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Centenary of Federal Government: Year 2001

I could be guessing wrongly but things do not look good for Australia's future beyond 2001. The bureaurocracy in Canberra has pulled in the reins on exciting citizen participation and taken tight central control of the nation's celebrations for the year 2001. One thing appears certain, we will get a large new expensive building in Canberra and a few outhouses in the states. We can forgive them all this if they will only give us a hearing on how to secure prosperity beyond 2001 by nurturing national resources. Our proposal generates wealth and the active participation of millions of Australians for very little cost! See page 229.

Australian plants and the cutflower trade. Readers will have noticed numerous articles recently on wildflowers as a commercial crop. These will continue. This will be a vital industry for Australia and a cash crop for country people but our own selfish concerns are also promoted; the development of superb flowers for the garden and our landscapes (the advice given is an excellent guide to the home gardener) and the curtailment of wild bush picking by producing a superior product on wildflower farms.

Australian Native Flora Botanic Gardens. Submissions are in for funding of these tourist oriented, educational and environmental research gardens under the Howard Government's National Heritage Trust. If you are hoping for one in your area, contact the Editor.

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COVER PLATE, *Pomaderris ferruginea* can be a large shrub to 3 m but cut back early it can be maintained as a delightful small shrub as shown. The heads of yellow flowers, each to 10 cm across, are showy in spring. The foliage is a pleasing contrast to other plants for the rest of the year. Photo by Neil Marriott.

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Pomaderris for the garden

Hardy, reliable and good looking as well

by Jo Walker* and W. H. Payne

Just about any native garden would benefit from the inclusion of one or more *Pomaderris* species. *Pomaderris,* (po-ma-DERR-is) seem to be the sort of plants few people notice in the wild. Certainly they blend into the background when not in flower, and no doubt the large heads of bright yellow flowers can be mistaken for wattles. Strange then that *Pomaderris* feature far less often than wattles in our native gardens. These long-lived, neatly-shaped shrubs, many with truely spectacular flowers, are certainly worth a space.

There are over forty species of *Pomaderris* in Australia, mostly in the south-eastern regions of the country, where they can be seen growing along roadside cuttings and in often very steep creek gullies. Flower colours range from pale cream to brilliant gold. The individual flowers are shown in the sketch on page 199 and in the photograph on page 197. The leaves vary from bright to dark green to pubescent grey. New growth is often attractively rusty or reddish and buds are usually a prominent feature before flowering begins. Most flower in spring. The photograph of *Pomaderris ferruginea* on the front cover is characteristic of how a potentially large shrub to three metres high may be maintained in cultivation by early pruning and then after flowering.

Pomaderris are easy to grow from seed if treated with boiling water (pour the hot water onto the seed in a cup and leave for a day or two before sowing). Cuttings are more difficult, but hardened small side shoots give the best results.

Beginner's Tip: *Pomaderris* are easy to grow from seeds soaked in boiling water.

Tablelands species are frost-hardy; those from the coastal ranges less so. Although *Pomaderris* often grow on very steep and apparently dry hillsides, those I have grown do not seem to tolerate very dry conditions in the garden. They do well in heavy but well-drained soils. Following are some species I have grown or seen and consider suitable for the garden.

***Pomaderris andromedifolia*:** A variable shrub, usually less than 2 m tall. Glabrous mid-green leaves. Flowers cream to yellow in terminal panicles. New growth is pinkish red.

***Pomaderris angustifolia*:** Bushy shrub to 3 m by 3 m. Leaves small and narrow, dark green. Flowers cream, borne in leafy panicles Flowers have a slight but pleasant perfume. Can get straggly but responds to regular pruning.

***Pomaderris betulina*:** Fairly dense shrub, 2–3 m tall. Small, dark green leaves, usually glabrous. New growth pinkish. Beige-cream flowers in small clusters.

***Pomaderris brogoensis*:** Compact shrub or small tree, up to 9 m tall. Leaves small, round to oval, pale greyish green. Flowers lemon-yellow in pyramidal terminal panicles.

***Pomaderris cocoparrana*:** Small to medium shrub, 1–3 m. Velvety dark green leaves. Flowers bright yellow in small terminal panicles.

*Leader of the Rhamnaceae Study Group. Contact through State Secretary.



Pomaderris humilis, △ the flower and ▽ the plant. See page 198 for description.
Photographs: P. Ollerenshaw, © Australian National Botanic Gardens.



△ ***Pomaderris elliptica***, photo by Neil Marriott. See page 198 for descriptions.

▽ ***Pomaderris intermedia,*** photographer, Murray Fag © Australian National Botanic Gardens.



***Pomaderris cinerea*:** Compact shrub or small tree, 5–10 m tall. Leaves oval and covered with a very fine pubescence which gives them a grey appearance. Flowers pale yellow in narrow panicles, in summer. Grows in moist open forest on coastal ranges and may need similar situation to do well.

Pomaderris discolor: A shrub from Eastern Australia, 1–4 m high, readily recognised in the wild by its broad lance-shaped leaves 4–8 cm long, dark green above, with grey to light brown velvety backs. The heads of yellow flowers are held on the ends of the branches.

Pomaderris eliptica: syn. *multiflora* can be kept to a small rounded fairly dense shrub. The leaf shape is shown in the photograph on page 197. The heads of yellow flowers are often so dense as to obscure the foliage.

***Pomaderris eriocephala*:** Spreading shrub, often with several stems from the base. Grows to 2–3 m. Leaves oval, mid-green with small tufts of fine hairs along the margins. New growth rusty brown. Clusters of cream flowers.

Pomaderris humilis: A spreading shrub 2–3 m tall and 3–4 m wide. Clusters of beige buds followed by bright golden flowers as shown in photograph, page 196.

***Pomaderris intermedia*:** Open shrub to 3 m tall. Dark green glabrous leaves. Yellow flowers in tight corymbose panicles above the leaves.

***Pomaderris lanigera*:** Shrub to small tree, 2–4 m tall. Fresh green leaves, new growth rusty. Large clusters of golden flowers carried at the ends of long stems.

Pomaderris obcordata: Is a low compact shrub to one metre high, the smaller heart-shaped leaves being to 1.5 cm long, the bush looking good when not in flower. The flowers are formed in clusters the deep woolly buds opening into white or yellow stars. They provide a massed display beneath whipstick mallees in South Australia and will decorate your garden.

***Pomaderris paniculosa* ssp. *paralia*:** Spreading dense shrub, 1.5 m tall by 2–3 m wide. Leaves ovate and glabrous with a pale felty margin. Flowers are pale, white to cream, and not showy, but the bush is attractive. A coastal plant, tolerant of strong salty winds.

***Pomaderris prunifolia*:** Open, tall shrub with rough mid-green leaves. Stems and new growth rusty brown. Small clusters of cream flowers.

***Pomaderris racemosa*:** A slender small tree, grown more for its appearance than its flowers. Flowers are cream, lightly scented and borne in small clusters. Leaves small, oval and bright green. Young stems are red.

There are many more species. The Royal Botanic Gardens, Melbourne, has published 16 new species* The sketches opposite are based upon this publication.

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*__Muelleria, 10__ published in 1997 by The Royal Botanic Gardens, Melbourne. *Pomaderris adnata, P. actensis, P. bodalla, P. coomingalensis, P. crassifolia, P. delicata, P. helianthemifolia, P. mediora, P. precaria* and *P. reperta*, together with some varieties of previously described species.

**__Editors note:__ This group of plants, assigned to the plant family Rhamnaceae, includes some very attractive plants. They produce masses of bright yellow flowers in dense flower heads. They are hardy and reliable to grow, accepting pruning to shape or for flower stem length when young. My plants are twenty years old and look like they will go on for ever. I have little doubt that when commercial growers get around to studying these plants seriously they will find that careful selection and development will yield forms with considerable horticultural potential.

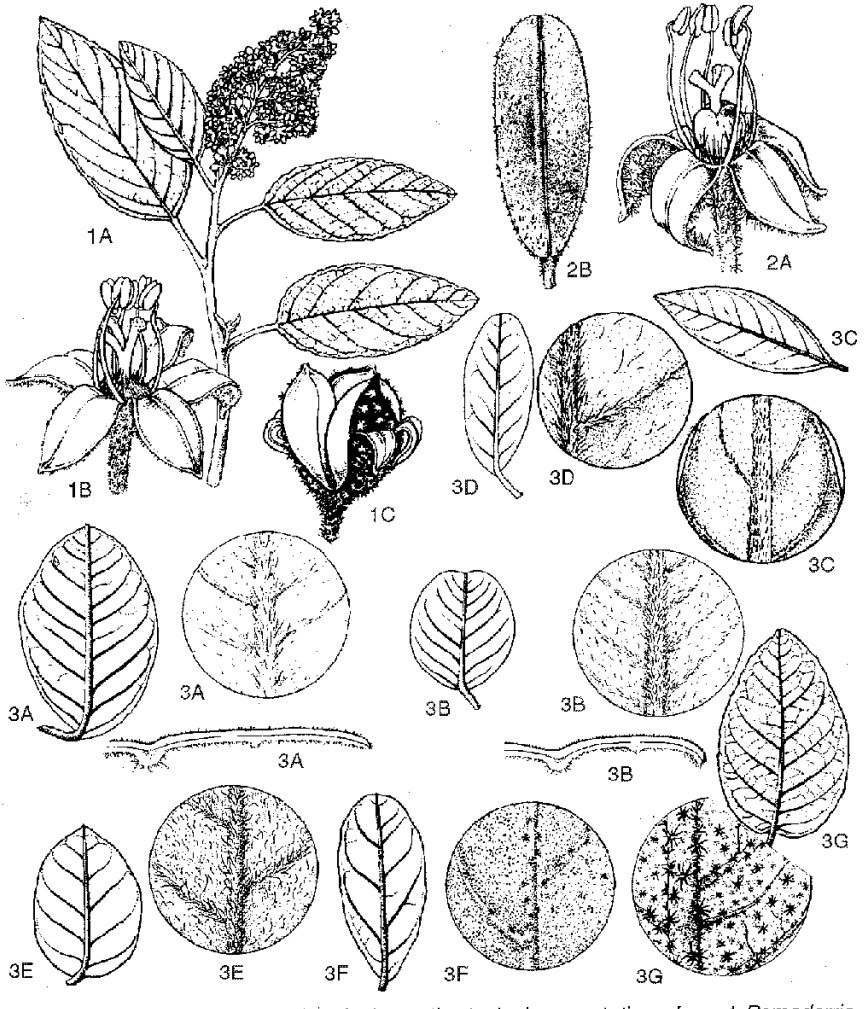


Figure 1, ***Pomaderris apetala***. 1A shows the typical presentation of most *Pomaderris* species, the flowers held in showy heads usually at the ends of branches. The various species may be determined by the individual leaf characteristics shown on this page. The individual flowers are usually as in 1B, with five petals surrounding five free stamens that enclose the three pronged style (the Western Australian species, *P. bilocularis* is unique in the genus with a two pronged style). The flower stalk and the underside of the petals are densely hairy. The ovary below the pronged styles, matures to a fruit, 1C, when fertilised and for this group of species, the sepals persist on the fruit.

Figure 2, ***Pomaderris helianthemifolia***, together with *P. angustifolia*, is unique in that the three pronged style sits on top of what is called a superior ovary, i.e., the petals are attached near its base, not enveloping as in 1B above.

Figure 3, ***Pomaderris*** species, newly described, the upper and underside of the leaf shown as the feature that serves to identify the species — A: *Pomaderris precaria;* B: *P. reperta;* C: *P. argyrophylla*; D: *P. andromedifolia*; E: *P. ligustrina*; F: *P. betulina; G, P. eiliptica.*

△ ***Brachyscome*** **'Lemon and Ice'** Photographs by Rodger Elliott.

▽ ***Brachyscome*** **'Jumbo Tricolour'**



New Cultivars

Now released for horticulture

***Brachyscome* 'Lemon and Ice'**, a hybrid based mainly upon the Stiff Daisy, *Brachyscome angustifolia*, is a suckering perennial herb of about 10–15 cm high. The lemon-yellow daisies fade to cream and pale pink to create an exquisite picture as shown in the photograph opposite. Excellent for rockeries, borders, hanging baskets, planters and patio pots, they are at their best over spring to autumn. The plants spread fairly rapidly by suckering. They rarely become open but respond very well to pruning or shearing in late winter.

**Brachyscome angustifolia*, in the wild, is a low, suckering plant that thrives in an open sunny position. The majority of the narrow, lanceolate leaves, 3–5 cm long, have entire margins, but there may be a few leaves with 2–3 acute teeth. The type form has masses of bright pink-mauve or mauve flowerheads on erect stems. It does well in containers or baskets if well watered.

***Brachyscome* 'Jumbo Yellow'**, a hybrid based mainly on *Brachyscome segmentosa*, is a spreading perennial herb of about 20–45 cm high with shiny, deep green, lobed leaves. The appealing daisies of about 3 cm across open to bright yellow and gradually fade to pale cream and blush pink, creating a lovely display. The photograph on page 216 shows these striking yellow flower heads but the camera has failed to capture these subtle tones. There are flowers for most of the year with the best display over spring to autumn. It is well suited for borders, rockeries, mixed planters and patio pots. It is attractive to butterflies.

Brachyscome segmentosa*, **'Lord Howe Island Daisy', is a robust, glabrous perennial, 0.5 x 0.5 m, with bright green, coarsely divided leaves. In the wild, the large white flowerheads, 3–6 cm across, are held aloft on stout stems.

***Brachyscome* 'Jumbo Tricolour'**, is also based upon the Lord Howe Island Daisy, but in this case the lovely daisy flowers are to 4 cm across, opening to a purplish-mauve that, with age, fades through mauve to nearly white as shown in the photograph opposite. The flowers appear for most of the year with the best display over spring to autumn. Responding well to pruning, this plant is also excellent for rockeries, borders and container display.

***Brachyscome multifida* 'Double Surprise'**, flowers all year to two colours, mauve and white. This is another plant derived from this popular parent but its value over the many others more adequately described and illustrated in colour in volume 17, page 346 and volume 18 page 300 is unknown.

***Bracteantha* 'Nullarbor Flame'** is the latest horticultural selection to be released that has been derived from the Golden Everlasting, *Bracteantha bracteata*. They have all proven exceptional garden plants with a good display over a long period and flower heads are ideal for drying for use in lasting arrangements. This new introduction is an attractive, small, semi-woody shrub of about 0.5–0.7 m x 0.5–0.8 m producing abundant bright red, yellow-centred papery-textured daisies to about 4.5 cm across, as shown in the photograph on page 216. For long-lasting posies, pick the flowers as they barely begin to open. Best display is from late spring to autumn. It tolerates periods of dryness.

*Prepared by W. H. Payne based upon information from Koala Blooms' 1997 releases and **notes from the Australian Daisy Study Group.

***Callistemon* 'Olive Green'** has bright pink, gold tipped brushes on an upright, compact bush to 2–3m high.

***Callistemon salignus* 'Great Balls of Fire'** is a more compact form of the species with bright pubescent new growth for 9–10 months of the year, producing masses of bright red brushes.

***Chamelaucium* 'Cascade Brook'** produces masses of soft pink waxy flowers fading to cream in the centre. The dense foliage, although needle-like in appearance, is soft to touch. **'Cascade Mist'** is similar, for cut flower production.

***Correa* 'Redex'**, is a cross between *Correa reflexa* and *C. decumbens*, from Kangaroo Island. To one metre high and wide, it produces waxy pink-tipped flowers through late summer to winter.

***Crowea exalata* 'Ryans Super-Duper Star Producer'** was a plant found by seven year old Ryan Theobold while weeding his dad's garden. Compact in growth, 50cm x 50cm, it produces a profusion of bright pink star-like flowers each the size of a five cent coin, in autumn and winter. The new growth is tinged a bronze-red. It appears to have been a seedling of *Crowea* "Southern Star".

***Cyathea* 'Allyn Lace'** is a tree fern with unusually bi pinnate fronds giving an unusual lacy effect.

Graptophyllum thorogoodii selection, a good horticultural form selected for its abundance of flowers and unique foliage. All four species of *Graptophyllum* were described in Australian Plants volume 17, page 66. They have proven to be hardly reliable plants over a very wide range of conditions from Sydney to Cairns.

***Greviliea* 'James Stanley'** arose as a chance seedling of *Grevillea* 'Bronze Rambler'. This selected form has bronze new growth maturing to dark green.

***Grevillea* 'Firesprites'** is the result of a cross between *Grevillea longistyla* and *G. venusta*, that occurred naturally in the garden of Merve Hodge. The attractive glossy, lobed foliage with coppery new growth produces flame red terminal brushes of flowers 8–10cm in length, on upright arching branches, 2–4m high.

***Grevillea* 'Gossamer'** has peachy-pink flowers in bunches, for most of the year on a bush to 3m x 2m after three years.

***Hardenbergia violacea* 'Purple Falls'** originated from a chance seedling. This species is a free flowering plant, horticultural forms in volume 18, page 294, 295.

***Hardenbergia violaceae* 'Winter White'**, has lime-green foliage on a compact bush to one metre high and wide, producing masses of tiny white flowers from July to September.

***Lophostemon confertus* 'Billy Bunter'** is a selection of this widely grown "Yellow Box" that is used extensively as a street tree.

***Pimelea linifolia* 'Snowball'** forms a compact bush which covers itself with large white flowers for 5–6 weeks each year.

***Scaevola aemula* 'Sunfan'** forms a compact plant displaying its mauve flowers to advantage. See volume 18, pages 172, 186, 296, 313 and volume 19, pages 100–144 for descriptions and photographs of species in horticulture.

***Syzygium paniculatum* 'Under Cover'** is the first prostrate Lilly Pilly produced for the horticultural market.

***Westringia* 'Milky Way'** has similar grey-green foliage to the widely grown *Westringia* "Wynyabbie Gem" but with white flowers in autumn and winter. ■

Bush Food Plantations

How to establish rainforest fruits and leaves*

The **Rainforest Bush Foods Association (RBFA)** is an independent body encouraging the development of an ecologically sustainable, ethically responsible and economically viable bush-food industry. The association is active in marketing, the formation of local branches, general promotion and education. It arose from the **Australian Native Bushfood Industry Committee (ANBIC)**, an independent authority which was initially funded by the Rural Industries Research and Development Corporation to accelerate growth in the bush-food industry from an estimated $15 million a year to $100 million in two to three years time.

Establishing a plantation

Rainforest bush-tucker plants grow in high rainfall areas but commercial plantings will require irrigation in dry periods. Year-round availability of water is important, with a drip or sprinkler irrigation system.

Different plants require different cultivation methods but as a rule, trees and shrubs need to be planted in open sunny positions. Space to grow into well rounded bushes and for harvesting is necessary, not the spacing you would use in a bush revegetation scheme. The soil needs to be deep and well drained, with a pH of 5 to 6, soils which are too acidic will need to be sweeetened with dolomite; gypsum can be added to calcium-deficient red soils and the addition of some trace elements may also be beneficial. Deep ripping first along the planting countours is essential for fast establishment and good growth rates.

The fertilizing regimes can be developed following observations and management planning. Organic pelletised fertilizers are suitable and should be applied at planting time, with another application after three months and then three applications a year during the growing season in September, December and March. An application rate equal to two thirds of a 140 mm pot per plant. With fruiting species such as *Syzygium luemannii* (Riberry) and the NSW form of *Davidsonia pruriens* (Davidson's Plum) the spring application could be made with a high potassium general fertilizer (i.e., a K level two to three times higher than the nitrogen level) to promote better flowering and fruit set. The next top dressing should be left until after the fruit has fallen because nitrogen applied at fruit set time can cause it to abort.

Clean and green

The plants need to be grown in prepared areas with crop management procedures based upon organic, environmentally friendly production principles. This will minimise the use of chemicals and the food can be honestly marketed with a "clean and green" image.

The ground around plants should be kept free of weeds with organic controls.

*Prepared by W. H. Payne from notes forwarded by the Australian Native Bushfood Industry Committee.

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Rainforest plants

for horticulture and Bush Tucker

by W. H. Payne from information in the Trade

Rainforest plants in the rainforest are difficult to see as individuals but presented together in the wild most people appreciate the tranquillity, the range of colour and leaf form and the splendid trunks, vines and lianes. Used as individual specimens there is a whole range of criteria to be considered. It is usually the shape of the bush and the colour variation and shape of the leaves that are appealing. They all have flowers but most are small and insignificant or hidden in the foliage. Some have quite spectacular flowers, in many cases, of great value in the cut flower trade. On fertilisation of the flowers, fruit containing the seed are formed. Many are poisonous to humans but some are now being harvested for consumption through the bush tucker industry.

If you wish to purchase plants for commercial harvesting of the flowers or fruit or even as a specimen plant in the garden or in a container for use indoors, be very wary of the source of the plants. In the trade a great number of "experts" and "specialists" have appeared. Most depend on seed collected indiscriminately and grown haphazardly. As with any other plant, you need to be sure you have purchased a specimen properly propagated from specimens carefully selected and subsequently developed for exceptional form, foliage, flower or fruit.

Rainforest Flora Promotions* are now marketing an exceptional range of plants. Pioneers in the rainforest plant supply and the bush tucker industry, their concern over what has happened in the industry has driven them to form this company. The beneficiaries are the consumer, carefully selected plants for a quality product, at competitive prices. Some of their first releases are described below. None of these are "bush tucker plants". Despite my urging they have not got "their act together" yet and rainforest plants developed for the industry are still being sold under their normal botanical name or widely used common name. As they have been specially selected and bred for maximum production they should be marketed with a cultivar name appendage to indicate their special horticultural merit. Examine the back of the plant label before you buy. If it says "A Limpinwood Gardens Nursery Selection" or "Rainforest Flora Promotions" you can be sure of professional quality.

***Rainforest Flora Promotions**. The principals are Vic. Cherikoff of Bush Tucker Supply Australia** and the Limpinwood Nursery (Chillingham, 2484, NSW) of Sharon and Russell Costin. Many years of field collection and research development have been invested in their quality products. Wholesale enquires should be directed to Limpinwood Nursery.

****Bush Tucker Supply Australia.** A company operated by the pioneer of commercial bush tucker, Vic Cherikoff, it was one of the first to promote foods from the Australian bush as legitimate and tasty restaurant fare. Their production is highly selective and safe to use. It involves sophisticated packaging techniques such as vacuum sealing. They are sold under the company's **Australia's Own Bushfoods** label. It should be noted that plants produced under the above labels are distinct from the bush tucker range promoted by Bush Tucker Supply and may be an entirely different selection of cultivars.

Plum Myrtle, *Pilidiostigma glabrum* "dwarf", is a shapely bushy shrub to 1.5–2 m high with a spread of 1 m. The shiny green pleasingly shaped foliage with red growth, is offset during autumn with 2 cm across white flowers with stamens in the centre. These are followed by black, pear shaped (non-edible) fruits which attract fruit eating birds. Plum myrtle is a native to the rainforest of S.E. Qld and northern NSW, but is just at home in your garden forming a neat, tidy shrub or even for hedge planting. Provided it receives some moisture, it prospers in a sunny or a full shade position, mulched well with a slow release fertiliser for best presentation. It is quite cold tolerant.

Glossy Fuchsia, *Graptophyllum thorogoodii* is an extremely bushy shrub reaching 2 m in height with a spread of 1.5 m. However, pruning will enhance the shape and tailor it to the situation even to the extent that it is suitable for topiaries. The lush green glossy foliage provides a startling contrast to the brilliant red "Fuchsia Type" tubular flowers all along the stems in spring and well into summer. An exceptionally hardy plant, it can be a showy specimen plant or used in mass displays, hedges or even as a border or potted plant. A major advantage is the year around, glossy green foliage.

Holly Fuchsia, *Graptophyllum ilicifolium* does not usually grow as tall as Glossy Fuchsia, above, but its leaves, while not a glossy green are an attractive "Holly leaf" shape. The tubular purplish/red fuchsia type flowers are 5 cm long and prolific in spring. It makes an attractive tub plant that can be used indoors for short periods, even when flowering. It tolerates light frost and is extremely hardy to heat and drought.

Beachball Syzygium, *Syzygium paniculatum* "dwarf", is a dwarf selection of the popular Magenta Cherry Lilly Pilly. It reaches 1.5 m high with a spread to 1.5 m forming a neat rounded shape ideally suited for specimen planting or as a hedge. The dark green foliage with flushes of bronze new tips is a feature of this attractive plant. Prune it to the shape you want even as a topiary. White fluffy flowers occur during summer followed by magenta coloured edible fruit which are crisp and juicy and excellent for jam making. "Beachball" will grow in most open or partly shaded positions with adequate water during dry times. It will tolerate colder conditions and is hardy to wind and moderate salt spray. Ideal for the garden or large tubs for your patio, outdoor entertainment areas or pool.

The first two rainforest plants were introduced by Trevor Garrard of Woombye, other selected rainforest plants produced by Limpinwood.

Hunchy, *Syzygium australe*, 'Hunchy' is a superior selection from *Syzygium australe*, a native to Queensland's Sunshine Coast. A hardy, easily grown small tree or large shrub, it is ideal for street, screen or parkland planting. It was introduced to the nursery industry by Garrads Nursery, Woombye, Qld.

Tiny Trev, another bushy dwarf form of *Syzygium australe*, this is a self shaping small dense conical plant requiring little pruning and growing to a height of 75 cm in 5 years. It is ideal for growing in tubs or patios as a low hedging plant in garden beds or on its own as a talking point evergreen. As with all feature plants, water regularly and mulch well during drier months, regularly fertilizing from spring to autumn.

Under Cover, a prostrate form of the Lilly Pilly, *Syzygium australe*, can be used as a ground cover 3 m square in large landscaping projects, or cascading over rocks or retaining walls. It has been used in hanging baskets and large containers. The glossy bronze pendulous foliage makes an eye-catching show with the plant grafted onto a standard, a weeping plant on top of a stick. This was introduced by Facey's Nursery, Melbourne.

Minipilly, a small bush form of *Acmena smithii*, can grow to 2 m high and wide but regular pruning and feeding can reduce it to any size, even to an attractive container plant. The bright green foliage will be topped with striking new red/bronze foliage covering the bush. The fleshy pink berries follow cream fluffy flowers giving this appealing bush a regular colour change. This oultivar and the following one are from Rainforest Tree Nursery, Brisbane.

'Weeping Beauty', developed from an *Austromyrtus* species, is an evergreen small bushy shrub with glossy green weeping foliage and shiny green pointed leaves. The new shoots are a silvery red. The delicate white, wax-like flowers are borne in summer and are followed by small purplish fruit. Ideal as a patio or tub specimen, the unique foliage makes it an accent shrub for decoration.

'White Opal', a selected form of *Leptospermum morrisonii*. The large opal-white flowers smother the dark bronze foliage during spring. Pruning after flowering will reduce its potential height of 3–4 m to a well shaped attractive, unusual foliage coloured shrub for year round decoration.

'Ruby Belle' and **'Lemon Bells'**, are two superior selections of the popular Wonga Vine, *Pandorea pandorana*. Each of these plants are vigorous evergreen creepers ideal for growing on fences and pergolas where some fast cover for privacy is required. The glossy green foliage is overlaid with huge clusters of flowers, lemon with maroon throat for 'Lemon Bells' and ruby red flowers with a cream throat for 'Ruby Belle'.

Plants for horticulture in warmer climates. Many of the gargen plants newly introduced into horticulture have been developed in Victoria and the cooler climates. Unfortunately the Queensland producers do not attempt to promote their plants as well. Following are the few that I have been advised of.

Sun Daisy Selections — Native daisies for cottage gardens in the warmer areas of Australia, are as a result of a cross between *Brachyscome segmentosa* and *B. procumbens*. ***Brachyscome*** **'Sunblush'** produces large pink flowers all year long, held on long stems above deep green lobed leaves, the plant growing to 15 cm high with a spread of up to 1 m. Other Sun Daisy Selections are ***Brachyscome*** **'Sunburst'**, ***B.*** **'Lavender Mist'**.

Australian Bushfoods Magazine

Available from Australian Bushfoods Magazine, 38 Mountain View Rd, Maleny, Qld 4552. Phone (07) 5494 3812 for $4.95 including postage. This 44 page magazine is devoted to all aspects of the commercial uses of Australian plants with emphasis on their commercial exploitation. What comes through loud and clear is that there is already an established market, that the competent people already engaged in the industry are widespread with growers cooperatives in Western Australia, South Australia, northern NSW and southern Queensland. Deserving special comment is the repeated warnings that the best forms of species are essential for commercial marketing, not only for hardiness and cultivation and abundance of the crop, but for the all essential quality, the taste. The articles are wide ranging, practical and include recipes. One, *Eat Your Garden*, will be of wide interest.

Sheer exhilaration

Sturt's Desert Pea *Swainsona formosus*

revisited by Fred Mazzaferri

While checking some references in the latest edition of *Australian Plants*, I came across Gwen Oxnam's article "Sturt Pea — Success at last!", 17:342. I am glad that Gwen has had such success. But if my limited experience south of Brisbane, some ten km from the coast, is any guide, growing *Swainsona formosus in situ* is not difficult — as long as uncontrollable weather conditions are favourable. This is no report of a careful experiment. I did no more than list a few obvious factors, then put them unmodified into reasonably successful practice for three seasons — beginner's luck, if you will. The result is shown opposite.

The most important of the controllable parameters include seed viability and vigour, sowing time and method, site selection and preparation, and nurture of the maturing plant. Every effort should be made to obtain fresh seed. Viability can be low under the best of conditions, despite assurances that *Swainsona* seed does not deteriorate in storage, it certainly does!

I soak the seed in *cold* water overnight. The minority that does not swell may be soaked safely in hot water to increase the yield. I then sow it all in pure medium sand, one seed per cardboard cylinder, at least 10 cm long. Germination occurs within three to ten days. However, this does not seem to be a reliable index of vigour. Even some of the earliest seedlings can just "sit there". So I select the most vigorous within one week of planting out. Normally, this cylinder length will ensure that the tap root does not reach the bottom in that time, so planting is virtually *in situ*.

Sturt's Desert Pea seems to require a well-drained sandy loam at least half a metre deep and 10 metres in area in full sun, with no special nutrient demands. However, I always sprinkle this area generously with lime before sowing, and water it well in. I plant three seedlings centrally by easing their cylinders into holes drilled in the wet soil with a plastic pipe. The cylinders can then be removed carefully, though this does not appear to be crucial to healthy growth. Once the plants begin to run, they can be thinned down to the healthiest.

In this near-coastal, subtropical climate, failure even of the best specimen finally occurs through excessive rainfall or humidity. Flowering may not occur, therefore, if planting is delayed until spring. I set my seedlings in place by late autumn, protecting them from winter frosts. Come spring and they have enough head start, except in abnormal weather, to flower and even seed before the summer stress.

Despite its arid origins, Sturt's Desert Pea does require regular watering in my well-drained garden. I have found it adequate, though, to confine this to some three litres per month, applied at once to the base of the centre of the plant. But if yellowing of leaves is noticed at any time, this could mean that the plant requires *immediate* attention.

I will be pleased if these few thoughts assist other enthusiasts to experience the sheer exhilaration which the blooming of this spectacular species brings to those fortunate enough to share its space. ■

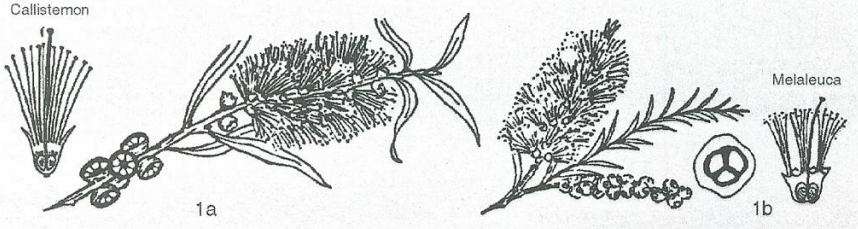


Bottlebrush flowers

Rewarding plants for new growers

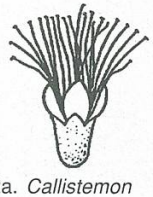
by W. H. Payne, Ivan Holliday and Ray Aitken

Every Australian knows a bottlebrush flower. They adorn our landscapes and gardens but this vast range of plants is not widely appreciated or grown. Where all else fails there is a bottlebrush that will prosper. This has led to the off-hand use of these valuable plants in uncared for situations. Rarely is it realised that they are not all space consuming shrubs and that many are small dainty mounds in pots or rockeries, or well shaped small shrubs that can be used as feature plants in any landscape.



Just what is a bottlebrush? If you look closely at a bottlebrush flower head you will see that it is made up of a number of individual flowers, each comprising a ring of stamens (coloured spikes with a blob of yellow on the end called the anther) with a column in the centre known as the style, but the petals which surround them, as in say a *Hibiscus,* appear to be missing. If all the stamens are free (not attached to each other as in figure 1a, 2a and 4b) then the plant is a *Callistemon* (cally-STEE-mon). Another group of plants which has free stamens is known as *Kunzea* but the seed capsules do not persist on the plant as they do with other groups with bottlebrush flower heads. Its flower heads are presented as ball or pom-pom shaped although *Kunzea baxteri* has them in the form of a bottlebrush.

2. stamens free

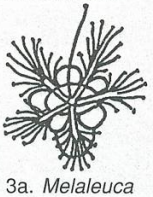


2a. *Callistemon*

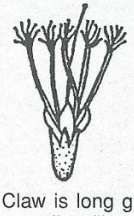


2b. *Kunzea*

3. stamens united into 5 bundles



3a. *Melaleuca*



3b. Claw is long greatly exceeding filament

3a. with bottlebrush flower heads

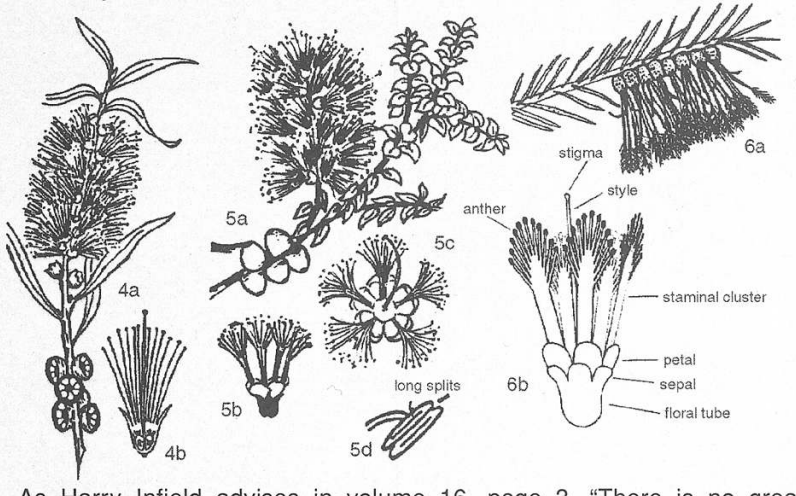
3a. ***Melaleuca*** (some as shown here). *Eremaea beaufortioides,* has short brushes, see page 220.

3b. Only flowers in bottlebrush heads. *Regelia,* one species. *Beaufortia sparsa* and *B.decussata* see page 213. *Calothamnus,* but the flowers are on one side only. Onesided Bottlebrush.

If the stamens are united at the lower end into five bundles on each individual flower, the flowers are in bottlebrush flower heads, the plant will probably be a *Melaleuca*, figures 1b, 3a and 5a. There is a group of *Melaleuca* species that do not have their individual flowers arranged along a cylindrical core, but present them in pom-pom fashion as do most of the *Kunzea* mentioned earlier. To confuse us there are eight groups of plants in the plant family Myrtaceae that present their heads of flower in the pom-pom style, the most widely known being *Eucalyptus*, our gum trees. This group also comprises hardy showy plants we will present in future issues. This article will concentrate only on the group with bottle brush flower heads. The important thing for the beginner is that **bottlebrush** plants are easily grown and that there are many suited for every situation from the tropical north to the tip of Tasmania.

Callistemon (cally-STEE-mon) **Bottlebrushes**

The group of plants most commonly referred to as a bottlebrush is correctly known as *Callistemon*. Australian Plants, volume 16, issue 125, is devoted almost entirely to these bottlebrush flowering plants and their cultivation. Over the years a profusion of horticultural forms, have been marketed and that issue describes all the named species and their horticultural forms, 138 of them. Subsequent issues have described still more so there is a bewildering range of forms selected for floral display, from which you can choose.



As Harry Infield advises in volume 16, page 3, "There is no great science involved, nor super green fingers, in the cultivation of *Callistemon,* tender loving care will provide excellent results". He advises on how to overcome the major problems. Plant carefully and be sure they are not root bound, be harsh on pests (which are few if you are observant and remove them by hand or if you encourage birds) and prune savagely after flowering.

One pest you can usually be sure of getting on *Callistemon citrinus* and cultivars with this as a parent, is the spitfire bug. They will eat all the leaves leaving a bush of stalks. Keep clear as they will spit an irritant fluid at you. Carefully crush them between flat boards or spray with just about anything, household flyspray will do, but, why use sprays at all?



Melaleuca ringens

Photographer: Ivan Holliday



Melaleuca eximia


Beaufortia decussata
Photographer: Ivan Holliday
Melaleuca cordata

Melaleuca (mel-a-LOO-ca) **Honey Myrtle Bottlebrushes**

The main objective of this article is to introduce beginners to the group of *Melaleuca* with bottlebrush type heads of flower. They are very hardy, floriferous plants providing a spectacle equal to none, from the dwarf neatly rounded bushes to the larger shrubs or trees. The larger trees are known as Paperbarks but the more general term of Honey Myrtles seems more appropriate.

Cultivation of *Melaleuca* from Ivan Holliday*

Melaleucas are excellent garden plants because of their general hardiness — they withstand both wet feet and long dry spells, are suited to most soils, and can be cut and pruned to any desired shape or size without detriment. The only exceptions are a minority of speoies, mainly from the Western Australian sand heaths, that are a little tricky in some soils. Melaleucas do well in most parts of Australia, but readers from cold areas should bear in mind that most species grow in areas where winters are mild and some tend to be susceptible to cold, frosty winters and do not thrive in areas where these conditions prevail.

Melaleucas may take the form of low dense bushes, suited to ground cover and excellent for living edges to lawns, where the extra water might upset some of the smaller natives; (*Melaleuca trichophylla*, *M. violacea*, *M. pulchella*.) Most are shrubs of all shapes and sizes suitable for ornament, screening or windbreak. Some are handsome specimen trees such as *Melaleuca leucadendra*, *M. argentea*, *M. styphelioides*, *M. cuticularis* and *M. linariifolia*. The Denmark (WA) form of *M. microphylla* grows into a lovely slender weeping tree useful for landscape work.

Many species are excellent plants for salty, low-lying, water-logged soils, and indeed, some melaleucas such as *Melaleuca halmaturorum* and *M. cuticularis* are possibly the only large plants which can be expected to succeed in soils of high salt content. Others are excellent plants for exposed coastal situations where they withstand wind burn from salt-laden winds better than most plants such as *Melaleuca nesophila*, *M. pentagona* var. *latifolia*, *M. leiopyxis* and *M. microphylla*. Many species have handsome year-round foliage which responds to hard pruning and can be trimmed to any desired shape. Flowering is often prolific, although in some species it is of short duration. Those grown for colourful flowers, once the bush has reached its desired size, are best cut back beyond the spent flowers each year immediately after flowering is completed. This will ensure profuse flowering again next year, and will overcome the neglected look of bushes dominated by woody seed capsules.

*One problem has been the vast array of plants which were not adequately named. At last the books by Ivan Holliday have considerably overcome this problem. Most have now been named and Ivan Holliday has produced a full page colour photograph of each one. We non botanists can name most plants by just looking at the pretty picture and its associated simple words and sketches. Every gardener needs a copy of the two books.

A Field Guide To *Melaleuca*, Volume 2, has been produced, at his own expense, by Ivan Holliday in a desire to advise us of the newly named species and to provide name changes of plants we previously were familiar with and are shown in volume 1. I urge you to support Ivan and purchase a copy so that he will at least recover the money spent for our advice. You may purchase a copy direct from Ivan Holliday, 29 Tennyson Av. Tranmere, SA, 5073 for $10 *Melaleuca* are, without a doubt, the easiest Australian wildflowers to grow over the widest range of conditions of soil or climate. Neglect them or leave them to rely on natural rainfall and they will survive; come a good bout of rainfall, they freshen up and, if in late winter to autumn, they will flower beautifully. Be sure to prune hard after flowering. Editor.

***Melaleuca* flowers come in virtually every colour except blue.** They are white, cream, yellow, orange, red, pink, mauve, purple, even green, and shades between. In the reds there are subtle differences, the bright scarlet of *Melaleuca coccinea* and sometimes *Melaleuca macronychia*; the vermilion, or almost deep orange, of *M. lateritia*; the brick-red to orange-red of *M. hypericifolia*; and the dusky red to almost maroon of *M. elliptica*. Pink to purplish-pink is a very common colour, but there are many variations including the delicate mauve-pink of some forms of *M. squamea*, whilst an unnamed species I found near Esperance has dainty salmon-pink flowers. Bright yellow is fairly common and is exemplified by *Melaleuca*, *M. urceolaris* and *M. odlfieldii*. White and cream flowers often cover the whole plant of *Melaleuca linariifolia*, *M. rhaphiophylla* and *M. cucullata*. Lime green to yellow-green flowers can be found on *Meleuca diosmifolia*, *M. longistaminea*, and *M. blaeriifolia*.

Cultivation of *Melaleuca* from Ray Aitken, Western Australia

No genus of native plants is more neglected in horticulture than that of *Melaleuca*. Varying in height from shrubs of a few inches to stately trees of more than 15 m, these plants are so diverse in colour form and texture and, indeed, flowering period, that it would be possible to plan an attractive garden, based entirely upon this single genus. The plants are extremely easy to grow. They tolerate a wide range of soils, temperatures and general climate, are extremely resilient after pest attacks. They can resist both drought and flooding. The colour range of melaleuca flowers is wide. There are a number of whites, pinks, mauves, scarlet, reds and a splendid assortment of creams and yellows to grow.

The horticultural acceptance of *Melaleuca* has been delayed by the non-selective nature of the production of plants from seed. Melaleucas propagate so readily by vegetative means that it is preferable to grow only by cuttings from superior plants. The only reservation appears to be with some dry country species. The percentage of 'strike', with desert forms is normally low. When the plant is in cultivation this percentage rises and continues with each successive generation of cutting grown plants.

Vegetative propagation of the wetland *Melaleuca* is comparatively simple. Indeed a worthwhile 'strike', is often obtained by standing the cuttings in a jar of water provided it is regularly changed to avoid stagnation. The best method would still appear to be preparation of four to six inch cuttings, treating them with one of the proprietary hormone powders and setting them out in pots at the rate of 30 to 60 cuttings to each 6" pot. They thrive under mist irrigation and give a result comparable in vigor and speed of strike to that which may be achieved with *Callistemon*.

Honey Myrtles or Paperbarks are gross feeders. Like *Callistemon* they have a dense fibrous root system and are capable of using large quantities of food. They thrive on liberal dressings of blood and bone and respond readily to inorganic fertilisers. Best results are achieved where the soil is kept moist, and this is equally important with 'dry country' *Melaleuca*.

While there are many beautiful species in Eastern Australia, the number of West Australian *Melaleuca* is quite impressive, with great variations of form. In the West it is more or less impossible to travel out of *Melaleuca* habitat. ■

Commercial development of better forms, see page 236.

△ ***Brachyscome*** **'Jumbo Yellow'**

▽ ***Bracteantha*** **'Nullabor Flame'**

Photographs by Rodger Elliott

Descriptions on page 201



Acacia quinetii, plant and flower, photograph by T. J. Hales, see next page.



Getting to Know a Rare Wattle

Acacia quinettii

by T. J. Hales

I first became aware of this species from a book published in 1990 by the W.A. Department of Conservation and Land Management called "Western Australia's Endangered Flora" and other plants under consideration. I purchased a home size pack of seed from Nindethana. There was no difficulty in germinating a few seeds after hot water treatment. Subsequently a seedling was planted out into a narrow bed against a retaining wall, which is well drained due to the drain at the base. The soil is an alkaline grey loam soil. The position faces north west, but due to our situation on the down side of a hill, we have some protection from the worst of the westerly winds.

My plant of ***Acacia quinetii*** is flowering for the second year as shown in the photograph. It has attained a height of about 60cm with a spread of around 1.5 metres. This is considerably shorter than the height of 1.5 metres as indicated in the book. I have had to remove two branches this year, which had died back. The cause is unknown but last year we had an extremely wet late winter and spring followed by an extremely dry summer and autumn, which has now continued into winter. Our local dairy farmers are in dire straits and it is currently being called a "green" drought. The flowering period would seem to be June to August as stated. ■

Triumfetta

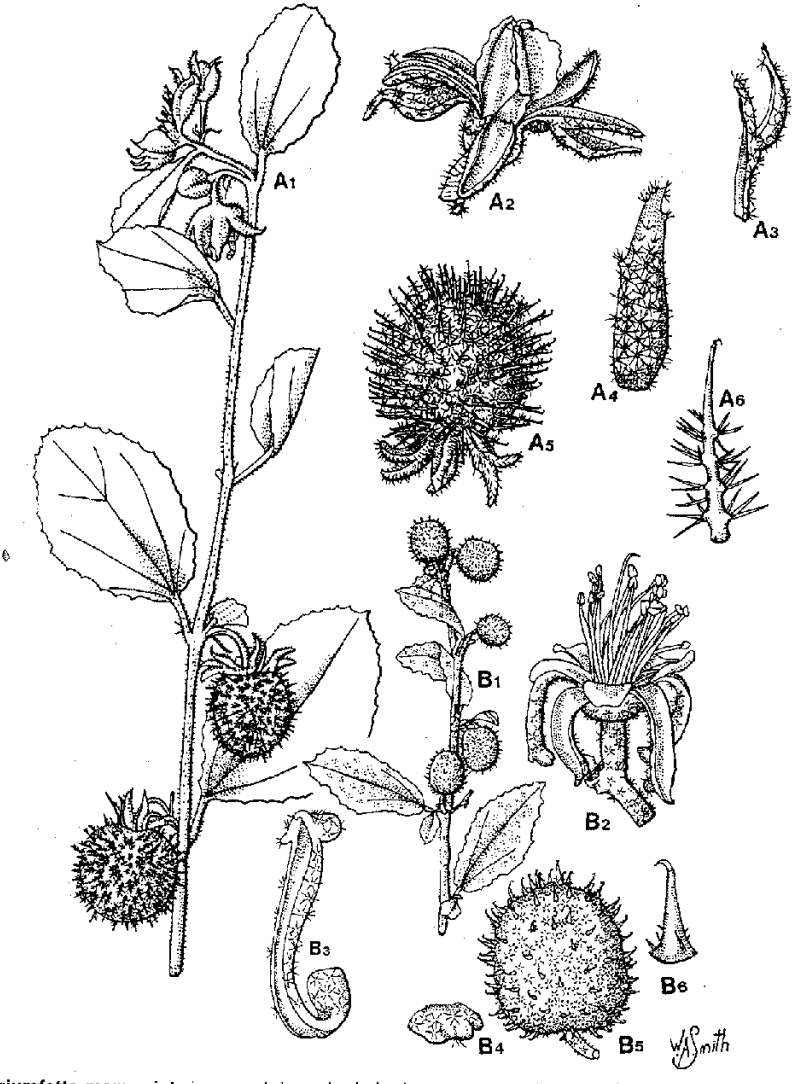
From a revision of the genus *Triumfetta* by D. A. Halford*

Triumfetta are perennial subshrubs or shrubs belonging to the family Tiliaceae which includes plants with small *Hibiscus* (the botanist suggests *Sida*) like flowers. In this genus they are not very spectacular. They are characterised by large, usually thorny fruit as shown opposite.The most common form is an open spreading shrub to 1.5 m tall as with *Triumfetta appendiculata, T. chaetocarpa, T. arnhemica* and the species featured here as examples. However, some species are prostrate creepers with stems to 2 m long such as *Triumfetta repens, T. prostrata* and *T. procumbens.*

Triumfetta is distributed throughout the tropical and subtropical regions of the world. There are 61 species described for Australia occurring right across the continent north of the 29°S latitude from Shark Bay to Fraser Island north into Indo-Malaya. Probably regarded as a weed-like plant, that it grows under such hard conditions indicates that there could be economic or horticultural interest to repay investigation and development from selected forms.

Weed-like plants!! This comment brought the following response from the botanist when checking my notes. "Although the introduced *Triumfetta* species (*T. pilosa, T. rhomboidea* and *T. pentandra*) do inhabit disturbed sites, the native species have not been recorded as causing problems as weeds in agricultural or urban areas." *Triumfetta plumigera* (see photograph on page 220), is one of a number of species well worth using in horticulture. ■

*Published in Austrobaileya 4(4)1997, a scientific publication by the Queensland Herbarium.



Triumfetta marsupiata is a much branched shrub to one metre high, the flowering branch shown at the end of the branch is reproduced in A_2 which shows the flower with five petals closed, presumably after it has been fertilised, and the sepals folded back with bristles on the back. One of these sepals is shown in A_3 where an appendage is shown attached to the centre of its back or underside, the appendage being shown enlarged in A_4. The flowers mature forming fruits as shown lower down on the flowering branch (these drooping but most other species hold them upright as in B_1) and this is shown a little larger in A_5 covered in prickles, one prickle shown larger in A_6.

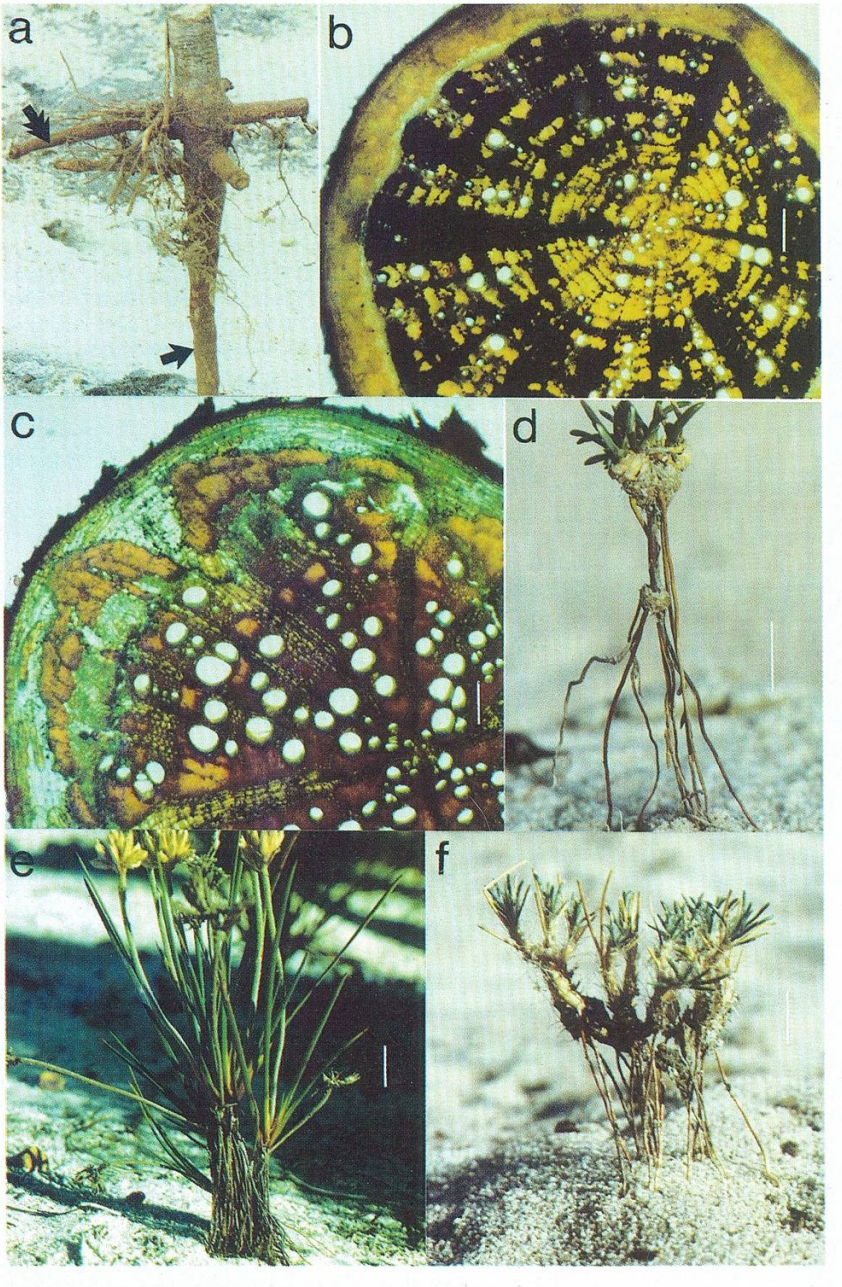
Triumfetta micrantha is also a perrenial shrub to one metre high, a fruiting branch shown in B_1. A clearer detail of a *Triumfetta* flower is shown in B_2, the style in the centre surrounded by numerous stamens, surrounded by the five small petals, surrounded in turn by five sepals with rigid hairs on the back. In this case the appendage on the back of the sepal is like a large wart as in B_3 and detailed in B_4. The fruit is as in B_5, its prickles as in B_6. It is also widespread across northern Australia in open woodlands and hammock grasslands.



Triumfetta plumigera, showy plants from the tropics, photo by D. A. Halford



Eremaea beaufortioides, has short brushes. *Eremaea* are not easy to grow



a. Sinker root (arrow) and lateral feeder root with (double arrow) of *Banksia prionotes.* **b**. Section of root of *Bossiaea ornata* stained with iodine to deposition of starch (black areas. **c.** Section of taproot of *Banksia prionotes* stained but showing little evidence of starch (black areas). **d.** *Stylidium guttatum*, a three year old micro-stilt plant. **e.** *Conostylis canteriata*, micro-stilting on sandplain. **f.** *Laxmannia squarrosa*, 8 years old.

Plant roots

What goes on under the ground?

Abstracted from research by J. S. Pate[1] and K. W. Dixon[2]

The commonest rooting system (Type R_1) is as shown in Fig. 1a, page 221, with a clear demarcation between subsurface, winter active feeding roots and a deeply penetrating tap or "sinker" root. It is typical of large trees and shrubs and, since the respective sinker or tap roots exploit underground water, many species of these types are summer-growing. Absorption of nutrients appears to be accomplished mostly whilst the upper soil is still moist. For proteaceous shrubs this takes place mostly from nutrient-rich upper soil layers through subsurface lateral roots. These upper lateral roots or the seasonal rootlets emanating from the main tap root may bear proteoid root clusters, or various types of mycorrhiza.

A study on the dimorphic roots of *Banksia prionotes* (Fig. 1c) has used seasonal analysis of xylem sap extracted from sinker and lateral roots to demonstrate levels of nutrient elements such as N and P in lateral roots which are much higher than in sinker roots during times when cluster roots are active in nutrient uptake from the wet upper soil layers. By contrast, there is little difference in composition of the two xylem streams the following summer when the cluster roots have senesced (dropped off) and upper layers of the soil are dry. At such times xylem of the laterals may be recharged with water from the sinker root by a phenomenon known as hydraulic lift. Sinker roots of members of the Proteaceae have vessels of much larger diameter than those of corresponding laterals, resulting in much greater hydraulic conductivity in the former.

Shallow, closely aggregated fibrous roots (Type R_2) are typical of herbaceous species and winter-active small shrubs (e.g., members of the Epacridaceae and Myrtaceae) and in most habitats do not penetrate to the water table. Vessel diameters of such species are normally much less than most of the R_1 and R_3 species. Shrubby R_2 species become severely water-stressed during summer, and leaf water potentials accordingly fall tc lower values than ever recorded for tap- or sinker-rooted species. They may be mycorrhizal (e.g., Epacridaceae with ericoid-type mycorrhiza) and exhibit infected hair roots throughout all parts of their root systems during the wet season. Sap analyses during this season suggest exploitation of nutrients throughout the zone 20 cm–1 m, i.e., below the main organic layer (5–15 cm) where cluster roots of Proteaceae tend to be concentrated.

The third root type (R^3) is distinctly tap-rooted with seasonal investments of fine feeding roots. The fourth (R_4) is a very shallow type with long laterally extensive roots and no sinker-type roots and is restricted to shrubby root hemiparasites (e.g., *Olax, Leptomeria, Exocarpos, Anthobolus, Santalum*) which establish contact with and abstract solutes and water from a wide range of host species. Haustorial contacts with deep-rooted hosts persist during summer and such hosts provide an important source of water to the parasite at this season.

*Abstracts by W. H. Payne from "Convergence and divergence of the south-western Australian flora in adaptions of roots to limited availability of water and nutrients, fire and heat stress." as published in Gondwanan Heritage, Past Present and Future, see page 225.

[1] Dr. J. S. Pate Botany Department, University of Western Australia, Nedlands, W. A. 6009.
[2] Dr. K. W. Dixon — Kings Park and Botanic Garden, West Perth, W.A. 6005.

Response to fire

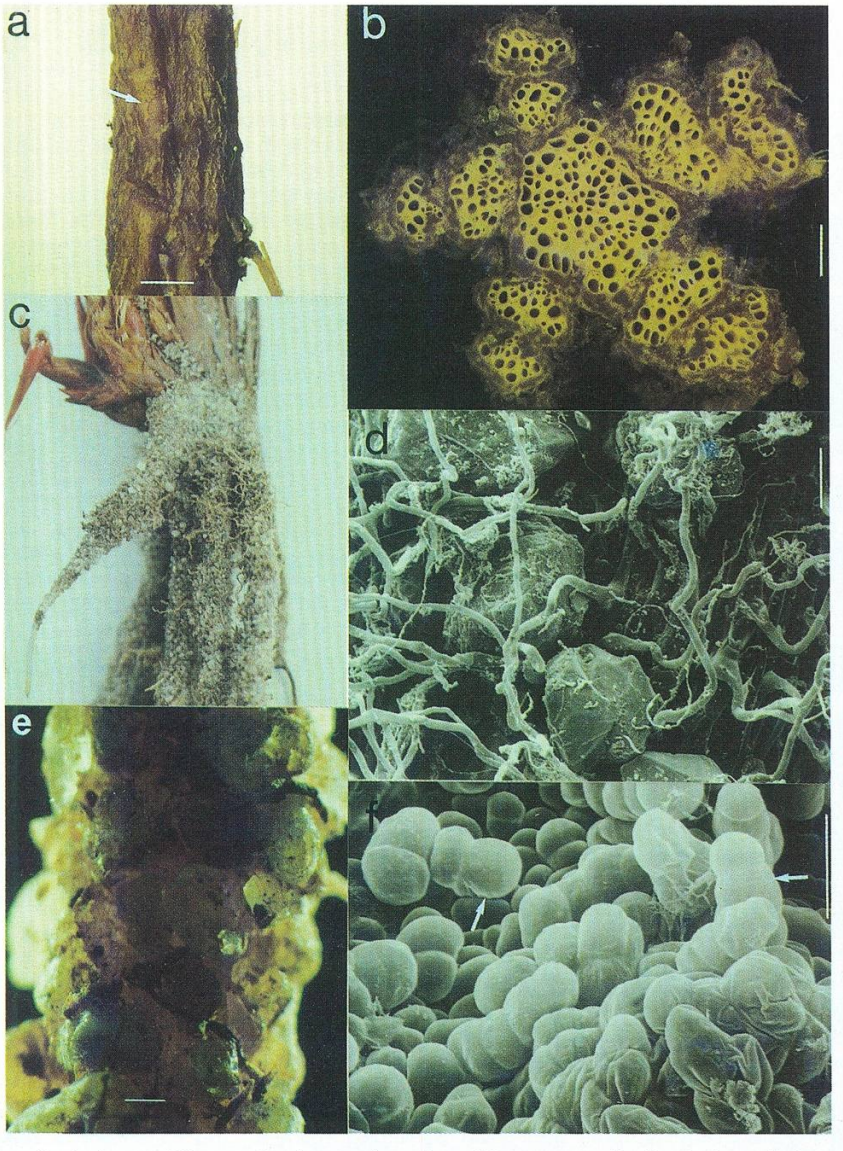
Five categories of fire response are usually recognised. (1) Fire ephemerals which complete their growth cycle as pioneer fast-growing species in the immediate period after a fire. (2) Fire-sensitive obligate seeder species which recruit mostly after fire and seed before succumbing to the next fire and establishing thereafter solely from seed. (3) Resprouter species which normally survive successive fires by sprouting from fire-resistant stems or root stocks. (4) Cryptophytes which die back annually to rhizomes, corms, bulbs or tubers and thus escape injury during the dry dormant season when natural fires are likely to take place. (5) Wet season therophytes surviving fire as soil borne seed reserves.

Obligate seeders have shoot: root biomass ratios of 3–6 versus, say, only 1–2 for comparable closely related resprouters. During their juvenile development seeders grow at approximately three times the rate of resprouters, due especially to their high proportional investment in new carbon-fixing leaf area as opposed to root tissue. Most noticeable is the high concentration of starch and other carbohydrate reserves in roots of resprouters (Fig. 1b). Up to 90% of the pre-fire starch reserve of a root may be utilised for sprouting new shoots after fire. Seeders, by contrast, normally carry little or no starch in their roots (Fig. 1c) and any reserves that accumulate transiently in their vegetative biomass are likely to be channelled into successive crops of seeds. Many seeder species also show earlier and much more prolific production of viable seed than comparable resprouters. This difference involves more prolific production of reproductive units and allocation of resources to reproduction in seeders.

Responses to heat and drought stress Micro-stilt plants

Some plants have adapted to the environment by raising the shoot system partly or wholly above ground by means of aerial prop or stilt roots. All stilt plants of the southwestern flora are of markedly diminutive stature and hence are termed micro-stilt plants. In each case the plant is associated with open habitats, rarely exceeds 10 cm in height and, when mature, has its shoot system elevated some 1–3 cm above soil surface on a set of highly lignified stilt roots (Fig. 1d). These roots elevate temperature-sensitive buds, stems and foliage of the shoot into air zones which on a summer day may be some 6–10°C cooler than the 45–59°C temperatures experienced at or close to ground level. Indeed, if habitat soil is heaped around the base of the plants to bury the lower parts of the shoot, plants will fail to survive the summer. Because of their small size and the obvious vulnerability of their aerial shoots, stilt plants are generally very sensitive to fire but recruit prolifically from seed in the following winter. At first the seedlings are not outwardly different from those of other species, but by the end of the first growing season one or more aerial roots have formed and, with death of the primary root system, the rest of the shoot will have become fully supported and sustained with nutrients and water absorbed solely by the stilt roots. Some stilt plants associated with seasonally-inundated habitats may have the additional function of protecting the shoot from waterlogging during winter.

The main seasonal increment in dry matter, of microstilt plants, occurs during the cooler, moist months of autumn, winter and especially early spring and is then usually followed by flowering and set of seed. Net losses of dry matter occur during summer when mortality of juvenile and adults is also high. Clone formation by means special vegetative propagules termed gemmae occurs in microstilt as well as a range of pygmy rosette species of *Drosera*, and in many is strongly favoured over reproduction by means of seed.



a. *Daviesia quadrilatera* showing cord rooting of its tap root. **b.** *Daviesia preissi*, an unstained cut section of corded tap root. **c.** *Lyginia barbarta*, sand binding roots. **d.** *Thysanotus patersonii*, micro-photograph of intermesh of long root hairs with sand grains. **e** and **f.** *Lechenaultia linarioides*, surface view of a sand-binding lateral root and **f**. the special glandular structures (arrow) responsible for production of adhesive substance onto which sand grains are bound.

Plants with cord-like roots

Some pea flowered plants of the family Fabaceae have been shown to form roots exhibiting a highly anomalous form of secondary thickening in which concentrically arranged layers of interconnected vascular strands give a highly unusual "cord-like" multiaxial outward appearance to the root (Fig. 2a). Each successive cambrian layer forms anew from pericycle tissue outside the current outermost layer of phloem (Fig. 2b).

The functional significance of the cord-like root habit is not clear, especially since apparently equally successful species of *Daviesia* can occur within the same habitat, some with cord-like roots, others with conventional anatomy.

Plants with sand-binding roots or underground stems

This form of highly specialised root involves the entrapment of sand particles within a mantle of persistent root hairs, thereby forming a protective desication-resisting rhizosheath (Fig. 2c). In certain taxa (e.g., species of *Haemodorum*), the sheath may be up to 1cm wide and greatly exceed in thickness the radius of the root within. In other cases (e.g., *Conostylis* spp. [Fig 2d] and certain members of Restionaceae), sheaths are relatively slender, only 1.5 or 2 mm thick, yet still engulfed with tightly adhering fine sand or soil particles. Although cementing sand particles onto the root may be accomplished initially by gelatinous (mucigel) excretions from the root tip, physical trapping of sand grains by root hairs is clearly paramount to long-term retention of sheath integrity in the long-lived fibrous roots of most southwestern examples. Indeed, the epidermal hair sheath and underlying sclerenchymatous hypodermis may persist for many years after death and decay of the internal tissues of a root. This leaves an open "pipe" through the sandy substrate into which roots of establishing seedlings of other species may grow, thus facilitating their descent towards the water table during the first season of growth.

Whereas the mantles of monocotyledonous species are part of the primary structure of the root, the rhizosheaths of dicotyledons are secondarily-formed perennial structures extending in diameter and complexity as sand grains are incorporated to produce an evenly thickened root (Fig. 2e). In species of *Lechenaultia* (Goodeniaceae) with the trait (e.g., *L. linarioides*), a meristemmatic outer layer to the root produces successive trichomes onto whose secretions sand grains adhere (Fig. 2f). Thus, sand binding capacity of such species is not achieved until the epidermis of a young root is lost and replaced by gland-bearing secondary tissue. In certain orchids (e.g., *Lyperanthus* sp.), glandular trichomes similar to those of *Lechenaultia* are found on underground structures. With sand binding, root-hair mediated roots also present, all below-ground parts are thus endowed with sand sheaths of one kind or another.

*The original article was published in *Gondwanan Heritage — Past, Present and Future of the Western Australian Biota*, edited by Stephen Hopper *et al.*, published by and available from Surrey Beatty, 43–45 Rickard Road, Chipping Norton, NSW 2170 for $80.00. The book is a collection of scientific papers, a valuable reference for scholars. The introduction dealing with the early history of our planet in the period of continental drift is a revelation, quite the best explanation of this theory I have read. It leads to a description of the possible changes to our continent since this time, especially Western Australia. This area has drifted twice to the North Pole, to the South Pole, and is now moving north again. Climatic changes because of the ocean currents and the ice banks at the polar caps have been extreme and our remaining flora has survived this and adapted to its isolation. There is little wonder that our flora is unique. — Editor.

Colours, styles and potential

Cut flowers and foliage for sale

by Craig Scott

Trends in the flower industry

The trends are to colourful; bold; glossy and bright. This would describe the past three years for the cut flower and fashion industry. Flowers in vogue include Lilliums, Gerberas, Roses and Berries. Foliages include Magnolia and Camellia.

Can Native Flowers Compete in this Market?

The diversity of our native flora, styles, colour and flowering times provides us with many opportunities. With well over 100 varieties available for cultivation and sale and the possibility of developing more species and varieties, native flowers will continue to compete in this very competitive market place. It is, however important for growers to be aware of trends and try to incorporate them into their production schedules.

Cut Flowers Available Throughout the Year

Native flowers are available year round featuring different species in different seasons. During some months of the year there are less species available. For instance in December, 1996 there was a shortage of feature flowers and in February of each year there is a shortage of filler flowers. However, because of the overlap of seasons, special requests, such as for weddings, oan always be filled satisfactorily.

Snapshot of the Year — A Guide to What is Selling

December, January, February and March, flowers available during these months include *Banksia sceptrum, B. speciosa, B. burdettii, B. baxteri, B. robur,* Grevillea Hybrids, *Ceratopetalum gummiferum* Christmas Bush – white and red, *Bracteantha bracteata*, Paper Daisies, *Scholtzia, Blandfordia grandiflora* Christmas Bells, *Anigozanthos spp.* Kangaroo Paws, *Eucalyptus ficifolia* red flowering gum, *Beaufortia sparsa*, and rainforest foliage. It isn't impossible to produce beautiful displays even in these months. In many florist's opinion, however, these months are the most difficult to get supplies of native flowers.

During April, May and June, supply is still slightly slow but varieties and quantities are building up. *Banksia ashbyi, B. menziesii, B. prionotes, B. hookeriana, B. praemorsa, Dryandra quercifolia, Agonis juniperina, Eucalyptus tetragona* nuts, *E. rhodantha, E. macrocarpa,* Eucalyptus in bud — *E. robusta,* Lilly Pilly fruits, *Callicarp*a berries, Paper Daisies, *Anigozanthos mangelsii* (red and green kangaroo paws), *Acacia podalyriifoiia* buds and flowers, *Chamelaucium* wax bud and flowers.

*Craig Scott is a very experienced cut flower grower and his facilities at the major Sydney flower market are the principal outlet for Australian cut flowers. This article is based on a very extensive practical experience. Craig is President of the Australian Native Cut Flower Growers and Promoters, which he helped to form, as it was clear that other professional grower groups (with the exception of the local associations in Queensland and Western Australia) were not promoting Australian cut flowers adequately. The association is doing an admirable job in promoting the industry, both Australia wide and on the export scene. For further information contact the Secretary, PO Box 9, Kariong, NSW, 2250.

July, August and September provide an abundance of Genera and species. This is the highlight of the year! A large range of colour and style of flowers, from the fine filler *Micromyrtus ciliata* and the delicate *Actinotus minor*, through to the very bold *Doryanthes* and of course the magnificent waratahs. Foliage includes the gold backed *Grevillea baileyana*, and the deep glossy leaves of the *Cordyline spp*. We offer for sale, in this period, 32 genera, 58 species, and around 80 varieties.

October and November is a time when the Spring flushes are finishing and while there is a shortage of a few lines, there is still an abundance of supply. The Kangaroo Paw season is about to start and by the end of November the market will be saturated. *Blandfordia* are coming through. Late flowering *Ozothamnus diosmifolius* riceflower and waxes provide plenty of fillers. *Banksia grandis* nuts and *Banksia praemorsa* can produce dramatic displays. On the delicate side, *Trachymene coerulea* — Rottnest island daisy and of course, *Ceratopetalum gummiferum*, Christmas bush, are available.

Because of the availability of such a wide range of species that can be grown, a person who wishes to specialise in native cut flower production can produce flowers for sale year round. (The types of plant that will grow in your area will depend a lot on the climate, a lot of research and a number of trials). As with exotic species, there is a cash benefit when high quality flowers and foliages are produced especially if out of season production can be achieved. One way to achieve this is the use of protective cropping.

In summing up we have a diverse and unique flora. One that we should cherish and develop. Native flowers can be used to form spectacular displays, stunning bouquets, or subtle sprays. Native flowers can also be mixed with traditional flowers, expanding their uses and increasing their market share.

Australian Native Flower Growers and Promoter's (ANFG&P) commitment is to encourage the growing of more Australian native species for cut flowers. To aim for high quality and to promote our unique floral heritage to florists, the corporate sector and the buying public.

I believe there is a place for a specialist native bouquet, one that is uniquely Australian, can be advertised as such, and enjoyed by many. I encourage the growing of a diverse range of native flowers and foliage, to fill the gaps in production. There are opportunities for the domestic market and maybe opportunely for export, especially as we learn more about these markets. This is not a complete list of what can be grown. This may enthuse you to look deeper into what can be grown and when. **Active promotion and quality production.**

Research On Australian Native Flora for commercial development.

Research is vital. Research is expensive. Who decides on what research is required and who pays. **We pay and you decide what research is needed.**

Thanks to the offer of a sponsor (under certain conditions) research may now be undertaken using the resources of the Horticultural Research and Development Corporation. This government sponsored research scheme can only operate if a certain percentage of the money needed for a particular project is provided by the relevant industry. The Australian cutflower industry is so small that an industry levy would not work. This industry cash component is available through a generous sponsor engaged in the industry, but under certain conditions. The major concern is that the research be directed specifically to the needs of the industry. Requests for a research project on specific aspects needing research should be directed to The Secretary, Australian Native Cut Flower Growers and Promoters, PO Box 9, Kariong, NSW, 2250, to be received no later than 31/1/98. ■

Woogaroo Scrub

Story of a bush remnant

by Lloyd Bird, Project Co-ordinator

South East Queensland represents an area experiencing rapid urbanisation and increasing population pressures. While extensive tracts of relatively intact bush land remain in close proximity to Brisbane and Ipswich, urban expansion will eventually result in loss of much of this green space. A major project attracting much attention is the development of an entirely new city to be known as Springfield. Incorporated in the design are a number of green belts and wildlife corridors aimed at conserving important flora and fauna habitats. Opossum, Woogaroo and Mountain Creeks serve as major drainage lines within the Springfield development. A fringing rainforest known as the Woogaroo or Goodna Scrub once extended from the Brisbane River at Goodna upstream for a distance of five kilometres. The lower reach of Opossum Creek also contains small fragmented patches of disturbed rainforest. A field trip in 1889 led by F. M. Bailey and J. M. Simmonds provides a record of plant species fringing Opossum Creek. A survey of vegetation prior to commencement of the project recorded one hundred and thirty closed forest species present within a small area.

Over the years timber getting, agricultural pursuits and fires have resulted in fragmentation of the closed forest. Valuable timbers including Hoop Pine (*Araucaria cunninghamii),* Red Cedar *(Toona australis),* Black Bean *(Castanospermum australe)* and Bumpy Ash *(Flindersia schottiana)* were logged almost to extinction. The invasive tree species, Camphor Laurel *(Cinnamomum camphora)* and Chinese Elm *(Celtis sinensis)* rapidly colonised disturbed areas. Springfield Land Corporation Pty Ltd decided to encourage involvement by residents, schools and the scouting association in a number of environmental projects aimed at retaining important habitats to conserve local flora and fauna.

Drought conditions prevailing at the present time in South East Queensland have curtailed planting of tubed stock in any great numbers. Waterholes along Opossum Creek dried up five months ago necessitating the sparing use of available water, all of which is carried to the site in containers. Watered during the initial planting all stock used has to depend on its ability to survive until rain occurs. Use of the right plant in the right place combined with copious amounts of mulch has resulted in minimum losses up to the present time. Planting immediately after reducing the Lantana into a humus rich soil, is a contributing factor towards optimum survival rates. Many Rainforest seedlings were noted once the Lantana was removed. Species included Silky Oak (*Grevillea robusta*), Blackwood *(Acacia melanoxylon).* White Cedar *(Melia azedarach)* and Kamala *(Mallotus philippensis).* Early explorers of the Brisbane area noted in their journals that rainforest formed fringing vegetation along many of the rivers and creeks. Remnants are often fragmented and degraded but still represent an important biological resource worthy of preservation and restoration.

A recent expedition to a patch of Woogaroo Scrub yielded plant material of the Rainforest tree, *Sarcomelicope simplicifolia* for Dr David Lin who presently is researching the medicinal potential of a number of species found in closed forests in South East Queensland. Discovery of two rare frog species along Woogaroo Creek emphasizes the value of preserving any remaining fragments of rainforest.

The restoration of sections of the Woogaroo Scrub represents a genuine attempt by a cross section of the community to involve themselves in conserving our dwindling natural resources. Hopefully the enthusiasm generated by this project will result in the formation of a Woogaroo Creek Catchment Association involved in a number of nature based activities including tree planting, bird watching, bushwalking, and with rapid urbanization in South East Queensland, we must not lose sight of the fact that, along with larger tracts of bushland, many small specialized habitats such as Opossum Creek and others are a vital link in preserving diversity of flora and fauna for future generations to enjoy. ■

Conservation of Australia

Conservation, a word to be used at election time, or a practice to be adapted, not because the majority of voting Australians are increasingly concerned about it, but because the very future of mankind will depend upon it. Why won't our leaders take this matter seriously? Never before in Australia's history, has an opportunity presented itself to unite the nation, to involve all its citizens, as that presented by the celebrations of 100 years of Federal Government in the year 2001. This is not a three-year term of promises but a 100 year term that will end in greater prosperity than ever before, or complete extinction. Our submission has been made but will we even get a good hearing?

Landcare and Greening Australia provide the proof of what can be achieved on a small pilot scale, providing a the nucleus of knowledge and participants needed on a long term nationally managed scheme that will work at little cost. Recent surveys have confirmed that 80% of Australians are concerned about conservation for the future and would like to be involved. Fortunately this applies particularly to junior Australians. Why not let us all participate in this adventure into the future, 2001 and beyond?

Landcare, the future or a political hobby?

The Woogaroo Scrub Project opposite is typical of what the Landcare Movement has produced. Another example is how Kathy Wray and her Citizens Wildlife Corridors have created green belts across the landscape of the New England/Armidale area that has now spread south. The enthusiastic response by private land holders has outstripped the meagre resources given. She has applied for more funding purely to meet immediate expenses but she is "flat out". We need hundreds of Kathy Wrays throughout the continent. The irony is that we have thousands of Kathy Wrays but no direction. These people work full time without pay and at great expense to themselves but our leaders refuse to recognize them or the critical need for what they are doing. Will the year 2001 celebrations be the catalyst to give direction and support to this conservation army? Nobody will even talk to us!

Our Project 2001 is not a "greenie" scheme of the past. We regard development as necessary, we regard the maintenance and improvement of the standard of living for all Australians as essential, we do not say **NO** to many proposals without advice as to how to achieve the result that will not only safeguard the environment but will add to the prosperity of the nation both now and in the future. Nobody will respond to the natural resources development incentive we placed before the Government repeatedly over the last five years! ■

Remaking a garden in Victoria

Our Garden No. 28

by Peter Bailey

After many years of letting the garden go to rack and ruin, we decided it was time to embark on a programme to completely revitalise and renovate both the front and back gardens. We don't have any lawns, so as you can imagine we have collected a tremendous amount of composted leaf litter over the years, especially as we mulch our prunings. After digging out several large and one enormous stump the whole area was well dug over and mixed with the humus. Only a few plants remained, including a ten-year-old *Buckinghamia celsissima* that was stunted beneath a *Eucalyptus leucoxylon* (the enormous stump). It was only about 1.5 m tall, and since the rejuvenation has been continuously tipped pruned to maintain its size. It is a lovely rounded shrub and during the last twelve months it has been continuously in flower!

As we are on a gentle slope and the garden is terraced, drainage is virtually perfect. The main bed was mounded slightly to further assist drainage. To reduce weed growth, we covered the area with a thin open weave weed mat and then covered it with 8 cm of fine chip bark. It has compressed into a dense layer that has only produced a nitrogen deficiency in one small *Actinodium cunninghamii*. The mat–mulch combination seems to keep the soil moisture fairly constant, and helps reduce temperature fluctuations. However, planting is particularly slow, as the bark has to be pushed back, the mat cut and the hole dug carefully with the soil put in a bucket to try and stop contamination on the mulch. However, it is well worth the trouble and we would thoroughly recommend the method to anyone. A *Thysanotus multiflorus* and a *Stylidium graminifolium* are two tufties that are doing exceptionally well. One of our favourite brachyscomes is *B. multifida* "Bright Eyes", not difficult to grow, a low growing, tight compact plant that is only about 10 cm high and has spread to almost 90 cm across.

Our Verticordias were also neglected and have long since departed. So we decided it was time to renew our relationship with these lovely plants. One level of the terraced garden is filled with fine black sand, which we have mulched in the same way. There are not many Verticordia available in Melbourne, but we managed to purchase a few, with some grafted onto *Hypocalymma cordifolium*. They have only been planted for about three or four months over winter in Melbourne, but all have put on growth and look fantastic. They are: *Verticordia brownii* (grafted), *V. chrysantha*, *V. fastigiata* (grafted), *V. fragrans*, *V. galeata* (grafted), *V. grandiflora*, *V. lehmannii* (grafted), *V. longistylis* (grafted), *V. mitchelliana*, *V. monadelpha* (grafted) and *V. plumosa*.

We have wanted to grow some Tasmanian natives for some time, and decided the side of the house that doesn't get too much sun would be ideal. So far we have planted about a dozen, including two lovely Proteaceae, *Agastachys odorata* and *Bellendena montana*. Not one has looked back and they look fabulous.

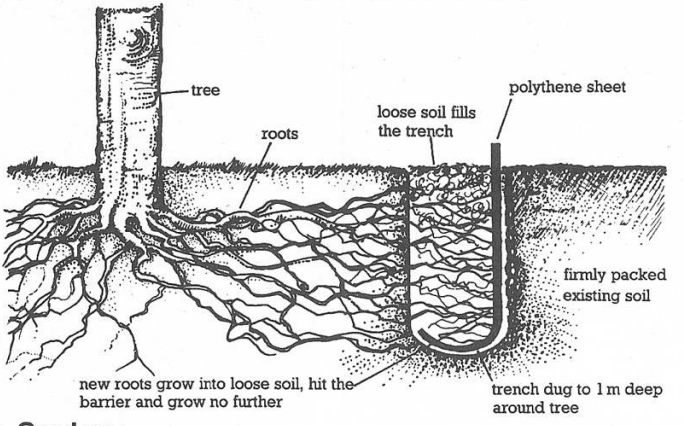
At the moment we don't have many native "Food Plants", but our all time favourite is *Backhousia anisata*, which we have in a large pot. The leaves are "aniseed" flavoured when rubbed and make a fantastic replacement for the usual Bay Tree and we thoroughly recommend it in all cooking. ■

Root competition

Note from W. H. Payne

If you have a tree, your garden has root competition. Some plants such as Waratah will not tolerate it while others never prosper. Tree roots spread below the soil well beyond the drip line of the tree and often to great depth. It is the surface spreading roots that will search out and rob your plants of nutrients and water. One method of checking this root competition is the use of polythene sheeting as a barrier as shown below (reproduced from "Shady Gardens"). Installed in a trench to one metre depth it will turn the roots back on themselves and leave your plants in peace for a time.

I receive the comment that shrubs and trees, especially Waratah, live together in the bush. A home gardener often wonders how and what sort of unique local conditions has enabled them to do this. In the garden we feed and water our favourite plants and it does not take a tree long to find this favoured area producing a mat of roots around your favourite plants to strangle them and suck up the goodies themselves.



Shady Gardens

by Virginia Reed

Creating a shady garden is easy, living and creating a garden in a shady area is hard. This book does not deal much with natives but with using shade for decorative living. It is not a new book but reprinted because of demand. My review some years ago reproduced the sketch above from the book, with permission and I do it again because it could be very important to you, growing flowering plants despite the presence of trees. A small book costing $16.95.

Water In Your Garden

by Paul Thompson

For the creation of your own miniature garden landscape using water in ponds or streams, this book by Paul Thompson is exceptional. While the final result will look very professional and artistic, the mechanics of construction as defined in this book is really quite simple and within the ability of any reader. A small book costing $16.95.

Lothian Garden Series. Each of these excellent books of about 60 large pages is produced as a series by Lothian Books, 11 Munro St., Port Melbourne. They are available at most book sellers each for $16.95 or as indicated inside our rear cover, by post for an additional $5. Others highly recommended in this series are "Backyard Organic Garden", "Bonsai", "Creating an Australian Rainforest Garden", "Hydroponic Gardening", "Simple Pest and Disease Control".

Asterolasia trymalioides F. Muell. — Alpine Starbush

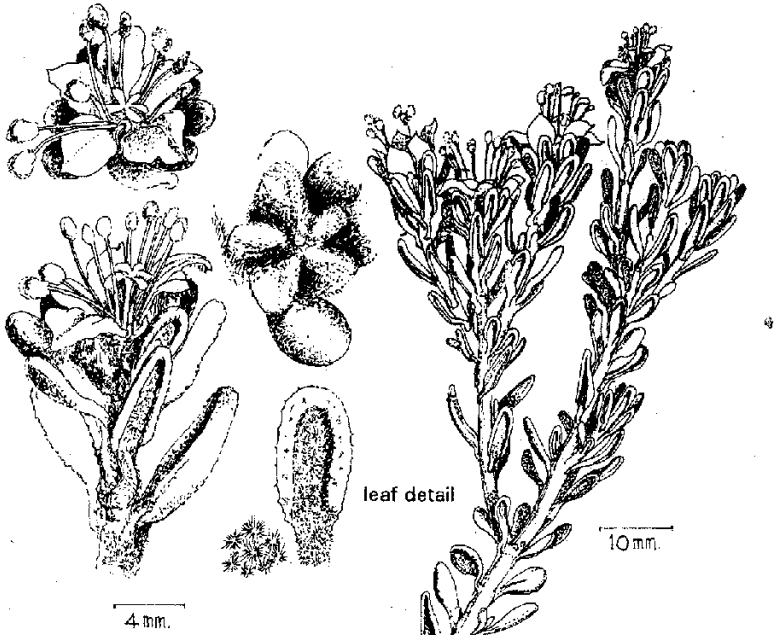
*Sub-alpine Flora of Victoria*** by Kathie and Peter Strickland

The genus name comes from the Greek *aster*, star and *lasios*, hairy, alluding to the hairs on the leaves and branches. The species is named after the genus *Trymalium* which comes from the Greek *trymalia*, meaning a hole or aperture and refers to the 3 splits on the top of the fruit.

Asterolasia trymalioides is a dwarf shrub which can reach 1 metre. Its dark coloured branches are covered with stellate, white to rusty hairs. It grows on mountain slopes and alpine heathland on the Baw Baws and can be found in sub-alpine and alpine areas of Victoria and NSW.

The ovate, obovate or oblcng leaves are alternate, shiny and glabrous above and densly hairy below. They are 3–8 mm long by 2–4 mm wide, crowded along the stem and have a parsnip-like scent when crushed. The margins are revolute and the apex obtuse.

The bright yellow flowers, which are prolific during **November** and **December**, can be seen until **February**. They are profuse, sessile, 1.5 cm in diameter, terminal and solitary or 2–3 together. They have 5 petals, 5–6 mm long, which are tomentose outside with 2 small bracts at the base. There are ten or more stamens and a rusty coloured style with a peltate stigma inserted in the centre of the ovary.



**Sub-alpine Flora of Victoria. A 154 page small book produced as a field guide to the flora of the Baw Baw Plateau, a unique southern finger of the Great Dividing Range, isolated from the rest of Victoria's high country further to the north. One page of this book has been reproduced above, condensed slightly to fit our page. The book is a must for visitors to the area, but of very special interest to all those interested in high country plants or plants suitable for rockery cultivation. It is available from booksellers for $19.95, or, post free from Karellah, PO Box 31, Balnarring, 3926.



Asterolasia trymalioides, plant photo: P. Strickland, flower photo: P. Ollerenshaw
© Australian National Botanic Gardens.

Asterolasia, a small group of unique and attractive plants ideal for rockery cultivation in southern areas or as a treasured potted plant. Will readers who have grown or photographed other species in the genus please contact the Editor, Australian Plants.



Research on Australian Native Flora

Editor

You decide what research is needed and we will arrange to have it carried out. This is the offer of the Australian Native Cut Flower Growers and Promoters on page 226. Thanks to the offer of a sponsor (under certain conditions) research may now be undertaken using the resources of the Horticultural Research and Development Corporation. This government sponsored research scheme can only operate if a certain percentage of the money needed for a particular project is provided by the relevant industry. The Australian cutflower industry is so small that an industry levy would not work. This industry cash component is available through a generous sponsor engaged in the industry, but under certain conditions. The research must be directed specifically to the needs of the industry.

Sankowskya

Do you ever dream of having a plant named after you?

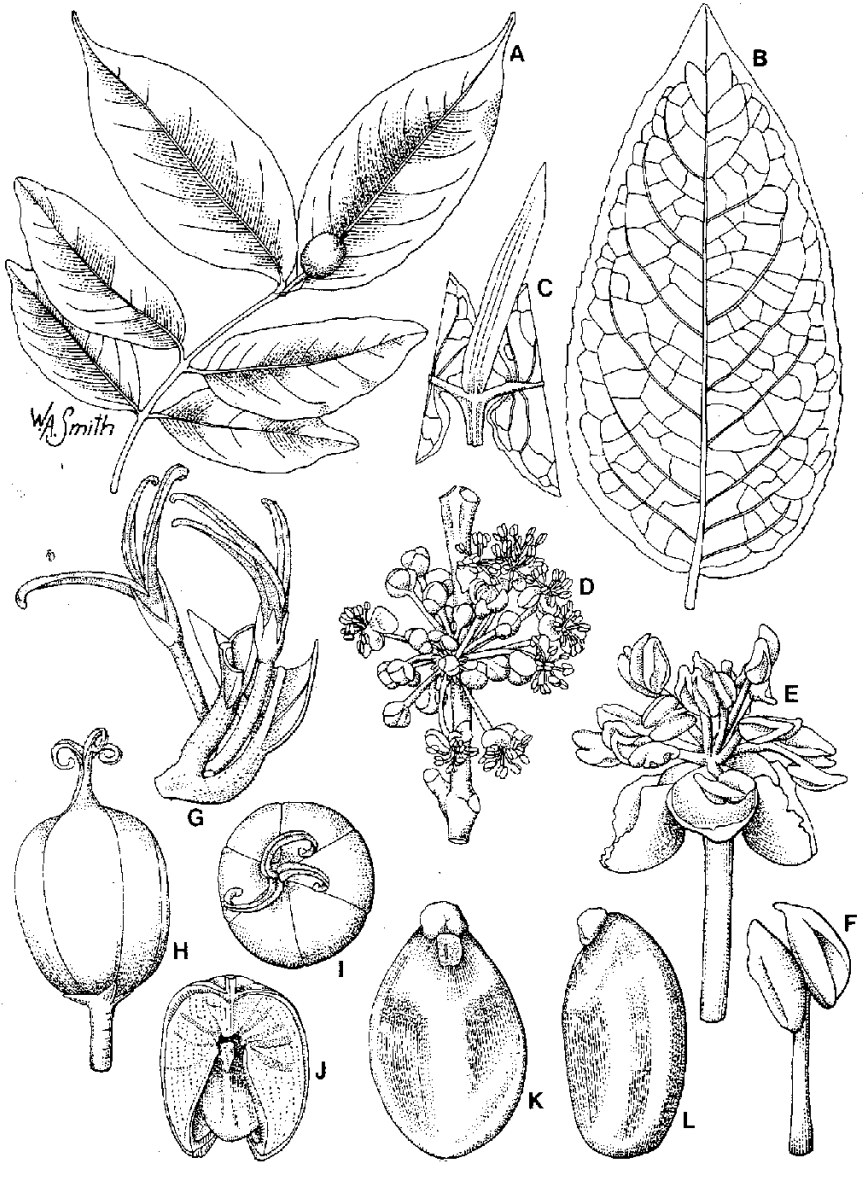
A new genus from the Australian Wet Tropics — by Tablelands SGAP Group

In 1988, Garry Sankowsky of Tolga in North Queensland discovered and collected material of a species of Euphorbiaceae from private land on a Rex Range estate where it appears to be confined and endangered.

A walk through this rainforest, containing some rare plants in the area, he observed saplings with bright red growth and huge stipules. A specimen was taken. He returned with Peter Radke to collect seeds and later some fruit. It was evident that it was a plant in the Euphorbiaceae family, but did not belong to *Dissiliaria*. There were some important differences in flora and seed morphology. A new genus *Sankowskya* was established to accommodate this species, named *Sankowskya stipularis*. Garry Sankowsky*, of Tolga, is an avid plantsman who discovered and collected this plant and many others new to science.

Sankowskya stipularis is a small tree to 15 m high with a straight trunk without fluting or buttressing, with a diameter at breast height of 10 cm. The bark is smooth, white with a pale pink blaze. Features of the plant are shown in the sketch; **A**, a fruiting branch; **B**, leaves which are a bright red to pink when expanding, dark green when mature, 50–180 mm long by 15–65 mm wide, leathery, with margins weakly toothed 23–30 per side, the venation obscure above and prominent below as shown; **C**, where the opposite leaves join the branchlet there is a pair of tiny leaves, stipules; **D**, this head of flowers is of male flowers only, each as in detail **E** showing the 12–15 stamens each as in detail **F**; **G**, the female flowers (with 3 sepals and linear styles), only singly or in pairs on the same tree, which, on fertilization, mature to a fruit **H** shown from the side and from above in **I**, and cut open in **J** to show one of the seed detailed in **K** and **L**, 8–9 mm long. The flowers and fruit are bourne throughout the year but flowering is probably more prolific from November to January. Sketch is by W. Smith (BRI).

*The Tablelands Branch SGAP Queensland is very fortunate to have such a person as Garry as a member. He is such an inspiration with his continued enthusiasm for the native flora. They are so proud of his achievements — hence this publicity — much to his disgust perhaps? But to have a new genus created and named after him just HAD to be recognized, everyone agreed. We dips our lid, Garry !!



Sankowskya stipularis

Swainsona

Not as spectacular as Sturt's Pea but exceptional plants in their right. Will readers interested in this group of plants contact Adrian McKinley, 2 Narran Place, Dubbo, 2830. You could end up with an active Study Group and a lot of interest. Would anyone who can, send seed of *Swainsona* species to Adrian. Editor

Development of better forms

Editor

Ray Aitken, in his article of 1971, recommended the development of better forms of *Melaleuca* and this has been ignored The production of *Melaleuca thymifolia* 'White Lace', 'Pink Lace' etc. to meet the potted plant market is an exception. The range of *Melaleuca* in the wild is a virtual treasure trove of exceptional horticultural plants and we have ignored them. We should be selecting better forms, propagating correctly and developing quite outstanding plants. This applies to many groups of plants. If you know of an exceptional form of any species, in cultivation or the wild, please contant the editor.

Other plants in this Myrtle plant family such as Geraldton Wax and *Baeckea* that have persistent waxy petals on their flowers have become an important component of Australia's export trade as cut flowers. The bottlebrush group of plants are much more spectacular but their commercial development has been hindered because of sustained presentation of the stamens, the prominent part of the flower. The flower heads may be harvested and stored at 0–8°C for transport to market and then full flower development triggered for sale. How long will they look attractive in a vase or bouquet. We have been leaving this work to the experts but they have priced themselves out of the business. We are the experts. Who will take up the challenge to run some trials of their own. If we come up with indications that there is a solution, I can get adequate funding at a research institution to develop our findings to a commercial reality.

NSW Christmas Bush

A growers cooperative group is being formed. Commercial growers already established and those intending to establish a production farm should contact Ross Worrall, NSW Agriculture, PO Box 581, Gosford, 2250. Phone (043) 48 1900. At this stage, this is not a service for casual advice on how to grow a few plants in the garden, but a serious industry promotion. Reports on the knowledge gained will appear in Australian Plants for all to use.

Research project on NSW Christmas Bush commercial production has been started by the University of Technology, Sydney, and NSW Agriculture to:

- optimise flower production by studying plant nutrition, irrigation and cultivation requirements.
- determine the effect of environmental conditions on flower set and post harvest quality.
- develop control measures for pest and disease problems.
- optimise post harvest storage, handling, packaging and export technology, extend vase life.
- facilitate the development of improved forms for horticulture.

Extensive field plantings have already been made for this project.
Ross Worrall is seeking notification on any probiems that need study.

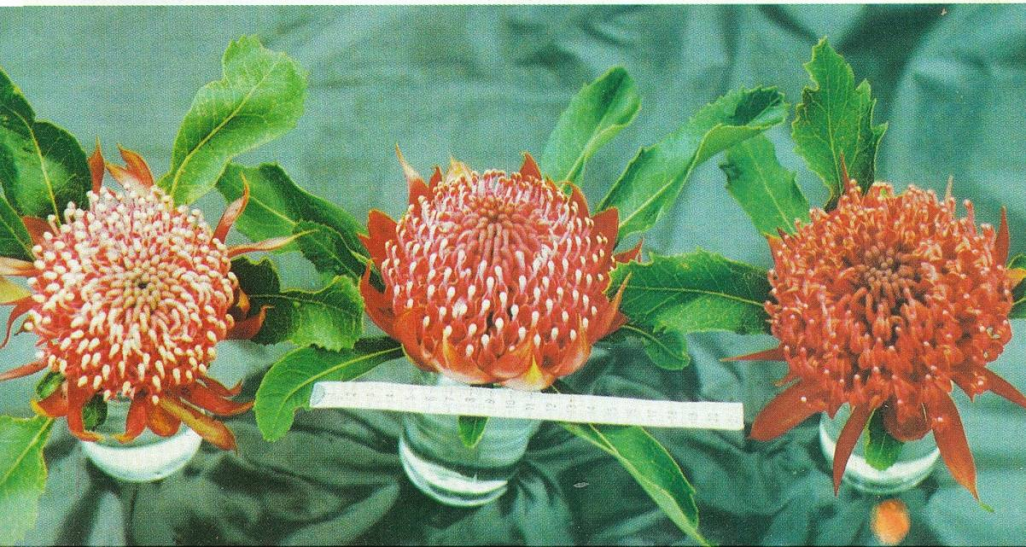
NSW Waratah

The development of the cut flower Waratah industry is an urgent concern. They will be featured prominently at the Olympic Games 2000. The industry needs growers in the warmer northern areas and in Tasmania to extend the flowering season for a commercially viable export industry. Readers may be interested in the photographs opposite that show various cultivars being produced. The good news is that the cultivar 'Olympic Flame' is now available for production. For wholesale orders, for any of the Waratwh cultivars, contact Yellow Rock Nursery, Single Ridges Rd, Winmalee 2777.





△ *Telopea* 'Wirrimbirra White' △ *Telopea* 'Shade of Pale' △ *Telopea* 'Brimstone Blush'
▽ *Telopea* 'Brimstone Blush' ▽ *Telopea* 'Fire n' Ice' ▽ *Telopea* 'Cardinal'



Euclid A CD ROM reference to Eucalypts of S.E. Australia

by M. I. H. Brooker, J. R. Connors and A. V. Slee

Euclid allows the user to quickly identify any of the 310 species and other forms found naturally in south-eastern Australia. This represents the perfect reference in magnificent colour to all the species features such as *habit of mature trees*, the *trunk*, the *leaves* with venation, *buds*, *flowers* and *fruit*. Given a specimen of any part of the tree, or by keying in any feature you have available, even just that it occurs naturally near you, the programme will lead you eventually to the species and show it in full colour. A scientific programme that anyone can use in a few moments. This is the way to present such a large group of apparently similar plants and we sincerely hope that Bruce Maslin will be given the resources to present a similar programme on our wattles. Compact disc is available for $120 plus $8 postage from CSIRO, PO Box 1139, Collingwood, Victoria 3066.

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Eucalyptus or Corymbia

Editor

The proposal by the Western Australian Wildflower Society to ignore the recent classification change recommended for some trees previously known as *Eucalyptus* and proposed to be called *Corymbia,* has received very wide support. We propose to support them for the reasons given. It is internationally recognised that there is no obligation to accept such research findings and that it is not incorrect to continue to refer to them as *Eucalyptus* species. This we will do, giving the alternative generic name in brackets. We do not want to upset anyone who intends to accept the generic name of *Corymbia* and recognise their right to do so. Many professional botanists are also concerned about the change. I understand that a leading authority on Australian *Eucalyptus,* a very competent professional botanist, proposes to publish alternative research that recommends all species previously known as *Eucalyptus* should be retained in the genus *Eucalyptus* as well as species previously known as *Angophora.* When this is done we will review our position. ■

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△ ***Kunzea baxteri***, a bottlebrush plant, hardy and decorative, see page 210.

▽ ***Kunzea pulchella*** form for horticulture. These photographs by Ivan Holliday.



Bottlebrush flowered plants are hardy in most situations. Many are used in swampy situations, for windbreaks, shade, or specimen plants. They can be left to survive on natural rainfall responding with bursts of flowering, practically covering the bush when good rain comes. However, as specimen plants, they need to be pruned after flowering to retain a well presented bush and to maximise flowering. See page 210 for further details.

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