. Anders could only find one plant in flower and this many metres in the bush.

We also found some more plants of *G. laurifolia* small-flowered form c.**1 km W of the Hospital** along the main road. I was surprised to find it so far up the mountains.

Then it was on to **Clarence** and *Grevillea x gaudichaudii*. There were some beautiful and variable forms of this hybrid swarm here, many of them suitable for horticulture. Waratahs were also in bloom.

Here the typical form of *G. laurifolia* occurs with much rounder leaves and very much larger flowers. As the weather closed in, Hessell and Dot Saunders then led us down the mountain along **Hartley Vale Rd** to a small area where *G. acanthifolia*, *G. laurifolia* and numerous hybrids occurred.

Then out onto the highway and down **Blackheath Creek Rd** on the road to **Cox's River** where Ray showed us plants of *G. arenaria ssp. canescens* in a road verge. These attractive plants bore scattered flowers but sufficient to get an idea of the general colour (orange and grey).

Along **Mill Creek Rd** we found more plants of *G. laurifolia*. What an attractive ground-cover this species is!

We set up camp at **Glenroy** and the rain bucketed down, flooding the Saunders out completely. Next morning we re-discovered *G. rosmarinifolia* (see separate article) before heading down to **Kanangra Walls via Jenolan**.

An undescribed pink-flowering species related to *G. patulifolia* occurs here and grows in abundance beside the track around the **car-park at the lookout**.

This small root-suckering species would make an ideal plant for the garden in a moist spot. Plants were actually growing in water. Soon after leaving the park Andrew Brown slid off the road into a ditch, requiring the services of several 4 -wheel drives to get him out lest the vehicle (brand new) tip over.

We then went on a long steep drive into the gorges of the **Kowmung River** looking for *G. rosmarinifolia* and *G. arenaria* . We failed to find them before rain and darkness overcame us and the search was abandoned in favour of a long drive to Ken and Elaine Arnold's where we were treated to great hospitality.

Ken and Elaine have made their country home here at **Yeoval** into a native garden wonderland and we spent many hours wandering through the next morning before heading off to **Burrendong Arboretum**. Unfortunately it rained again during the night and the Saunders decided enough was enough and took off to buy a new tent.

Burrendong Arboretum was like a long lost home revisited. Most of the species planted there over a decade ago are still growing and looking magnificent. Some of us met up with Hazel Althofer and the day was spent wandering the arboretum before camping out at the nearby caravan park.

Our last day was spent heading first to **Bumberry** where we found a soon-to-be named Grevillea species (*aff. linearifolia*) growing beside the railway track with *G. floribunda ssp. floribunda*. Then onward to **Yambira SF** and many points between **Grenfell** and **Cowra** where we unsuccessfully searched for *G. polybractea* and *G. lanigera*.

I was disappointed not to find this last species because it appears to be a very distinct form. The name *G. ericifolia* was named from this population. However, rain and poor information stood between us and the search was abandoned at about 3 o'clock and we turned for home.

IN THE WILD

Rediscovering *Grevillea rosmarinifolia*

P. Olde petero@gco.apana.org.au

One of the few plant species actually described by Allan Cunningham was *Grevillea rosmarinifolia* which appeared, along with several others, in Barron Field's *Geographical Memoirs of New South Wales* (Pp.326-329).

Although Cunningham was a capable botanist himself and collected hundreds of species unknown to science during his time in Australia and New Zealand, most of his specimens and descriptive work was sent to Robert Brown who used his manuscripts and often even his manuscript names in his *Supplementum Primum Prodromi Florae Novae Hollandiae* published in London in 1830.

Cunningham's Latin description of *Grevillea rosmarinifolia* was accompanied by the words

> …"A shrub of robust growth, and with reddish showy flowers. Banks of the Cox's River."

The rediscovery of this plant at the Type locality has been one of the holy grails of New South Wales botany, especially those associated with the genus Grevillea.

Grevillea rosmarinifolia is not a rare species, as circumscribed by McGillivray (1993). This circumscription is very broad and encompasses several population-based distinctive taxa. The species sens. lat. will soon the subject of a detailed revision.

It is distributed on a wide range of soils ranging from basalt to granite and desert sands over a large area of both New South Wales and Victoria. Yet the form from the Cox's River differs from all the others in having longer and broader, linear to narrowly lanceolate leaves.

There are few recorded collections of this taxon. The only specimens are those of Cunningham, collected in 1822. However, in a *Catalogue of Plants* cultivated at the Botanic Gardens, Sydney, New South Wales, January 1828, Charles Fraser indicates that *G. rosmarinifolia* was introduced there by himself in 1825. Indeed Fraser died while returning from Bathurst with a cartful of living plants in 1831.

The particular form of this species next appears between 1827-1828 in Robert Sweet's *Flora Australasica* as an illustration of a plant growing at Mackay's Clapton Nursery. Sweet also informs us that it was first introduced at the Royal Botanic Garden at Kew, without explicitly stating by whom and how the plant was communicated.

In 1829, there appears another illustration from a "weak and starved" specimen at the Hackney Nursery, London. This can be found in Conrad Loddiges' *Botanical Cabinet: 15* where we are informed that the species had been in cultivation in England "since c. 1820".

Subsequent sources give variable dates of introduction. Sweet (1827) says 1821 while Loudon (1830) says 1824, the latter date being the most likely since Cunningham did not collect it until 1822 as far as I can make out.

In Europe, *Grevillea rosmarinifolia* flourished in horticulture. There is evidence of its cultivation in Dusseldorf 1834, Florence 1854-55, Amsterdam 1857 and even Russia at Aksakov, 1860.

However, things on the ground at home were not too good. In a letter to Richard Cunningham accompanying the Type Sheet at K, Allan Cunningham recommends a visit to the grassy flat of the military depot (now known as Glenroy) where Governor Macquarie rested in 1815. *Grevillea rosmarinifolia* was to be found "on the flat at Cox's River just below the Military depot on the immediate bank of that ?stream where also are to be observed *G. sulphurea* and *G. canescens* … if not destroyed by cattle".

The place must once have been a haven for grevilleas. In a diary entry dated Friday 11th April 1817, Cunningham writes "At this river we first observed granite, of which its bed is composed. *Grevillea acanthifolia* and *Grevillea asplenifolia* (sic!),…, grow on the banks of this river in the greatest luxuriance."

Several searches of the Type locality in the late 1960's and early 1970's failed to locate any plants of *G. rosmarinifolia*. Certainly no new collections have appeared in the specimen base at NSW, although specimens that differ in minor ways have been collected at Hampton and on the Kowmung River at Tuglow.

Then in a brief note that set interest soaring, D.J. (Don) McGillivray (1975) stated that "in August 1969, [he] observed a specimen of the type form of *G. rosmarinifolia* growing outdoors, beside a building in the Edinburgh Botanic Garden".

Cuttings from the plant were sent to the Royal Botanic Gardens, Sydney, and specimens have been established in a number of gardens and some nurseries in New South Wales and Victoria. It is distinguished from other forms of the species by its longer, broader leaves, c. 2.5-4 cm long and 2-3 mm wide.'

The very thought of a presumed-extinct Australian plant form being re-discovered at Edinburgh nearly half a world away and 1.5 centuries after it had presumably disappeared from its natural habitat was scarcely believable; but to have material returned from there to be re-introduced perhaps into the Australian wild was inspiring and exciting to say the least. Not only that but the re-discovery was such a fluke in itself.

The interpretive label on the living plant at Edinburgh Botanic Garden was *Grevillea lanigera* , and perhaps the only person in the world capable of recognising the taxon and its correct name and significance at that time happened upon it there by chance.

The origin of the plant at Edinburgh is unclear. It may have been cloned from the original material at Kew which was communicated probably by Cunningham.

However, it may have been sent independently by Fraser, who was also a Scotsman and sent large amounts of material to Scotland during his tenure at the Sydney Botanic Gardens. For Fraser, indeed, this was part of his job description, as from 1823, he was officially known as "Superintendent Sydney Botanic Gardens" where he worked to collect and grow indigenous plants for the garden and to stabilise them for long voyages in a "plant cabbin" to grace the gardens of the King and also as a clearing house for exotics and fruit vines being introduced to the colony.

In 1826, William Jackson Hooker published a description of *Grevillea pubescens* (*syn. G. baueri subsp. baueri*) from a specimen grown from seed sent to him at Glasgow by Charles Fraser in 1822, flowering there in 1825.

Seed was also sent by Fraser to Dr Graham at Edinburgh Botanic Gardens. The truth is that we do not really know how or from what clone the Edinburgh material arose but we can surely be grateful that it had been maintained so successfully in culti-

vation for so long and that plants continued to survive outdoors in such a climate.

In Australia, meanwhile, the search for topotypical material continued. Between 1990 and 1999, individual members of the Grevillea Study Group (a part of the Association for Growing Australian Plants) had conducted no less than four private and unofficial searches in the Hartley area.

As most of the area is now degraded, private farm land, these searches consisted of fence-peering and traipsing through road verges (no trespassing, of course!).

In November 1999, a Grevillea crawl was conducted in the area. On Saturday morning, November 6, while a number of the party travelled to Lithgow to vote for the republic that was not to be, Anders Bofeldt , Wollongong Botanic Gardens, decided to take a walk in the area where we had encamped the night before. On returning to camp, he asked innocently what this particular pink-flowered plant was that he had just collected.

The specimen was from a single plant that appeared to be about 30 years old, judging from the main stem which was the thickness of a man's arm. *Grevillea rosmarinifolia* - rediscovered!

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Durrakoppinen Reserve, Western Australia

At Kellerberrin on the Great Eastern Highway, W.A. a road runs north towards Trayning. If you take this road, drive about 28 km to the junction with Brown Rd. On this corner begins Durrakoppinen Reserve, one of the richest reserves of the genus Grevillea in Western Australia.

The area contained by the reserve is relatively small but contains the following 13 species: *G. acuaria*, *G. dryandroides ssp. hirsuta*, *G. eryngioides*, *G. excelsior*, *G. hookeriana*, *G. huegelii*, *G. incurva*, *G. paniculata*, *G. paradoxa*, *G. roycei*, *G. shuttleworthiana ssp. shuttleworthiana*, *G. teretifolia*, *G. umbellulata ssp. acerosa*.

It is probable that *G. haplantha ssp. recedens* occurs here also and is worth searching for as it is considered rare in the wild nowadays. It is found in the Kodj Kodjin Reserve a few km to the north but south of Trayning.

There are two soil types, each of which supports a different flora; grey sand over laterite, which is the major type in the reserve and and brown clay-loam.

The heavier soil which mainly occurs within and beyond the eastern periphery of the reserve supports *G. acuaria*, *G. huegelii* and *G. paradoxa*.

The sand supports the remaining flora which is so rich and well-preserved that it was obviously the major reason for creating this small reserve in the first place.

The grey sand over laterite country in this area has largely been cleared and it is only in reserves like these that we can see patterns emerging of the pre-existing flora for the whole area.

In another reserve on Thornett Rd., S of Dowerin, most of the species that grow in this soil type also occur, including *G. dryandroides*, *G. roycei* and *G. incurva*.

G. roycei occurs in similar country at Cunderdin, in the cemetery. Around the badly degraded road verges throughout this area, *G. paniculata* struggles to survive.

In Durrakoppinen Reserve, the population of *G. dryandroides ssp.hirsuta* is quite unique in the variety of flower colours that range from pale lemon to deep pink.

To view this population, take a track from the main road, approximately in the middle of the reserve, heading east. Walk along this track for c. 1 km to a cross-road at which point turn south for c. 600 m. You will find the relatively small population ofG. dryandroides on the western side of the road through here.

It was in this reserve that it first became clear to me that the *Grevillea integrifolia complex sensu McGillivray* could not be supported in its revised form. Both *G. shuttleworthiana* and *G. incurva* were here growing beside each other. Whereas *G. shuttleworthiana* was in flower and bearing pale lemon inflorescences, *G. incurva* was only in bud, flowering probably a few weeks after.

McGillivray ranked our *G. incurva* as only a form of *G. biformis*. However,in my view, as it occurs both here and elsewhere in quite sizeable, consistent populations, it deserves equal ranking with the other named populations of *G. integrifolia sens. lat*.

Altogether, this reserve is well worth a visit, if you are travelling in the west.

CUT FLOWERS

MCP prevents Ethylene-mediated Flower Fall in Grevillea

Daryl Joyce & Andrew Macnish, Dept of Plant Production, University of Qld, Gatton College
originally published August 1997 in Ornamentals Update, 12:3, adapted for this newsletter by P. Olde

Ethylene Ethylene is a natural plant hormone. It is produced by ripening fruit (e.g. apples) and by deteriorating and decaying fruit, vegetables and flowers. Ethylene is also produced from plastics (e.g. polyethylene) which are breaking down, and is a product of the partial combustion of fuels (e.g. petrol).

Consequently ethylene is all around us, and can be particularly high in confined places. For example, ethylene may accumulate in fresh produce shop display areas, where sources might include ripening fruit, heated plastics (e.g. fluorescent light ballasts), cigarette smoke and vehicle exhaust fumes for the car park.

Ethylene is unique among plant hormones in that it is a gas. As such, it can readily move around. However, like all other plant hormones, it is extremely potent at very low concentrations (i.e. in the parts per billion to parts per million concentration range). Effects of ethylene on ornamentals include induction of leaf, bud, flower and fruit drop, and acceleration of the fading of certain cut flowers.

Flower fall in Geraldton wax and Grevillea is an ethylene-mediated problem for cut flower growers at the post-production handling phase.

Flower fall in Geraldton wax and Grevillea is an ethylene-mediated problem for cut flower growers at the post-production handling phase.

Anti-ethylene treatments

A number of chemical anti-ethylene treatments for ornamentals have been developed over the years. Perhaps the most well known is silver thiosulphate (STS). Another is amino-oxyacetic acid (AOA). Unfortunately, both of these chemical treatments have limitations. The silver in STS is considered an environmental pollutant, and AOA is toxic to most ornamentals except cut carnation flowers. Other chemical anti-ethylene treatments, such as aminoethoxyvinylglycine (AVG), are currently too expensive to be practical from a commercial perspective.

However, some exciting news is that a new chemical anti-ethylene treatment has been devised by Professor Edward Sisler of the University of North Carolina.

This chemical is called 1-methyl-cyclopropene (MCP), and it has been shown to have extremely potent anti-ethylene activity. Furthermore, it is considered likely that MCP will have little or no adverse environmental impact.

At present, commercial preparations of I-MCP are being formulated by an American company called Biotechnologies for Horticulture. This company has recently made samples of a commercial preparation available for testing by research organisations both in the United States and overseas, including in Australia. Before commercial formulations can be used by industry, they must be approved by the Environmental Protection Agency in the United States and by equivalent authorities elsewhere. The necessary paperwork has been submitted to the EPA for consideration.

In the meantime, thanks to advice from Professor Sisler, collaboration with Professor Michael Reid (University of California) and financial support from thr Rural Industries Research and Development Corporation (RIRDC), we have been able to manufacture and test MCP here in Australia. This testing is focused on native Australian cut flowers, since it is funded under the Wildflower and Native Plant section of the RIRDC. The general aim of this research, as set out in the original proposal, is to 'extend postharvest longevity of native cut flowers and foliage through treatment with the new anti-ethylene agent, MCP'. More specifically, we aim to 'determine dosing (concentration, time and temperature) relationships for MCP treatment and define practical application systems for MCP treatment'. To this end, we are currently expanding work with MCP that we manufacture in our laboratory to include testing of the recently available commercial 'prototype' formulation.

Grevillea

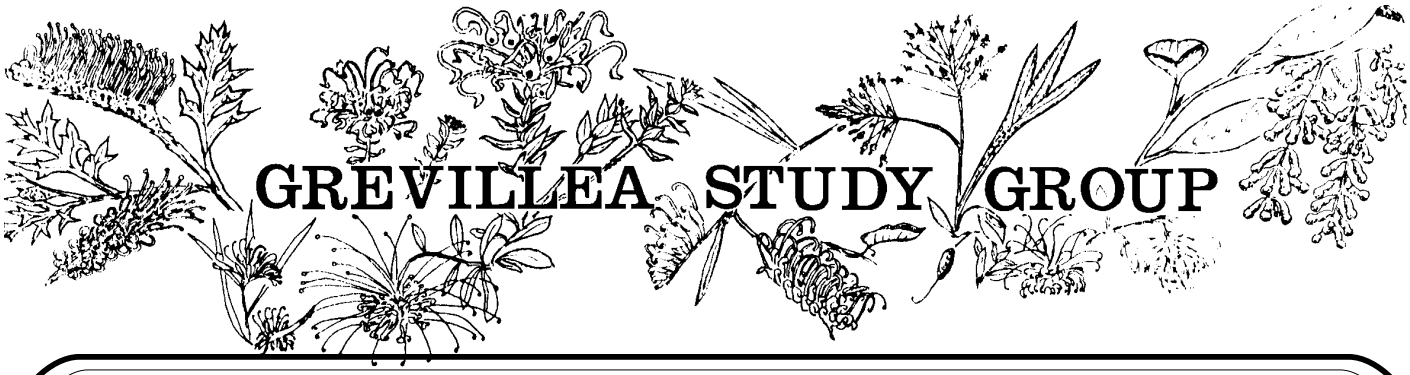
In our ongoing research, we are determining MCP effects on a range of native cutflower crops.

Our initial testing was conducted with Grevillea 'Sylvia', which is considered to have good cut flower potential, but which also suffers from serious flower fall during vase life.

A controlled test was conducted in which cut flowers were exposed to ethylene at the rate of 10 parts per million for 12 hours on day 1 after harvest. On day 0 (harvest day) the control group was given no special treatment, whereas the test group was treated with 10 parts per billion MCP formulation for 12 hours. After 5 days, the results showed that none of the treated flowers had fallen, whereas all the florets had dropped on the untreated flowers. It was concluded that MCP pre-treatment completely prevented ethylene-induced flower fall. No other anti-ethylene treatment of grevillea (e.g. STS pulsing) comes close to this spectacularly beneficial MCP effect.

It was concluded that MCP pre-treatment completely prevented ethylene-induced flower fall

In other tests on Geraldton wax, MCP is being applied in a plastic tent, originally designed for treatment of cut flowers with aerosol insecticide. The results to date look extremely promising. Thereafter, we will continue to evaluate MCP effects on a variety of ethylene-sensitive native cut flowers and to devise realistic treatment recommendations in order that this novel anti-ethylene technology can be immediately adopted by Australian industry when it becomes commercially available.



SEMINAR

FRED ROGERS SEMINAR 2000 "GREVILLEAS"

Melbourne Cup Weekend, Sat. 4th and Sun. 5th November
GRAMPIANS, VICTORIA

Plans are well under way for this exciting weekend. Being jointly hosted by the APS -Grampians Group and The Grevillea Study Group, we have planned a wonderful range of speakers for the Seminar on Saturday. These include Peter Olde from Sydney, the leader of the Grevillea Study Group, Merv Hodge from Brisbane, Founder of the Grevillea Study Group and Grevillea breeder, Neil Marriott, leader of the Victorian Chapter, Phillip Vaughan, owner Mt. Cassell Native Nursery etc.

SATURDAY'S PROGRAM

The Seminar will be Ararat Secondary College. Following afternoon tea, delegates will have the opportunity of visiting Ararat's beautiful Alexander Gardens where the Grampians Group have established an attractive native garden.

Back to the Secondary College for pre-dinner drinks and nibbles prior to catered dinner. Following coffee we are planning a special and entertaining evening lecture, as well as displays, book sales etc.

SUNDAY'S PROGRAM

Sunday will be devoted to garden visits and plant sales, with visits to Seppelts Great Western superb native gardens established by Neil Marriott and extended by Phillip Vaughan. The gardens are not only full of rare and beautiful native plants, but the opportunity exists for wine tastings and purchases.

Not far from Great Western is Neil Marriott's native garden, set amongst huge granite boulders on a high ridge looking out to the Grampians. It is the home to OPCA's official Grevillea Collection with over 260 species and subspecies under cultivation. A range of Grevillea and other tubestock will be available from the Grevillea Study Group.

At beautiful Pomonal, set on the slopes of the Grampians, we will be visiting two famous native gardens and nurseries. Phil and Jane William's Wildflower Nursery is one of the longest running native nurseries in Victoria, with extensive display gardens and wonderful areas of natural Grampians bushland.

Not far up the road is Phillip and Alexis Vaughan's amazing garden and Mt Cassell Native Nursery. Phillip specialises in all the rare and spectacular native plants that most of us only see on a trip to the West. Here they can be seen growing to perfection. Both nurseries will have an extensive range of native plants for sale including many of the rare and uncommon Grevilleas sure to be featured in the seminar.

BBQ LUNCH AT BEAUTIFUL REDMAN'S BLUFF

Delegates will be divided into two groups, with one group visiting the Great Western/Black Range properties, while the other visits the Pomonal properties. Following the morning visits we will be having a BBQ lunch in the beautiful oasis of Redman's Bluff Caravan Park run by APS Grampians Group members Tom, Aileen and Aiden Banfield. Set at the base of the massive Redman's Bluff, the property is fed by permanent crystal clear springs, and is landscaped with a large range of natives, huge shady trees, and large ornamental lakes.

Following lunch, the two groups will swap about and visit the other two gardens. At the conclusion of the garden visits, delegates will be free to visit the Grampians or local wineries, or head off home.

ACCOMMODATION

The Melbourne Cup long weekend is one of the busiest times in the Grampians so it is essential that delegates **book their own accommodation as soon as possible** as most motels etc are fully booked out if left too late. Delegates can camp or stay in on-site vans at Redman's Bluff Caravan Park, or book in to a motel or caravan park in Ararat, Stawell or the Grampians by ringing the toll free booking numbers.

AFTER THE SEMINAR

For those who wish to visit some of the Grevillea habitats in the Grampians on the Monday or Tuesday, special self-guided tour maps will be included in the Seminar booklet. These will provide participants with accurate directions, kilometerages, etc on where to find the majority of the Grampians Grevilleas. The drives will also take you to some of the best wildflower areas in the Grampians.

GREVILLEA STUDY GROUP CRAWL

There will be a 4 day **bush campout** and Grevillea Crawl through Western and Central Victoria from Tuesday the 7th to Friday the 10th Nov. We intend to visit the homes of *Grevillea montis cole* and its rare subpecies *brevistyla* on the top of Mt Langi Ghiran, before heading on to find several populations of *Grevillea floripendula*. Other species we intend to find include *Grevillea dryophylla*, *G. obtecta*, *G. alpina*, *G. rosmarinifolia* -dwarf forms, Whipstick forms, and *G. micrantha*.

BOOKING FORM

Post to : Phil Williams, Wildflower Drive, Pomonal, VIC. 3381 (Phone 53566 250)

Name/s . . . . . .

Address . . . . . .

Postcode . . . . . Telephone . . . . . Fax . . . . . .

REGISTRATION @ $40/ HEAD . . . . . .

Vegetarian meals preferred . . . . . .

I enclose $. . . . . PAYABLE TO; APS- GRAMPIANS GROUP

BOOKING DETAILS

F.J.C. ROGERS SEMINAR "GREVILLEAS"

MELBOURNE CUP WEEKEND
NOVEMBER 4th & 5th 2000

Hosted by APS - Grampians Group and the Grevillea Study Group

Registration includes lunch and dinner Saturday, morning and afternoon tea Saturday, nibbles and pre-dinner drinks, BBQ lunch Sunday, morning tea Sunday, and Grevillea booklet, including Self-guided "Grampians Grevillea Crawl" maps for those wishing to explore the Grampians on the Monday

(BYO DINNER DRINKS)

PLEASE NOTE

1. There is a limit on delegate numbers due to catering etc. There will also be numerous interstate bookings including Grevillea Study Group memberregistrations. Members are therefore urged to book early to avoid disappointment.

BOOKINGS CLOSE AUGUST 30

2. Melbourne Cup Weekend is a long weekend for most in Victoria, and as a result delegates should book **THEIR OWN ACCOMMODATION NOW**, as the Grampians area is very popular at this time of the year.

ACCOMMODATION

Redman's Bluff Caravan Park, Pomonal (APS Members) on site vans or camping amongst the natives 03 5356 6309

Ararat Tourism Booking Agency 1800 657 158

Stawell/Grampians Booking Agency 1800 246 880

Following the Seminar, the Grevillea Study Group will be running a **Grevillea Crawl - Campout** through Western and Central Victoria from Tuesday the 7th till Friday 10th November.

Those wishing to join this trip should book with:
Neil Marriott (03 5356 2404) or Peter Olde (02 9543 2242).

TAXONOMY

Notes on *Grevillea banksii* and its colour forms

PR Beal - 29/9/99

(Red and cream forms)

Typical *G. banksii* with its red perianth and style and the form *albiflora* with cream-white perianth and style are common in the wild in Queensland (Olde and Marriott, 1995) and well known in cultivation. I recently (July 1999) visited central Queensland with the guideance of knowledgeable local SGAP identities Ann and Ted McHugh to look for other variants with different flower colour (e.g. pink) and also for prostrate plant habit (the true prostrate known as "Ruby Red").

Over 40 km of Bruce highway from Maryborough to Childers on the trip north the dominant form was *albiflora*, as trees, in scattered to dense populations on roadside margins. However, I observed a low incidence of red trees in populations scattered over approx. 5 km on the highway near Pig Creek. In contrast, the red form overwhelmingly dominated in the widespread populations of trees in the greater Byfield area. Only one tree with cream flowers was observed in this area near Waterpark Creek.

This confirms previous personal observations and records that the red and cream forms are common and often occur together in the wild.

This occurrence of red and cream forms together is not surprising as the red form only differs from the cream form in one gene (Beal, 1970). The allele for red flower colour may be tentatively designated as RR in the homozygous state and the cream allele tentatively designated rr in the homozygous recessive state. The rate of mutation of these alleles is the basic factor influencing gene frequency.

Homozygotes are expected to breed true, although any advantage in survival one allele may have over the other is presently a matter of speculation. However, the allele for red flower colour is dominant in the heterozygous state. Thus, the red form could include heterozygotes (i.e. Rr) capable of producing both red or cream flowered segregates.

(Pink and apricot forms)

Colour variants *G. banksii* described as pink and apricot have been recorded by Olde and Marriott (1995). Information on their nature, natural distribution and horticultural value is less well documented.

A range of pink or apricot flowered shrubs (to 2-3 m height) was recorded in the 1980's in the Agnes Waters hinterland by Pat and Harvey Shaw (Pat Shaw pers comm). In a recent (1999) visit by Bryson Easton to the Agnes Waters hinterland, he confirmed the occurrence of pink flowering shrubs or small trees (up to 5 m height) in *G. banksii* populations scattered over 10-15 km^2 . These pinks ranged from very light pink to dark pink. They constituted up to 5%, with *albiflora* up to 60% and *G. banksii* (red) up to 40% of the population.

Further, a very low incidence of pink forms (only 5 or 6 plants) was also recorded in the wild in the very extensive populations of tall trees (up to 5-10 m), otherwise red flowering, in 1994 north of Byfield (Bryson Easton pers comm).

G. banksii *Colour variant, Agnes Waters Headland (Photo P & H Shaw - from The Grevillea Book II)*

In my July 1999 trip I found a few plants with dark pink (or light red) flowers in local populations of otherwise red flowered types at both Five Rocks and Stockyard Point. Incidentally, the plants from these exposed locations were typically low growing (<0.5 m high and 1.0-2.5 m wide) with sprawling or decumbent habit. This sprawling habit was retained in plants derived from 1975 collections of the red form from Five Rocks originally made by Scott Cornford (Col Cornford pers comm) and subsequently cultivated by me. The plants so cultivated at 2 years have increased vigour and size (1.2 - 1.4 m high and 2.5 - 3.1 m wide) compared to those in the wild.

I have now seen samples of flowers of three accessions of the pink form from either cultivated or wild plants. The development of pink colour varies and may be more vivid (up to a light red) or less vivid (to a very light pink), include all the perianth or only the distal part and include or exclude the style. Objective assessment of this colour form and any variants is desirable. A comparative evaluation of the available accessions of the pink form in a field trial would be useful in defining the nature of colour development, the distinctness of the different accessions and their ornamental potential. Also, hybridisation of the pink form with each of the red and cream form of *G. banksii* would be valuable in determining genetic relationships.

NB: Unfortunately I did not find any plants in the wild which could be considered with certainty to have the true prostrate habit, small leaves and small inflorescences typical of cv 'Ruby Red'. This does not mean this form is not there, only that it remains to be rediscovered!

References:

Beal, P.R. (1970). *G. banksii* : inheritance of flower colour in the intraspecific cross *Grevillea banksii* R. Br. forma *albiflora* (Degener) Deg. and Deg. x *Grevillea banksii* R.Br. Results of hybridising. *Australian Plants* 6, 11.

Olde, P., and Marriott, N. (1995). *'The Grevillea Book'* Vol. 2. (Kangaroo Press: Kenthurst, NSW). 248 pp.

PROPAGATION

The following article was downloaded from the World Wide Web. Would members report any information on the effects of smoke on the germination of grevillea seed.

PLANT SCIENCE RESEARCH LAB

The Effects of Smoke on Germination
Kings Park & Botanic Garden

Since the time of the first fleet in the 1780s, many Australian species could not be germinated reliably from seed. This baffled many horticulturalists and plant lovers who marvelled at the diversity of wildflowers in Australia but were unable to grow them by the conventional seed propagation means.

Although sophisticated tissue culture methods often involving complex hormone treatments may have resulted in germination for many species, these methods were hardly applicable to the home garden or for nursery production in a commercial sense. Following the discovery in 1991 by South African scientists that smoke may aid seed germination in African species, Kings Park staff were quick to research the impacts of smoke on germination of Australian species.

Smoke provides one of the most important cues for breaking dormancy in many species and opens up new horizons for the horticulture appreciation and conservation of Australian plants.

Germination after a fire

It has been commonly held that it is the heat and the ash of fire that is important in germination. It is now clear that it is the smoke from the fire that plays one of the most crucial roles in aiding germination in a wide range of native species. This effect is most apparent in those species which shed their seeds into the soil seed bank. For those species that retain their seed in capsules on the plant for long periods, there appears to be less of a requirement for smoke.

How Smoke can be Applied

Experiments

Experiments were conducted under nursery conditions and in disturbed bushland, using seed selected from the natural soil seed bank. In most instances where smoke is not applied, the control, that is, without smoke treatment, will often have no, or very little germination.

Current research into smoke Liquid smoke, aerosol smoke and concentrated forms of smoke are currently being developed for application to horticulture and land management. Research is also attempting to understand what is the key chemical in smoke responsible for promoting germination.

The search for the active chemical in smoke.

What is clear so far, is that whatever the agent is in smoke, it is likely to be very effective at extraordinary low levels, and that only small quantities will be needed to treat hectares of bushland; eliciting a germination response from the dormant seed bank. For horticulture, resolution of the active chemical will allow the commercial application of smoke to a broader range of species, and may help in the commercialisation of native species for bedding plants and landscaping.

NEWS IN BRIEF

Merv Holland from New Zealand reports that a well known NZ nurseryman who is full of enthusiasm for Grevilleas is growing Grevilleas from Merv's cuttings. Hope he remains enthusiastic!

* * * * * * * * * * *

Egon & Edith Demuth, of Kingfern Native Nursery have been long time members of the Grevillea Study Group, but find themselves these days more involved in more wide ranging environmental aspects of their land. They have been involved in breeding native ducks and geese, and protecting their regional fauna, including the Long-nosed Potoroo and Wallaby species. If would like to know more about their trials and tribulations in this endeavour, their web site is:
http://www.pbq.com.au./home/kingfern/

The Type

by Bruce Wallace

There was a rush for the Cox's River as the word was passed around that the "Rosey Type" had been re-discovered.
Thingummyjig fell in the Cox's River or was it Cox fell in the Thingummyjig River in the dash and had to be recovered.
We all rushed to help but an emergency services type person was on the scene saying "move on, move on… we'll handle this, we have it covered".

The old hands went a-sprinting across the river flat with young new chum Anders beating the way.
The old hands stood aghast when that rosey was revealed, their mouths wide open
"How dare that young upstart usurp our hard fought gains…
He will be last in our cast!" they proclaimed.

Brownii was ecstatic with arms spread open wide and exclaimed that history was made as this plant was of old age.
Oldeii was a-beaming "Well done young Anders, you can drive up front behind me, we will lead this trip, your name shall not fade down Cox's way!"

A wag from the old hands yelled "That plant's no good it has old genes!"
The leader gave the wag a look most mean and said "You silly dag, go and put your head in this here bag and be gagged for the rest of the trip!"
As we left that hallowed ground, Oldeii was heard to mutter
"Eat your heart out Marriottii".

HISTORY

Charley Fraser, first grower of Australian plants in Australia

P.Olde

Charles Fraser (?1788-1831) a Scottish-born private of the 45th Regiment arrived in Sydney in April 1816, eight months before Allan Cunningham.

There is no record of the early life of Fraser but he appears to have been familiar before his arrival with the cultivated Australian plants and their names growing at Edinburgh Botanic Garden. Fraser's keen interest in botany drew Governor MacQuarie's attention and he was made superintendent of the Sydney Botanic Gardens when it was formally proclaimed by MacQuarie in June 1816.

The 'botanical soldier' accompanied John Oxley on three journeys as collector; the first in 1817, along with Allan Cunningham, the King's Botanist, which produced an 'accession of upwards of Five Hundred Plants totally different from those hitherto collected or known in this country' explored an area between Bathurst and the Lachlan & Wellington valleys; the second, in 1818, this time as the only botanical collector, during which he collected 'near 700 new specimens' from the New England and Hastings River areas to Port MacQuarie; the third expedition was again to Port MacQuarie by sea in June 1819.

Three cases, containing all the rare and choice plants discovered and collected by Fraser were forwarded by MacQuarie to Earl Bathurst for the King in England in 1819.

In 1820, with Commissioner Bigge, Fraser was in Tasmania and later in the year returned to inland New South Wales. However, it was not until 1 January 1821 that Fraser was appointed formally to the position with the title of 'Colonial Botanist' although Oxley referred to him as having that title in his journal of 1817.

From 1823 he was officially known as 'Superintendent Sydney Botanic Gardens' where he worked to collect and grow indigenous plants for the garden and to stabilise them for long voyages in a 'plant cabbin' to grace the gardens of the King and also as a clearing house for exotics and fruit vines being introduced to the colony.

In 1826, William Jackson Hooker published a description of *Grevillea pubescens* from a specimen grown from seed sent to him at Glasgow by Charles Fraser in 1822, flowering there in 1825. Seed was also sent to Dr Graham at Edinburgh Botanic Gardens where plants flowered in 1826. Hooker recognised that 'it appears to come near to *G. Baueri* of Mr Brown' but some specimens in his possession 'gathered upon the Blue Mountains in New Holland ...differ only in having more stiff and rigid leaves, and are scarcely at all pubescent'. *Grevillea pubescens* is now in synonymy under *G. baueri subsp.baueri*, the pubescent new growth of Hooker's plants now being regarded as within the natural range of variation for this species.

Other plants were also introduced to horticulture in England and Scotland from seed sent by Fraser. J.D. Hooker in his Introduction to the Flora of Tasmania, says Fraser enriched the gardens of England with numberless plants.

In 1826, Fraser visited Norfolk Island and the Bay of Islands, New Zealand where he busily collected along the shore for many hours both specimens and live plants.

In 1827 he again returned to Tasmania and was part of the expedition to the newly proclaimed Swan River Colony where he collected among many others type specimens of *G. bipinnatifida*, *G. crithmifolia* and *G. synapheae*.

In 1828 he was sent to Brisbane with Allan Cunningham to lay out the Botanic Gardens on Moreton Bay. He was a prodigious correspondent, sending comprehensive reports of his trips to Swan River and Moreton Bay to W.J. Hooker at Kew. George Bentham acknowledged Fraser as the collector of over 230 Australian species.

Not only was Fraser an excellent collector but he was an extremely industrious and hard-working man, a fact attested to by all for whom he worked, including not only Oxley and Bigge but also, Governor Stirling, Governor Brisbane, Robert Brown and Allan Cunningham, although Cunningham preserved a pithy comment on Fraser in a letter to his brother Richard Cunningham. He writes that "I have repeatedlygiven a sumptuous dinner to half a dozen when on my excursions at the close of each year (Dec & Jany) of which party on one occasion were poor little Hunter & Fraser - but these are bygone days. I now think of them with_____. "

Fraser died of a stroke at Parramatta on 22 December 1831 after taking ill at Emu Plains while returning from a collecting trip to Bathurst with cartloads of living plants. It is probable that Fraser liked a drop of rum. The Australian, 30 December 1831, recorded that there were 'few to whom Charley Fraser was not personally known...Naturally of a plethoric habit, his convivial disposition probably contributed not a little to the apoplectic attack of which he expired.' He was thought to be about 44 years of age.

Charles Moore in his official reports dating from 1851 was the first to officially record the plantings at the Sydney Botanic Gardens.The records of plants grown during Fraser's tenure and his successors were previously unknown although Commissioner Bigge's " Report on the state of Agriculture &c in N.S.W." published in 1823 refers to 'a catalogue furnished by [Fraser] of the plants that are now cultivated in the Botanic Gardens of Sydney'.

Recently, a photocopy of a handwritten catalogue was sent to me by Noel Lothian, from Crafers, S.A. The document is entitled "Catalogue of Plants cultivated in the Botanic Gardens, Sydney, New South Wales., January 1828." The catalogue consists of some 45 pages, and lists over 350 mostly exotic genera and about 1350 species including 11 species of Grevillea. This catalogue records the earliest known cultivation record of Grevillea in Australia, predating by 23 years that of William Macarthur who recorded *G. robusta* and '*G.blechnum*' in cultivation at Camden in1843.

Although the earliest records do not pre-date cultivation records in England, the earliest cultivation of Grevillea in Australia now can be traced back to 1820, being *G. sericea* and *G. linearifolia*.

The full list of Grevilleas is listed at end of article. All species were introduced by Charles Fraser.

G. baueri is not found in the Blue Mountains. The taxon referred to may either be a form of *G. arenaria* or some other species or, more likely, Fraser has incorrectly cited the collection locality or confused it with the Great Dividing Range.

HISTORY *(cont.)*

The catalogue lists hundreds of plants and their date of introduction. Within the Australian Proteaceae are listed 2 petrophiles, 2 isopogons,5 persoonias including *P. hirsuta*, 1 adenanthos (*A. sericea*) introduced in 1827 by Fraser himself from King George Sound, 5 conospermums (including *C. coeruleum* in 1827 by Fraser), *Symphionema montanum*, 13 hakeas, *Lambertia formosa* (1819), *Xylomelum pyriforme* (1819),*Telopea speciosissima* (1819), 3 lomatias (one from Melville Island by J. Richardson in 1827), 8 banksias, and even one dryandra, *D. floribunda* (syn. *D. sessilis*) introduced in 1823.

G. sericea	*P.J.(Port Jackson)*	*1820*
G. linearis (linearifolia)	*P.J.*	*1820*
G. juniperina	*P.J.*	*1823*
G. aspleniifolia	*P.J.*	*1827*
G. punicea (speciosa)	*P.J.*	*1825*
G. acanthifolia	*B.M.(Blue Mountains)*	*1823*
G. pubescens (?baueri)	*B.M.*	*1825*
G. rosmarinifolia	*B.M.*	*1825*
Grevillea sp.	*B.M.*	*1825*
G. cinerea (?arenaria subsp.canescens)	*B.M.*	*1825*
G. buxifolia	*B.M.*	*1825*

Some of the taxa are incorrectly identified e.g *Banksia australis* from Van Dieman's Land. I have had insufficient time to sort this out before writing.

References:

Fraser C. (1830) Letters to W.J. Hooker Bot. Miscellany 1

Froggatt W. (1932) The Curators and Botanists of the Botanic Gardens, Sydney Journ & Proc. Royal Historical Society 17.3. 101-133.

Gilbert L.(1981) Plants Politics and personalities in colonial New South Wales in D.J. & S.G. Carr (eds)*People and plants in Australia*.

Graham R. (1826) *Dr. Graham's List of Rare Plants*, Edinburgh Philosophical Journal 27 (53):189

Hooker W.J. (1826) ***Grevillea pubescens***, Exotic Flora 3: t216

Lothian N. (1998) *Records of the Earliest Cultivation of Australian Plants* SGAP Journal S.A. Region Inc. 14.8 (November):306.

MacArthur Sir William (1817-73) *Horticultural correspondence and lists of plants*, Unpub.

Maiden J.H. (1902) *The Sydney Botanic Gardens*. Biographical Notes Concerning the Officers No.1 - Charles Fraser. in Charge Journ. Public Serv. Assoc. (N.S.W.)

Moore C. et al. (The Director) (1851-95) *Report of the Botanic Gardens & Museum*, Sydney.

Seed Bank

Stocks of free seed are getting very low.
If anyone can donate free seed please send to Judy Smith, 15 Cromdale Street, Mortdale 2223.

A Note from the Treasurer

Please ensure all cheques are made payable to Grevillea Study Group, not Peter Olde. Thanks

OFFICE BEARERS

Leader: Peter Olde, 138 Fowler Road, Illawong 2234. (02) 9543 2242

Treasurer and Newsletter Editor: Christine Guthrie, PO Box 275, Penshurst 2222. Phone/fax (02) 9579 4093

Curator of Living Collection & Herbarium: Ray Brown, 29 Gwythir Avenue, Bulli 2516. (02) 4284 9216

Seed Bank: Judy Smith, 15 Cromdale Street, Mortdale 2223 (02) 9579 1455

FINANCIAL REPORT

FEBRUARY 2000

Income		Expenditure	
Subscriptions	$190.00	Newsletter Publishing	220.00
Donations	5.00	Postage	122.50
Seeds	45.50	GPS Unit	404.10
Interest	7.18	Fuel & Postage WA Tour	1609.92
	$217.38	Subs Aust Network for Plant Conservation	70.00
		Bank Charges	10.14
			$2,436.66
Balance on Hand 17.2.2000	**$12,788.56**		

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1999	2000

If a cross appears in the box, your subscription of $5.00 is due.
Please send to the Treasurer, Christine Guthrie, PO Box 275, Penshurst 2222.
Please make all cheques payable to the Grevillea Study Group.