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FEDERATION BELLE



Correa



Editorial

W.H. Payne

Cultivation of the Australian flora is an ongoing theme. Not all wildflowers are easy to cultivate and some such as *Boronia* and some *Correa* have proven frustrating. Carefully read the advice given in the article on *Boronia* on page 206 and the advice for cultivation in frost prone areas on page 222. A feature of the issue is also cultivation in containers and small gardens such as balconies. Easy to grow plants were featured in our previous two issues, all especially bird attracting.

In this issue, we continue to present groups of wildflowers widely grown, with proven reliability and bird attracting. *Boronia* and *Correa* are not so easily grown but John Knight provides a guide to their culture as well as many other more difficult wildflowers. Experienced gardeners will recognise this as good garden practice.

The Nursery and Garden Industry Association are also taking an interest in Australian wildflowers and the ability to attract birds. Read about the Flora for Fauna project on page 202.

Farm forestry is another continuing theme through issues of *Australian Plants*. *Flindersia*, described on page 197, are recommended for special valuable timber harvest. We need to grow trees to stave off the day when salt engulfs us and to temper the greenhouse effect on our atmosphere.

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Front cover: *Correa* 'Federation Belle', described in the article on the opposite page. The photographs were taken by Shirley Caldwell.

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Correa 'Federation Belle'

and other *Correa* cultivars

Maria Hitchcock*

Correa 'Federation Belle' originated as a chance seedling in the garden of Sarah Caldwell, Mole River Station, in the Torrington area of northern NSW. The Caldwells operate a nursery and have a selection of *Correa* passing through the nursery. It is believed that this seedling is a hybrid between *Correa* 'Marion's Marvel' and perhaps a form of *Correa reflexa* var. *speciosa*. The seedling appeared beside a 2 m high *Correa* 'Marion's Marvel', which is growing adjacent to the nursery. The other parent plant was probably in a pot nearby.

As the new cultivar is only 3 years old, the mature size of the shrub is difficult to estimate at this stage. 'Marion's Marvel' can grow to over 2 metres in height while *Correa reflexa* var. *speciosa* tends to be much smaller rarely climbing over a metre in height. It is believed that this variety will be similar in height to *C. reflexa* var. *speciosa* but having the density and rounded shape with heart-shaped glossy leaves, mid-green in colour, similar to *Correa* 'Marion's Marvel'.

The large wide-flowering bell is approximately 3 cm long and rose pink becoming pale green towards the tips. Flowering begins in February and continues through autumn and early winter, providing an excellent source of nectar for small birds during a 'quiet' time in the garden. It is fast-growing in cultivation and is very hardy, withstanding frost and drought. The seedling germinated in coarse gravel and is growing well in this medium.

Gardener's Tip:

**Correa are
small plants
ideal for a
small garden
or rockery**

The Centenary Committee in Tenterfield has promoted *Correa* 'Federation Belle' during Centenary of Federation celebrations. An official launching ceremony took place in Bruxner Park, Tenterfield at 10.00 am on April 21 2001 during the Bards of the Bush Festival. All available plants were sold out at the launch but more plants will be available from Mole Station Nursery (02 6737 5429) in late spring. The cultivar should be readily available in nurseries within two years.

The majority of *Correa* are drought hardy and frost resistant. Many varieties flower in autumn and winter, providing a valuable nectar source for small birds when most other species of Australian plants are dormant. They are all easy to grow from cuttings and some forms set seed which germinate in the garden giving rise to a large number of hybrids.

***The Correa Study Group** is led by Maria Hitchcock. They have enjoyed numerous field trips, studying the many species and their various forms and selecting those with the greatest potential for horticultural development. The report on this study will probably fill an issue of *Australian Plants* in the future. This advance report was prompted by the choice of the *Correa* as the Federation Flower of Tenterfield and the announcement that selected *Correa* species will be available in the nursery trade over the next season.



Correa 'Narrow Neil'
Australian National Botanic Gardens Collection



Correa 'Blush'
Australian National Botanic Gardens Collection



Correa 'Starlight'
Australian National Botanic Gardens Collection



Correa 'Raelene Goldie'
Australian National Botanic Gardens Collection



Correa 'Pink Delight'
Australian National Botanic Gardens Collection

General Cultivation of *Correa*

Correa are generally easy care plants requiring very little maintenance, apart from an annual light pruning, and they are generally disease-free. *Correa* are suited to a large number of garden situations but generally require a well-drained position. Gardeners in coastal areas subject to high humidity may need to experiment as some species, particularly those with hairy leaves, are not suited to these conditions. An alternative would be to grow *Correa* varieties in large pots to allow for improved air-flow around the base of the plants. The smaller, showy forms look spectacular in tubs.

Because of their low-maintenance reputation, *Correa* are now being used across the southern part of Australia in amenity plantings, in town parks, central shopping areas and on roadside verges. They adapt well to a wide range of soil conditions and climates, especially in cooler, dry zones. They tend to be vigorous growers and most reach maturity within 3-5 years. The dense habit of a wide range of *Correa* lends them to small hedge planting and open varieties can be planted closely in clumps to give an illusion of density. This is advisable for the *Correa reflexa* varieties.

Gardener's Tip:
Correa are low maintenance plants for landscaping and gardens

Correa cultivars

W.H. Payne

****Correa* 'Narrow Neil'** is a selection from a forested area west of Geelong, Victoria. It was named to honour Neil Marriott for his efforts to popularise the genus. This medium sized shrub (1.7 x 1 m) is frost and drought hardy. Suited to most garden conditions, it is easy to grow from cuttings and bird attractive.

The branchlets when young have rust coloured star hairs and then become brown and hairless with age. The leaves are simple and heart-shaped approximately 19 mm x 14 mm in size. The upper surfaces of mature leaves are dark green. The narrow, cylindrical flowers (37 mm long x 9 mm wide) are deep red with a pale green band at the tips, which are strongly curled back. Anthers are much longer than the petals. Peak flowering is from June to September in most districts. This form of *C. reflexa* var. *reflexa* features rich-red flower colour and many flowers. Photo on page 188.

****Correa* 'Dawn Glow'** is a prostrate shrub to 20 cm x 2 m with a moderately dense habit. It has rusty branchlets and the dark green (139A), rough-textured leaves up to 30 mm long x 18 mm wide with short stalks. The corolla is cylindrical, 25 mm long x 10 mm wide, dull orange-red (48A to 160B). The stamens are slightly longer than the flower. Peak flowering is from May to June in most districts. This cultivar of *C. reflexa* var. *reflexa* resembles plants found naturally in the Portland area (known as *Correa* 'Portland Dawn Glow') but is distinctive in its prostrate habit and unique flower colour. Photo on page 192.

***Cultivars and their naming** on page 194 may clear up some confusion, particularly those given Plant Breeders Rights and a Trade Mark. The cultivars above are registered with the Australian Cultivar Registration Authority and the descriptions are based on those in their web page - www.anbg.gov.au/acra - Note that the species name is not given in the published cultivar name.

The photographs used to illustrate this article, from the ANBG collection, were submitted with the applications to register these cultivars.

Correa 'Mary's Choice' is a form of *Correa reflexa* var. *reflexa* selected from a wild population near Anglesea in Victoria. The collector of the original is unknown. It is named in honour of Mary E. White who was a tenacious and extremely knowledgeable campaigner to save areas of the floristically rich Anglesea heathland from developers.

It is an erect shrub to 1 m x 1.5 m with an open habit. It has very hairy branchlets and dark green heart-shaped leaves, approximately 25 mm long x 9 mm wide, with short leaf stalks. The calyx has four minute teeth and is about 4 mm long and fawn coloured. The corolla is cylindrical and narrow, up to 35 mm long x 9 mm wide, deep red (53B) graduating to pale green (142B) at tips, which are barely curled back and the stamens are slightly longer than the flower. Peak flowering is from June to October in most districts. Photo on page 192.

This cultivar conforms to descriptions for *C. reflexa* var. *reflexa* by Wilson (1998). The rich-red flower colour and floriferous habit are attractive features of this selection from the wild. *Correa* 'Mary's Choice' has been widely cultivated in Australian gardens for many years.

Correa 'Green Giant' is an erect shrub to 1 m x 0.5 m with a moderately dense habit. Branchlets are covered with rust-coloured hairs and the heart-shaped dark green (147A) leaves are 23 mm long x 16 mm wide on short stalks. The calyx is hemispherical, 4 mm long, with rust-coloured hairs; the corolla cylindrical, green, 40 mm long x 8 mm wide, the stamens slightly longer than flower. Peak flowering is from June to August. It was formerly known as *Correa* 'Narrawong Forest Green'.

Beginner's Tip:
Corolla refers to the petals of a flower collectively. In *Correa* it forms a tube or bell.

Correa 'Raelene Goldie' is a spreading shrub to 1.2 m x 3 m with a dense growth habit. Branchlets have pinkish-rust-coloured hairs and the heart-shaped dark green (139A) leaves are 27 mm x 16 mm, with short leaf stalks. The calyx is hemispherical with fine rusty hairs, the flower tube narrow and cylindrical, up to 33 mm long x 9 mm wide, bright red (47B) gradually becoming white to yellow-green at tips and the stamens are slightly longer than the flower. Peak flowering is from July to October in most districts. It is a garden seedling of *Correa reflexa* var. *reflexa*. Photo on page 189.

Correa 'Blush' is a medium sized shrub to 2 m x 2 m with a dense habit. It has hairy branchlets and round dark green (137A) leaves approximately 20 mm x 20 mm with slightly recurved margins. The corolla is 10 mm long x 10 mm wide with petals split to the calyx, largely white around margins with pale pink spreading along the petal from the throat. Peak flowering is from April to June in most districts with spasmodic flowering throughout the year.

The normal flower colour for *Correa alba* var. *rotundifolia* is white. Various forms with pink petals occur naturally in both Victoria and Tasmania. This is one of those naturally occurring forms from Victoria. The descriptive name 'Blush' has been used to differentiate this plant from other *Correa alba* var. *rotundifolia* forms. Photo on page 188.



Correa 'Mary's Choice'

Australian National Botanic Gardens Collection



Correa 'Dawn Glow'

Australian National Botanic Gardens Collection

Correa 'Starlight' is a selection from the wild by a member of the Australian Plants Society, South Australia during the 1980s. Its origin is unknown but it has been established in the nursery trade. Formerly known as *Correa alba* 'Variegated'.

It is an erect medium sized shrub to 1.5 m x 1 m with a dense habit. It has rounded dark green leaves with splashes of yellow particularly around the margins, approximately 20 mm long x 18 mm wide and very short flower stalks 1 mm long. Flower clusters with up to 10 flowers at tips of branchlets. Flowers are white, up to 10 mm long x 10 mm wide with petals split to calyx. Peak flowering is from July to September in most districts with spasmodic flowering throughout the year. This is the only known *Correa alba* var. *alba* with variegated foliage. Flower clusters appear to have a larger concentration of flowers than other *C. alba* var. *alba* forms. Photo on page 188.

Correa 'Coconut Ice' (*C. reflexa* var. *reflexa* x *C. alba*) may have originated as a seedling in a garden in Canberra. However, it is not the same plant as *Correa* 'Hartshorne Hybrid' and not the same as *Correa* 'Gwen', both of which have Canberra origins. It has been available commercially as *Correa alba* hybrid for at least 10 years. The name refers to the similarity of the flower colour to a well-known confectionary of the same name.

It is an erect tall shrub to 3 m x 2 m with a moderately dense habit and round dark green leaves, up to 25 mm long x 20 mm wide. The corolla is up to 25 mm long with petal tips tightly recurved, cream at tips with pale pink spreading along the corolla from the calyx. Peak flowering is from May to October in most districts with spasmodic flowering throughout the year.

This plant varies from either presumed parent in that the shape of the floral tube resembles that of *C. reflexa*, the leaves resembling those of some *C. alba* forms. The cream tips also vary from *C. reflexa* forms that usually have green tips even when the flower colour is pale pink. The size and habit of the plant conforms to *C. alba* var. *alba* forms rather than to *C. reflexa* forms which tend to be smaller and more open in habit.

Correa 'Pink Delight' possibly originated as a *Correa pulchella* seedling. It is a prostrate shrub to 40 cm x 2–3 m with a moderately dense habit. The branchlets and stems are green, glabrous with occasional hairs. The dark green (137A) leaves, approximately 28 mm long x 14 mm wide, have an obvious pattern of oil glands and stalks to 6 mm. The corolla is cylindrical, up to 40 mm long x 15 mm wide, pale pink with cream tips. Peak flowering is from May to July in most districts.

The smooth leaves of *Correa* 'Pink Delight' conform to descriptions for *Correa pulchella* by Wilson (1998) but the flower is larger and the cream tips are an unusual variation. *Correa pulchella* flowers tend to have only one colour from the base to the tip rather than two. There may be some affinity with *Correa backhouseana* in this seedling. The cultivar flower is distinctive because of its size which is larger than most *Correa pulchella* flowers and because of its colour which is different from other *Correa pulchella* hybrids, such as 'Dusky Bells', 'Pink Mist' and 'Mannii'. It differs from *Correa* 'Firebird' in flower size and colour, size of plant, growth habit and leaf shape. Photo on page 189.

Cultivars and their naming

W.H. Payne

A cultivar is a plant (or hybrid) raised in cultivation that has been selected for use in horticulture because of special attributes such as flower size, colour or abundance; habit such as dwarf or compact form; foliage such as colour, variegation or presentation; its fruit or even its hardiness in cultivation. Normal forms of plants brought from the wild into cultivation are not cultivars.

A cultivar is often the result of breeding for special attributes. The term "cultivar" may be applied to selections of exceptional plants from the wild. Horticulturalists want to grow the very best forms of a species and if the cultivar is given a distinguishing name it can be sought out by the public.

The Australian Cultivar Registration Authority (ACRA) resides at the Australian National Botanic Gardens at Canberra. Membership is comprised of a representative of each major botanic gardens in Australia and of the Plant Breeders Rights Authority. The Australian Plants Society played a major role in creation of this Authority and ASGAP gives financial support, and both are represented by a number of members. Under an International Code of Practice this Authority has been authorised to register cultivars for the Australian flora. The Authority also acts in an advisory capacity for all applications for Plant Breeders Rights concerned with the Australian flora.

A registered cultivar (registered by the ACRA) does not confer any special ownership and anyone can propagate from it and market it. However it does confer some rights to the cultivar name. The name, once registered, is not available for use by another plant of the same genus. It has become common practice for nurseries to adopt a cultivar name without its formal registration, i.e. *Boronia* 'Harlequin', *Telopea* 'Shady Lady' and *Zieria* 'Pink Crystals'.

Plant Breeders Rights (PBR) may be conferred on a plant that has undergone significant development to achieve characteristics that have commercial importance. This assigns ownership to the applicant for an approved period. Propagation is restricted to the owner or those who pay a royalty. PBR is administered by the Department of Agriculture, Fisheries and Forestry - Australia. Approximately \$2,000 is required to register a plant for PBR and \$300 per annum to maintain the registration. It is intended for serious plant breeders who undertake significant development to achieve special characteristics. It involves structured comparative growing trials to demonstrate Distinctness, Uniformity and Stability that are planned and monitored by "Qualified Persons" of which there are approximately 150 in Australia, each with a specified field(s) of expertise.

Trademark is not a safe alternative. Trademark may only be applied to the names of groups of plants such as 'Bush Gems'. In the past it has been incorrectly assigned to a particular plant and the Trademarks Office has advised that this is an inappropriate use of Trademark. It protects the name but not the plant. Anyone is at liberty to propagate from it and sell it under a different name. Continued on page 220, **Plants from the Australian flora for PBR.**

Container plants for balconies

Alec M. Blombery & Betty Maloney

Gardening on balconies should be an exciting challenge, whether your balcony be a small box-shaped Romeo and Juliet style, an extensive addition to the outdoors or an annexe to a living room. It is your access to the outside world, so make it a joy to see. Your garden may be needed to screen neighbours or cut out an unwanted view and can help with reducing noise levels, wind, air pollution and heat.

No matter what its size a garden is never static. Replace plants when their time is up, a cardinal rule of gardening in small spaces. The tending of your garden can be both stimulating and therapeutic, demanding imagination and knowledge of container plants. You can change the appearance of your garden overnight, an instant garden using mature well grown plants. Don't clutter too much - keep the balcony garden simple.

Start with the basics, the containers or pots - beautiful glazed earthenware pots, some from China and Thailand, exotic urns, tubs, old coppers, half barrels are all available. Anything with good drainage holes can be put to use but remember the bigger the pot the better the drainage it needs. Light plastic pots can contain the plant concealed within heavy decorative containers. Use a mulch of pebbles, *Casuarina* needles, walnut shells or leaves to conceal the rims of the plastic pots.

The view from a window or doorway may be the deciding factor in finding a focal point in your balcony garden. Frame your garden from the inside. Perhaps one single pot is all you need to make a statement.



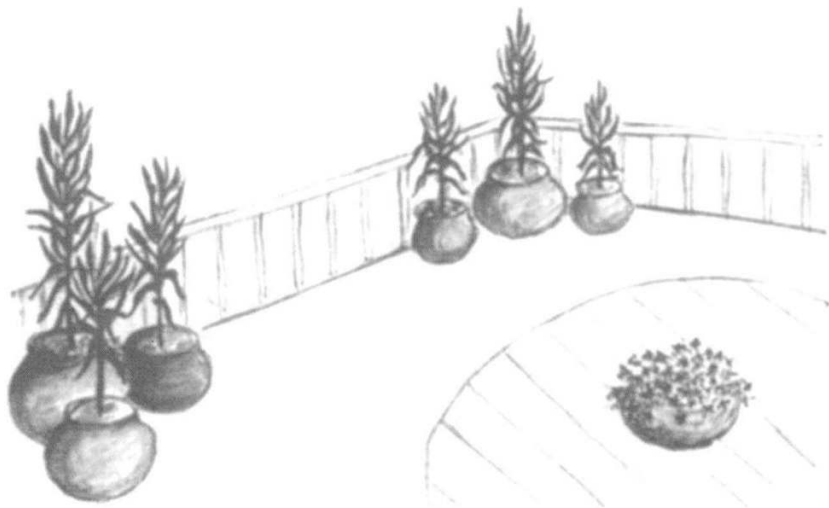
A sunny open balcony with an espalier along one wall and hanging baskets and troughs opposite. Sketch by Betty Maloney reproduced from "*Growing Native Plants for Balconies, Courtyards & Townhouses*"

Have fun arranging pots in groups to soften a corner or create an interest. Groups of an odd number of pots seem to work best. Perhaps one tall plant surrounded by smaller low-growing species. Use clipped or topiary plants to fence against the wind. A few large river stones or groups of smaller pebbles around the bases of the pots will give added atmosphere.

Although flowers are generally a gardener's aim, myriad greens of a selection of non-flowering plants, with their variations in leaf shape, size and texture, make a soothing garden. Add a pot of parsley and another of mint. The use of indigenous plants, including grasses, adds interest.

Please only yourself, enjoy your patch of paradise, tend it with care, have fun experimenting - and make sure there is room for a chair with its back to the sun where you can sit and watch your garden grow.

Growing Native Plants for Balconies, Courtyards & Townhouses by Alec M. Blombery & Betty Maloney, published by Simon & Schuster, is a beautifully presented small book of 88 pages. It is available from your bookseller for \$21.95. The authors have been widely known and respected for thirty years for their various books on wildflowers and their use in our homes and landscapes. The perfect team, their practical-experience and considerable botanical knowledge demonstrated in each book. This book is a particularly sensitive, practical approach to modern living in confined spaces. A portion of one chapter on balconies has been reproduced here to illustrate how well they understand your concerns. Other chapters are headed Courtyards, Townhouses, Sunlight and shadow, Growing native plants in containers, Plant training, Water features and bog gardens, Paths and paving, Propagating from seed and cuttings, Growing native ferns, Growing native orchids, Fertilisers, Plant diseases, followed by Plant lists. Editor



Dramatic use of cordylines grouped at opposite ends of the balcony. A small waterproof container of the fern *nardoo* adds interest. Sketch by Betty Maloney reproduced from *Growing Native Plants for Balconies, Courtyards & Townhouses*

Flindersia

John Wrigley

The Genus *Flindersia* R.Br. was named by Robert Brown to commemorate Captain Matthew Flinders, with whom he sailed in his botanical exploration of Australia. The genus has 17 species, 15 of which occur in Australia and 11 of which are endemic. All inhabit the rainforests of eastern Australia with the exception of *F. maculosa*, the Leopardwood, which occurs in the dry inland areas of NSW and Queensland. The extra-Australian species occur in the Moluccas, Papua New Guinea and New Caledonia, while four of the Australian species extend to Papua New Guinea.

Flindersia is placed in the family Rutaceae. All form small to large trees, rarely forming buttresses and with opposite or alternate pinnate leaves with one to eight pairs of leaflets. Oil dots may be seen when held to the light or with a lens. White, cream, yellow or red five petalled flowers are borne in dense, mostly terminal panicles. The fruits are long ovoid capsules, often covered with raised blunt protuberances. They usually split into five boat-shaped sections when mature releasing the slender winged seeds.

Many of the rainforest species are fine timber trees and also make handsome shade trees for parks and large properties. Most are a little large for suburban gardens. They adapt readily to cultivation and are propagated easily from fresh seed.

Flindersia acuminata C.T. White Silver Silkwood, Putt's Pine or Silver Maple

A tall, spreading tree reaching 30 m in rainforests between the Windsor Tableland and Tully in north Queensland ranging in altitude from sea level to 1200 m. The leaves are pinnate to 30 cm long with 6–10 opposite or alternate, elliptical or falcate leaflets. Oil dots are more conspicuous on the underside. Flowers are white or creamy-yellow and clothed with small stellate hairs. They are seen in spring. The capsule is 9–12 cm long, brown and covered with conical protuberances. The winged seeds are about 5 cm long.

This species produces a light, silvery-white, soft timber, which has been used for cabinet making and for planking in sailing boats. This species grows well in my garden at Coffs Harbour where it has flowered at about 8 m tall after ten years. It is in an open situation in well drained, but heavy soil, receiving sun for most of the day in summer but little sun in winter.

Flindersia australis R. Br. Australian Teak, Crow's Ash or Flindosy

Growing in rainforests from northern NSW to central Queensland, this species may reach 40 m high in optimum conditions of high rainfall and rich soil. It forms a broad dense canopy with dark green pinnate, alternate leaves to 30 cm long. The bark is smooth and grey. Each leaf has 3–13 glossy, elliptical leaflets to 10 cm long, paler on the underside. Flowers are white in terminal panicles and usually appear when the tree has lost some of its upper leaves. It flowers in spring. The capsule is about 8 cm long and opens in five parts, which stay together when mature and remain on the tree for some time after losing the winged seed. It is covered with rough blunt protuberances.

Flindersia australis is a fine tree producing a very durable timber, which has been used for flooring and other building purposes. Its greasy nature made it popular for dance halls. The species adapts well to cultivation in high rainfall areas, where it grows quickly in most loamy soils and forms a beautiful shade tree. Fine examples may be seen in parks around the mid-north coast town of Bellingen. Its use in timber lots is also recommended. A tree in the Waite Campus of the University of Adelaide, where conditions were anything but ideal, was seen to flower for the first time at 50 years old. The dry seed capsules, which resemble a flower, are prized for use in floral arrangements. Sketch on page 204.

***Flindersia bennetiana* Benth. Bennett's Ash (Syn. *F. leichhardtii* C. DC)**

Occurring in coastal rainforests north between Iluka in northern NSW and Maryborough in south Queensland, the tall tree will reach 40 m with greyish bark. The opposite pinnate leaves have 3–9 elliptical, leathery leaflets to 19 cm long. The leaves are glossy dark green on the top surface and dull beneath with obvious dots. Large, mostly terminal panicles of creamy white perfumed flowers are seen mainly in autumn and winter. The woody capsules are clothed with blunt prickles and fall into five narrow boat-shaped sections when mature. The winged seeds are about 4 cm long, maturing in summer. This is a good timber tree, which has been used for flooring, boxwood, cabinet making and plywood although the sapwood is prone to borer attack. It is also a fine park tree, which is spectacular in flower. In my garden at Coffs Harbour, the tree flowered for the first time at 9 years old.

***Flindersia bourgotiana* F. Muell. Qld., Silver, Northern or White Ash**

Widespread and ranging from sea level to 1200 m in rainforest of Northeast Queensland, this species is a tall tree reaching 35 m high. The trunk is grey with numerous small corky pustules. The opposite, pinnate leaves are up to 30 cm long with 4–9 narrow elliptical, dark green leaflets to 16 cm, slightly hairy on the underside. The terminal panicles of creamy white flowers are well displayed in winter or spring. The prickly fruiting capsules are dark brown, up to 15 cm long and split into five separate sections at maturity. The slender winged seeds are up to 6 cm long. The yellowish timber has been used for cabinet making and flooring. At Coffs Harbour, the species is slower growing than most other species but has flowered at about ten years old in November, when the tree was only 5 m high. After 18 years it is now 8 m high, growing in heavy shade in deep loam.

***Flindersia brassii* T.G. Hartley & B. Hyland, Scented or Claudie River Maple**

Occurring on Cape York Peninsula in a restricted area near Claudie River and Mt. Carter from sea level to 550 m altitude in drier more seasonally wet rainforest on the edge of closed forests bordering streams. It forms a medium to large tree, which may reach 30 m. The wood has an odour somewhat resembling guavas. The opposite leaves are pinnate, to 18 cm long, with 4–9 leathery leaflets. The terminal leaflet has a much longer stalk than the lateral leaflets. They are dark green and slightly pale on the underside with conspicuous dots. The white flowers are borne in terminal panicles in spring and early summer. The capsule is up to 11 cm long with relatively long prickles. The seeds are winged at both ends and up to 7 cm long. This species has a conservation rating of 2RC-. Used as a timber tree.

Continued on page 226

Acacia leprosa 'Scarlet Blaze'

A vintage red for Victoria's Federation Flower

Rob Cross, Horticultural Botanist

Royal Botanic Gardens, Melbourne

Finding a red-flowered *Acacia* is significant for both horticulturists and botanists. *Acacia* species are largely yellow-flowered and only a handful of the estimated 1100 species in Australia or 300 species from elsewhere have flowers of a different colour. Until the recent finding of *Acacia leprosa* 'Scarlet Blaze', the only Australian *Acacia* with other than yellow flowers was the small spreading shrub, *Acacia purpureipetala*. Discovered in 1904, it is found in north-eastern Queensland, and has mauve-pink flowers. *Acacia purpureipetala* has proven difficult to cultivate and is not widely grown.

Bruce Maslin (pers. com.) from the Western Australian Herbarium also notes that occasional purple coloured sterile staminal filaments can be found in *Acacia tetragonophylla*. This species is found in Western Australia, South Australia, Northern Territory, Queensland and New South Wales.

Botanists working on *Acacia* from other regions of the world can identify only about five *Acacia* that are not yellow. The bright red flowered *Acacia reniformis* is endemic to the states of Queretaro and Hidalgo in central Mexico. *Acacia previllei* (scarlet spikes) and *Acacia sakalava* (usually scarlet heads but can be pinkish crimson) come from Madagascar. The white to pink flowered *Acacia arenaria* is found in Tanzania, Angola, Namibia, Botswana and Zimbabwe. *Acacia ogadensis* has white or lilac staminal filaments and is from Ethiopia, Somalia and Kenya.

Red-flowering *Acacia* are rare and *Acacia leprosa* 'Scarlet Blaze' is the only Australian representative to date, the only red-flowering *Acacia* in Phyllodineae, the subgenus representing most Australian *Acacia*. A photograph is shown on page 201.

Discovered in the mid-1990s, the parent plant of *Acacia leprosa* 'Scarlet Blaze' was a chance finding by Victorian bushwalkers. Fortunately, cutting material from the original plant was given to the Royal Botanic Gardens Melbourne and its successful propagation by Gardens' staff ensured the conservation of this unique plant as the parent plant did not survive. In fact, the only plant material to survive was that at the Royal Botanic Gardens.

Botanically *Acacia leprosa* 'Scarlet Blaze' appears to fit with the large phyllode variant of this variable species. It is a small tree growing to about five metres in height. The pendulous younger branches give the tree a graceful habit. The straight to slightly curved phyllodes are long and narrow, 7.5 to 12 cm in length and 12 to 22 mm wide. The phyllodes feel thin, have a prominent midrib, an acuminate tip and fine lateral veins that join to form a vein running along the inside of the phyllode margin. There is a small gland 1 to 3 mm from the base on one margin of the phyllode.

The flower colour is due to the red stamens, each with yellow anthers at their tip. The flowers are in globular heads about 12 mm in diameter and there are two of these in the leaf axils. *Acacia leprosa* 'Scarlet Blaze' flowers from August to October.

There has been some speculative discussion about the origin of the red stamens. Red pigmentation in plants can be caused by compounds such as anthocyanins, carotenoids and quinones. David Cooke, Senior Botanist with the Animal and Plant Control Commission of South Australia, believes that the red colouring in the stamens may be due to the presence of anthocyanins*, and that anthocyanin production in *Acacia* flowers may have the capability of being switched on or off. This switching mechanism for colour is found in petunias and carnations (Meurer-Grimes, pers. com.). In the vast majority of *Acacia* species the gene would be switched off, giving the typical yellow flowers. In *Acacia leprosa* it would usually be switched off too, but something would have happened to the switching gene in the case of *Acacia leprosa* 'Scarlet Blaze' so anthocyanin production would have been switched back on.

The propagation methods developed for *Acacia leprosa* 'Scarlet Blaze' at the Royal Botanic Gardens Melbourne and the subsequent involvement of the wholesale nursery Plant Growers Australia, have enabled widespread commercial release of the plant in time for the Centenary of Federation celebrations. It is a fitting choice for Victoria's Federation floral emblem as it introduces a unique plant to horticulture and it also represents the important role that botanic gardens now play in conservation.

A Plant Breeders Rights application has been lodged by the Royal Botanic Gardens with royalties from the sale of the plants assisting the work of the Royal Botanic Gardens including conservation, and horticultural and botanical research.

Acacia leprosa 'Scarlet Blaze' is a fast growing tree suitable for growing in full sun or dappled shade. It grows best in well-drained moist soil. Overly wet soils should be avoided. The ornamental qualities of the plant lends itself to specimen planting, but it could also be easily blended with other species or used for screening. It requires little upkeep and is suitable for low maintenance areas.

Acacia leprosa 'Scarlet Blaze' also makes an attractive cut flower, although as with most *Acacia* species, the vase-life is not long.

Acacia leprosa 'Scarlet Blaze' is currently being released to retail nurseries throughout Australia, although numbers will be limited initially.

* An **anthocyanin** is a water soluble pigment occurring in the cell sap of pigmented flowering plants.

Through chemically reaction a glycoside may be hydrolised by an enzyme or acid to an aglycon, **anthocyanidin**. Anthocyanidins change colour according to the ph of their dispersal media and largely determine the range of reds, blues and purples of flowers and some fruit and, with carotenoids, the changing hues of autumn leaves.

In general, an anthocyanin is specific for a species, its nature influenced by both genetic and environmental factors.



***Acacia leprosa* 'Scarlet Blaze'** - a flowering branch and the tree.
Photographs by Rob Cross, Royal Botanic Gardens, Melbourne.

Flora for Fauna

W.H. Payne

The project has been developed by the Nursery and Garden Industry Association and the paragraphs below are a direct quotation from their literature. Environment Australia has since made a grant of \$500,000 to the project. The address of the web site is: www.floraforfauna.com.au

"This is a new program that has the potential to make your garden a more enjoyable and interesting place and at the same time, benefit your own local environment. Through the program, you'll be encouraged to attract more Australian birds, butterflies, lizards, frogs and other wildlife to your garden by planting the relevant attracting plants and creating the right habitat. The plants most suited for your area will be clearly identified in garden centres with their own label showing the Flora for Fauna name and symbol and carrying planting and other information. In the garden centre itself, a distinctive Flora for Fauna section will be set aside and will feature the plants and other items such as frog ponds, bird baths, possum boxes, etc. Information and advice will be freely available from garden centre staff.

"Flora for Fauna promotion to the public will commence in November 2001. There will be a variety of avenues of promotion including TV programs, radio and magazines. Information on how and what to plant will be available from garden centres, local councils, and on the Flora for Fauna web site.

"This is an initiative of the Nursery and Garden Industry and is supported by the Natural Heritage Trust. It will be developed by the Australian gardening industry and it is hoped, supported by the Commonwealth Government through Environment Australia. It will involve, to varying degrees, local councils, the botanic gardens, zoos and special interest groups. A draft list of species has been prepared so that growers and wholesale nurseries can ensure that they are gearing-up to meet the demand".

Salt tolerant native grasses, germination and growth response, a study.*

Native grasses from ephemeral wetlands of inland Victoria were studied seeking a suitable plant to revegetate saline degraded areas. Selected were *Agrostis punicea*, *A. avenacea*, *Puccinellia* species and *Poa sallacustris*. It was found that all have potential for use in rehabilitating saline soils and preserving or enhancing native plant diversity and would be preferred over introduced exotics. None of these species displayed a salt requirement despite their occurrence in saline conditions in the field. One conclusion is that they have been out-competed by more vigorous species in non-saline sites. Adequate management would be essential for revegetation attempts.

Germination is adversely affected by light and seed should be stored in dark conditions prior to sowing. The exception was *Agrostis punicea* where germination is dependent on light conditions. It is not a vigorous species but could be used in low to moderately saline land. It is a most attractive grass with its pinkish-purple, relatively large diffuse inflorescences. It had delayed germination whereas the other species germinated in 1–2 weeks.

*The Australian Flora Foundation sponsored this study by Brown, Reddy, Cady and James, Royal Botanic Gardens, Melbourne.

Matthew Flinders _____ The ultimate voyage

An exhibition of 100 rare and stunning 18th century treasures touring Australia will mark the bicentenary of Matthew Flinders' epic circumnavigation of mainland Australia in HMS Investigator, in 1801–1803. This voyage has forever linked him with this country.

Matthew Flinders, 1774–1814, was amongst the most accomplished navigators and chart-makers of any age. Besides Flinders' charting work, the voyage is outstanding for the botanical work of Robert Brown, Ferdinand Bauer and Peter Good and the landscape art of William Westall.

During the expedition, Ferdinand Bauer drew hundreds of sketches of plant-life never before recorded. One of these of *Flindersia* is reproduced on the next page and the group of plants named *Flindersia* is described in an article on page 197. No less a pioneer of Australian botany, Ferdinand Bauer had with him 2073 sketches on his return to England in 1805. Arguably, he is regarded as the best illustrator of Australian flora.

Join Flinders and Bauer on this epic voyage of discovery in a well presented display that includes Flinder's log books, diary, original charts, accounts of incidents and even love letters to his wife Ann. On this voyage he suggested the name Australia and hundreds of other place names such as the Great Australian Bight. Allow plenty of time, you will be captivated.

The exhibition will visit the following locations between now and May 2003: South Australian Maritime Museum in Port Adelaide SA, Gladstone Regional Art Gallery & Museum QLD, Queen Victoria Museum in Launceston TAS and National Archives of Australia in Canberra. A Regional travelling exhibition will also visit other centres in QLD, NSW and Victoria. For more information, contact the State Library of NSW or visit the web page:

<http://www.slnsw.gov.au/exhib/flinders>

Robert Brown _____ Botanist extraordinaire

Students of history, especially the botanical history of Australia, regard Robert Brown as equal to Joseph Banks, his sponsor. What a remarkable choice Banks made in his selection of Robert Brown to accompany Matthew Flinders on his voyage of plant discovery to Australia.

His subsequent expeditions allowed him to return to England with 3200 dried specimens, despite the loss of his early collections due to misadventure of two voyages back to England. However, it was his contribution to the science of botany that will be long remembered and he is fittingly honoured in the scientific name for *Brunonia* and describing *Grevillea* R.Br. (Robert Brown, 1773–1858).

An international conference celebrating Robert Brown's time in NSW and his contribution to science will be held at the Royal Botanic Gardens, Sydney on 8-10 May, 2002.

Editor



*Grevillea
banksii.*
Brown proc. fl. overholt. p. 379. 29.

Grevillea banksii Robert Brown Artist, Ferdinand Bauer
Courtesy of NSW State Library NSW

Boronia and its relatives

Propagation and cultivation

John Knight*

Boronia is in the family Rutaceae, which is named from the European herb *Ruta graveolens*, a small rounded shrub to about 1 m. The leaves can be described as pinnate with broadly obovate leaflets, and with a bit of imagination could be seen as boronia-like. *Rue*, from the Greek word "rueo", to set free, refers to the value of this herb as a medicine. Rutin, its essential principle is used, among other things, for the treatment of high blood pressure. The large family Rutaceae worldwide contains about 150 genera, and over 1800 species, including citrus trees and the South African *Diosma vulgaris*.

Within this family is the Tribe Boronieae, with about 250 species. This tribe is almost exclusively Australian, represented in all states, from many diverse habitats, and displays a wide ecological tolerance. Many plants have desirable qualities, be it attractive foliage or habit of growth, fragrance of both flowers and foliage, or spectacular floral display.

Some plants in this group have proved their adaptability in cultivation over many years, being long lived, attractive garden plants in a variety of situations. Others however, such as the desirable heart breaker, *Boronia megastigma*, Brown Boronia, continually tests the patience of even experienced growers. Members of the Boronia and Allied Genera Study Group are working to overcome some of the problems associated with growing these desirable plants, and to bring more species into cultivation. Information on both successes and failures is being recorded in the hope that the right formula for cultivation can be ascertained.

Whilst *Boronia* is by far the largest genus in the study, other genera such as *Asterolasia*, *Correa*, *Crowea*, *Diplolaena*, *Eriostemon*, *Phebalium*, *Philotheca* and *Zieria* are also included.

At Karwarra Australian Plant Garden on the eastern slopes of Mt Dandenong near Melbourne, some 102 species and a number of cultivars or forms within the tribe Boronieae are being grown. Included here are 36 species and 21 forms or varieties of *Boronia*. Many of these plants are over 10-15 years old and, in the main, still thriving and healthy.

Boronia invokes passionate responses from growers. "One year wonders" I hear many say. The record at Karwarra and of Study Group members suggest that this is not so. It is no surprise that those bought as delightful flowering potted plants often fail to perform in the home garden. Why?

* This article was first presented by John Knight at the ASGAP 17th Biennial Seminar, Robert Menzies College, Sydney, 1993. At that time he was Study Group Leader of The Boronia and Allied Genera Study Group. He is the Superintendent of the Eurobodalla Regional Botanic Garden at Batemans Bay on the New South Wales south coast. The present Study Group leader, Marilyn Gray has continued his work at the Karwarra Australian Plant Garden. An important seminar is to be held at Karwarra late in 2002 and this report by an acknowledged authority on the practical aspects of cultivation has been reproduced, as a basis of further study.

Editor.

Let me state first of all that the generalisation above mostly refers to *Boronia megastigma*, as it is this one which begs us all to take 1 or 2 home to enjoy its exquisite aroma. In the vast majority of cases, it appears that our lovely *Boronia* is sentenced to death from the day the cuttings are taken. As a rule these plants have a relatively weak root system, but one which is obviously suited to their natural environment. Plants are often found growing in light soils, and with overhead protection, or in heathland where crowding affords protection from the hot sun. It is rare, even with desert species, to find plants growing in isolated, unprotected situations. Seedling roots develop quickly, and penetrate the light soils and crevices to astounding depths.

Collection of *Boronia* seed, or that of other genera in the Tribe, is difficult as it is usually dispersed quickly once ripe. One warm day is all that is needed for near ripe seed to be thrown wide and far as the fruits explode. Collection of unripened seed provides no joy in my experience, as it refuses to ripen once picked. If you are lucky enough to be around when the fruits begin to burst, collection of nearly mature fruits is possible.

Even when seed is available, germination as with many Australian genera, is difficult. No reliable method has been established although some success has been reported for some species by leaching inhibitors in running water. Those species from Western Australia are sometimes easier to germinate, but results are often unsatisfactory.



Gardener's Tip:
Boronia are
difficult to
propagate from
seed

With some exceptions, *Boronia* and related plants are readily propagated by cuttings, but the root development is lateral rather than downwards. Appearing to contradict the previous statement that the root systems are weak, the lateral roots grow strongly, branching often and quickly filling the potting media. However the growth of roots is still not vigorous, as can be seen if a pot is turned out. Little soil will be visible, just a mat of cream coloured roots. Despite the number of roots, none seem to adopt the strength of primary roots, and no fine root hairs are apparent.

It takes about 18 months for a nursery to produce a bushy, full of flower specimen. In this time the pot is filled tightly with roots. An innocent buyer, so taken by the perfume and/or attractive floral display on such a bushy little plant, proudly takes the plant home, lovingly places it in the chosen position and watches sullenly as life slips, often quickly, from its limbs.

Should *Boronia* be seen as a bunch of flowers to be enjoyed as a potted specimen on the kitchen windowsill, and then thrown away? I hope not. But plants are generally only available when in flower, for obvious commercial reasons. I must stress that there is nothing unethical about this, for growers have a right to be compensated for their endeavours. However, the treatment of plants in a nursery situation is far removed from that experienced in a tough home garden environment.

Boronia are unreasonably regarded as short lived, not hardy, unreliable, and therefore not horticulturally desirable. Not all *Boronia* species are difficult to cultivate. Many of the other related genera also contain desirable and relatively easy to grow species.



Left and Above:

Boronia deanei

M. Fagg

Australian National Botanic Gardens collection

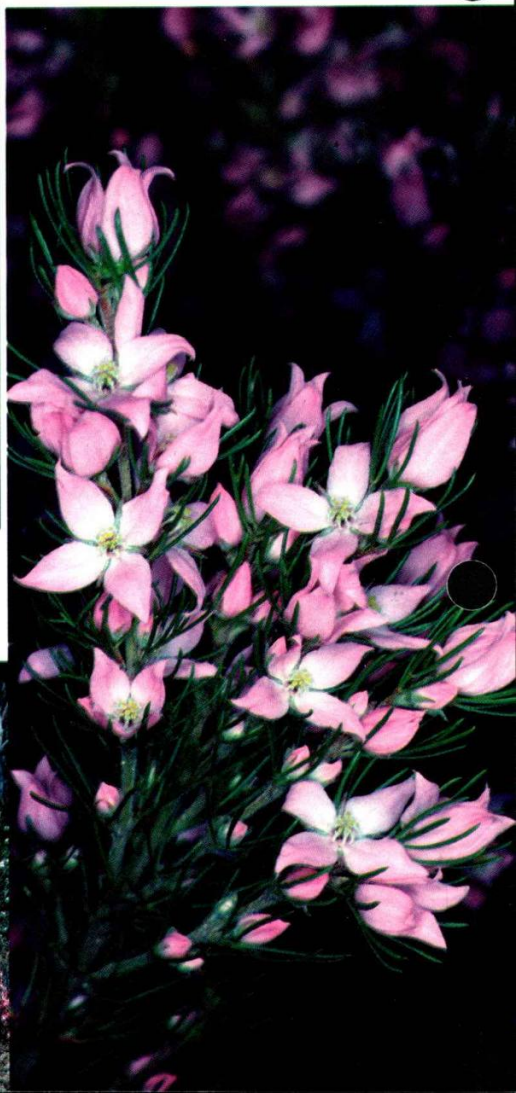
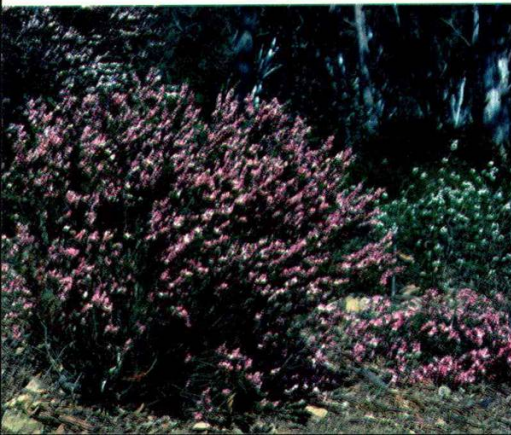


Below and Right:

Boronia subulifera

M. Fagg

Australian National Botanic Gardens collection





Above:

Boronia heterophylla

D. Hockings

Left:

Boronia 'Lutea'

F.M. Court



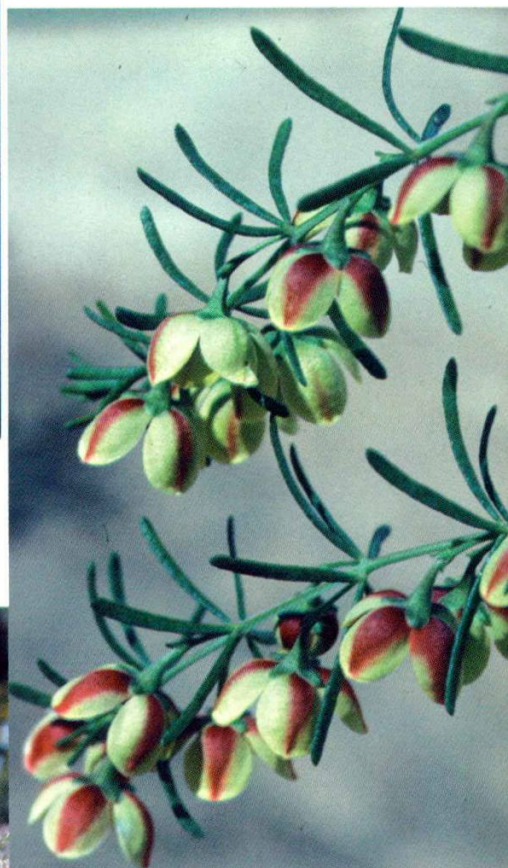
Right: ***Boronia megastigma***

'Harlequin' Denise Greig

Both photos: Australian National Botanic Gardens collection

Below: ***Boronia megastigma***

'Jack Maguire's Red' Andy McWhirter



So how can we grow *Boronia* and its relatives in our gardens?

It might be a good idea to avoid species such as *Boronia megastigma* until a little success and confidence is gained. Grow firstly some of the more adaptable species. Think seriously about the aspect. *Boronia* and their relatives in general have fairly specific, straightforward requirements:

1. Good Drainage. The number one key to success in growing a wide range of Australian plants is to ensure that the soil is well drained. Heavy soils should be well worked, and incorporating some gypsum, compost and coarse sand will assist in keeping the soil open. This allows the roots to penetrate deeper, away from the surface, and moisture will also travel away from the surface, protecting plants from collar rot. It may be more practical to raise the garden bed level by 150 to 300 mm, to ensure drainage is unimpeded, but don't make the mistake of just putting extra soil on top of existing ground. Make sure that the new soil is incorporated into the natural ground so that roots can travel through to the sub-soil. In light soils, adding compost through the top 150 to 300 mm of soil will assist in retaining precious water in the warmer months, and build up the number of worms and soil microbes so necessary in achieving healthy soils.

2. Consistent Moisture. The emphasis is on "consistent". It is no good letting the soil dry out, causing stress to the plants, then wetting and drying out. This will almost certainly guarantee failure with most plants. If the soil has been worked properly, water-logging should not be a problem. Beware though of watering during hot humid weather as many species are susceptible to root rotting fungi which develop quickly in moist warm soil.



Gardener's tip.
To grow
Boronia you
need good
drainage and
consistent
moisture

3. Protection of roots from vast soil temperature fluctuations. This can be achieved by planting in an easterly or north-easterly aspect, or below open canopied *Eucalyptus* or other plants which will provide dappled shade at soil level. Protection can be afforded by planting closely to other shrubs so that the effects of strong winds can be reduced. Mulching more open areas can reduce the amount of heat reaching the soil drastically, but be careful to keep organic mulches away from the stems to avoid collar rot, and damage from soil organisms which feed on the mulch material. These organisms have trouble distinguishing our living plant stem. Some growers prefer mulch of gravel, or pieces of rock close to the plant.

4. Pruning. "You don't prune Australian plants", was a lamentable generalisation from the 1960's and 1970's. Unfortunately many people seem to think this is true, to the detriment of their plants. If pruning Australian plants worries you, try thinking of them as plants, and forget the "Australian" bit. Maybe then we can overcome our reluctance to prune. Pruning should be carried out when the plants are growing well. Immediately after flowering is ideal. About one third of the growth should be removed. An idea worth considering is to prune whilst the plants are in full bloom. Many *Boronia* are long lasting as cut flowers, the perfumed ones especially. Not only are the flowers attractive, but our houses can be filled with the unmistakable aroma of the Australian bush. Watch out though for some do not have the prettiest odour. Using flowers this way it doesn't really feel like pruning.

5. Fertilising. Members of the Boronieae tribe are not gross feeders, and none appreciate great dollops of citrus food even if they are related to the lemon tree. A light feeding with slow release Osmocote or similar each autumn should be all that is required. Avoid feeding in early spring because this can result in a flush of growth at the expense of flowers, and likewise avoid summer feeds as the extra growth would need to be carried through the hottest time of the year, putting extra stress on the root system.

Good garden practices. If all this seems a bit too hard for "just a *Boronia*" think of what effort you have put in for some other special plant. Are not all plants special? Plants treated well respond with kind.

As container plants*. For those who have given up, or whose conditions are such that none of the above seems practical, most of the Rutaceae make excellent container plants. Given an open free draining potting mix and light fertilising, they can be grown to quite a size. Watering and pruning are of course necessary. Containerised plants can be moved to take advantage of winter sun or summer shelter, and brought close by to enjoy during flowering.

To build up confidence with these plants, try first some of the easier to grow species, and have another go at that blessed (cursed) *Boronia megastigma* maybe next year. If you really must have a Brown *Boronia* this year, pot your purchase up immediately to the next size pot to give it a little room to move, enjoy the flowers, then take some cuttings for the garden. Flowers of the cultivars, *Boronia megastigma* 'Maguire's Red', 'Harlequin' or 'Lutea' are more attractive than the common "Brown *Boronia*", see photographs on page 209. Unfortunately these plants retain the problems of the more common form.

Gardener's Tip:
Boronia make
good container
plants but
water
consistently

Propagation It seems every grower has their own way of propagating plants. There are different mixes for setting cuttings, different types of hormone powders, gels and liquids, and different times to take cuttings. Simple advice is to use the method with which you have reasonable success.

For those who have not yet tried, could I suggest that the well tested mix of 3 parts sharp coarse sand and 1 part finely sieved organic material is the ideal way to start. For our own use we need just a few cuttings to start with. I use 100 mm square punnets that hold between 15 and 20 cuttings comfortably.

The use of hormones to promote root initiation is optional, but most growers feel they get better results with hormones. The most common among Study Group members is a powder or gel suitable for semi hardwood cuttings, about 2000 ppm. I have trialled mixes up to 8000 ppm with varied results, but as most of our material is on the soft side, a lower concentration is most suitable. A combination of IBA (indolebutyric acid) and NAA (naphtalene acetic acid) 1500:500 gives consistent results. It is difficult to say that you definitely get better results by using hormones, but you do get a better root structure.

Some means of maintaining humidity is necessary to prevent the cuttings drying out, and to provide a means for the pieces to maintain life without a root system.



Richea gunnii

R. Crowden

See page 218



Richea dracophylla

R. Crowden

See page 218



Richea x curtisiae

R. Crowden

See page 218



Richea alpina

R. Crowden

See page 216



Richea sprengelioides

R. Crowden

See page 219



Richea acerosa

J. Simmons

See page 218

Simple structures such as upturned drink bottles, plastic bags held on a wire frame, small plastic frames, or even glass houses all prove suitable. The important thing is to ensure that the container does not get too hot, and so cook the plants. The smaller the container, the hotter it will get, so things like bottles or plastic bags need to be well sheltered. Larger structures can be more exposed to the sun, but need protection too during the hotter months. A small igloo about 2 m x 2 m is a good way to start. This will hold enough cuttings to keep most of us busy, but be warned that once you are hooked on propagation, it seems no structure is big enough.

Let's do some cuttings

Questions are always asked. "When do I take cuttings, and what pieces are suitable?" Often a flippant reply will come from an experienced grower. "Take cuttings when they look right." That's all very well for those with experience, but it doesn't help. Unfortunately, because everyone has different conditions of climate, sun/shade, etc, the right time is always a matter of judgement and experimentation. Members of the Study Group from all over Australia have relayed information pertinent to their area, and a few comments can be made.



Gardener's Tip:
Boronia may
be grown from
cuttings.

They all recommend cuttings of firm new growth produced after flowering. This can mean any time from October in warmer areas to January or later in cooler climates. A good rule to try is to let the plants grow about 150 mm in the spring growing season, prune the plant by one third as recommended earlier, and use as cuttings the tips which are neither too soft so that they would quickly wilt, nor too woody so that striking would be too slow. Tips are too soft when, if bent down they remain limp. Wood is too hard when, if bent, it snaps or fractures. Somewhere between these two extremes is the ideal cutting.

Cuttings taken from February to April produce excellent results. Pruning after flowering will produce a flush of new growth that will be ideal propagating material. Cuttings taken at this time will usually strike within 6 weeks or so, and be potted well before the cold weather and short days cause plants to hibernate. Listed below are plants which are fairly easy to strike. Many species not included have been propagated by Study Group members but the rate of strike might be low, say 25%, or less. The more difficult species show better results when taken in early autumn.

Those species with hairy foliage, which can rot quickly under mist conditions, are better grown in a dry area of the propagating house if mist is used. One idea worth trying is to set the cuttings in the propagation house and cover with a plastic bottle; a mini glasshouse within the propagation house. I use opaque orange juice bottles with the bottom removed with some success for plants like *Boronia mollis* and *Diplolaena* species. The bottle needs to be removed periodically to inspect the cuttings, are they too dry or too wet, and to remove any rotting leaves before fungal problems set in. Washing the bottle regularly (weekly) in a solution of Biogram or similar should prevent fungal problems.

Some plants which strike well during late summer/autumn.

- *Acradenia frankliniae*
- *Asterolasia asteriscophora, correifolia, hexapetala, trymalioides*
- *Boronia anemonifolia, barkeriana, citriodora, clavata, coerulescens, crassipes, crenulata, deanei, denticulata, falcifolia, filifolia, floribunda, fraseri, gracilipes, heterophylla, juncea, megastigma, microphylla, mollis* 'Lorne Pride', *molloyae, muelleri, nana, parviflora, pilosa, polygalifolia, pulchella, rhomboidea, serrulata, spathulata, thujona*
- *Chorilaena quercifolia*
- *Correa* most species and varieties
- *Diplolaena angustifolia, ferruginea, microcephala*
- *Leionema ambiens, bilobum, coxii, dentatum, elatius, lamprophyllum, viridiflorum.*
- *Nematolepis frondosa, squamea.*
- *Phebalium bullatum, glandulosum, squamulosum, woombye*
- *Philotheca angustifolia, buxifolia, difformis, myoporoides, nodiflora, pungens, scabra, spicatus, verrucosa.*
- *Zieria arborescens, cytisoides, granulata, laevigata, pilosa, smithii*

Difficult species such as *Boronia edwardsii, inornata, ledifolia, purdieana, Eriostemon australasius, Geleznovia verrucosa, Leionema coxii* and *Philotheca salsolifolia* respond to covering by a plastic bottle in the propagation house.

Some members have trialled grafting as a means of propagating difficult species, using *Correa* sp. as the stock. Early results are encouraging, but *Correa* stems are often too large for the slender *Boronia* scion to get a complete union. I have tried *Boronia clavata* as a stock for *B. megastigma*, which may be successful in the long term. *Boronia clavata* is very adaptable in a range of soils and withstands winter wet very well.

Boronia* cut flower production, root and crown rots problems

Phytophthora species were found to be the cause of wilting and dying of whole plants of *Boronia* species, causing rotting of roots and crowns. The plants studied were *Boronia heterophylla, Boronia* 'Carousel' and *Boronia* 'Lipstick'. Current work is to screen a potential rootstock for tolerance to these *Phytophthora* species. Early indications are that *Boronia clavata* may be suitable.

*The Australian Flora Foundation sponsored this study by L. Tesoriero, J. Ledbetter and others from NSW Agriculture.



Richea procera

R. Crowden

See page 219



Richea pandanifolia* ssp. *pandanifolia

R. Crowden

See pages 218 & 232

Tasmanian Epacridaceae

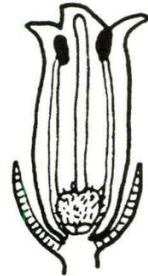
Part 4*

R.K. Crowden and Y. Menadue

Prionotes

The flower

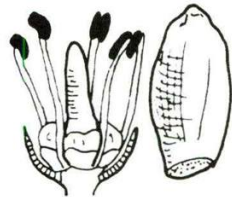
Prionotes cerinthoides is a climbing or epiphytic shrub that grows in the wet sclerophyll forests of the west and southwest, straggling over banks or on the trunks of trees up to 10 m. The leaves are oblong/elliptical with a few serrations on the margins and with reticulate venation. The plant is conspicuous when in flower with pendulous, crimson flowers 1–2 cm long. Fruit is a capsule. Flowers in autumn. Photo on page 109 of June issue incorrectly labelled *Epacris impressa*.



Richea

The flower

The genus is characterised by sheathing leaves, and flowers in which the petals are fused forming an operculum which is shed from the flower at maturity.



Key to the genus *Richea* in Tasmania.

1. Inflorescence simple clusters, flowers solitary, axillary, crowded in heads, bracts persistent. 2
- Inflorescence compound spikes or racemes or panicles, flowers in clusters along a central axis, bracts caduceous. 5
2. Leaves 8–14 (–25) mm long, flowers in erect terminal heads. 3
- Leaves greater than 20–40 mm long; flowers in drooping terminal heads, nectary lobes present. *R. milliganii*
3. Leaves greater than 3 mm wide, nectary lobes absent. 4
- Leaves less than 2 mm wide, nectary lobes present. *R. acerosa*
4. Inflorescence matures from the base up (acropetal), filaments thickened, anthers bilobed. *R. procera*
- Inflorescence matures from the top down (basipetal), filaments slender, anthers single lobed. *R. sprengelioides*
5. Inflorescence a slender spike-like panicle with little lateral branching, leaves < 10 cm long. 6
- Inflorescence a broad panicle with extensive lateral branching, leaves > 10 cm long. 7
6. Dense compact shrub, erect leaves 2–4 cm long, older branches with flakey bark. *R. scoparia*
- Open divaricate shrub, recurved leaves 3–6 cm long, older branches with prominent annular scars. *R. gunnii*
7. Inflorescence axillary, leaves > 60 cm long. *R. pandanifolia*
- Inflorescence terminal, leaves < 30 cm long. 8
8. Shrub 1.5–5 m high, old branches with scars, corolla white. *R. dracophylla*
- Shrub usually less than 1 m high, old branches with rough bark. *R. alpina*

*Part 1 described and illustrated species of *Acrotriche*, *Archeria*, *Astroloma*, *Brachyloma*, *Cyathodes* and *Dracophyllum*. Part 2 described and illustrated species of *Epacris*. Part 3 described *Leptecophylla*, *Leucopogon*, *Lissanthe*, *Monotoca*, *Pentachondra*, and *Planocarpa*.

New features noted in a review of *Richea* by Menadue and Crowden include:

- (a) the recognition of two subspecies in *R. pandanifolia*, and
- (b) description of a new species *R. alpina*, and
- (c) *R. x curtisiae* A.M. Grey (photo on page 212) is an interspecific hybrid between *R. scoparia* and *R. pandanifolia*.

Richea acerosa is an endemic, erect, spindly shrub up to 1.2 m high with erect, small (about 10 mm long) leaves confined to the ends of the stems. The white or cream terminal flowers appear in summer. It grows mainly on the Central Plateau but also on the alpine regions of Mount Field and Ben Lomond in a variety of habitats. Photo on page 213.

Richea alpina is an endemic low growing, sparsely branching shrub, branches often covered by soil, 20–80 (–100+) cm high, with annular scars apparent. Leaves crowded towards ends of branches, spreading, recurved, flexuous, lamina narrow-lanceolate to lanceolate, 8–13 cm long, 6–12 mm wide, apex acute, tapering to a point. Inflorescence of numerous flowers in terminal, broad, pyramidal panicles, maturing acropetally. Flowers in summer. Photo on page 213. This plant was previously confused with and included by many with *R. curtisiae* A. M. Gray (see below with *R. scoparia*).

Richea dracophylla is an endemic shrub up to 5 m high with clusters of leaves at the ends of branches. The leaves are spreading and flexuous, 15–33 cm long. Large terminal inflorescences of white flowers appear in the spring. It is popular as a garden plant and the leafy branches are used by florists. Found in wetter forests in Southeast Tasmania. Photo on page 212.

Richea gunnii is an endemic, loose shrub with leaves crowded near the branch ends and with conspicuous annular scars on the bare stems. Leaves 3–6 cm long, recurved and pungent. The “open” terminal inflorescences are usually white tinged with pink, and appear in summer. It grows in localised wet areas, frequently with sphagnum, in alpine and sub-alpine regions mainly in the central and eastern half of the state. Photo on page 228.

Richea milliganii is an endemic sparsely branched shrub reaching 2 m, with leaves crowded at the branch tips. The leaves are “softer” than those of other *Richea* species. The creamy-yellow, drooping flowers are clustered at branch ends and appear in winter to early spring. It grows mainly in the Southwest in peaty soils amongst boulders near mountain summits or in wet open heath and scrub fringing button grass communities.

Richea pandanifolia (endemic). The subspecies *pandanifolia* is a tree up to 12 m tall, similar in appearance to the arborescent *Dracophyllum* species of New Zealand. It usually has a single trunk, but is sometimes branched, due most probably, to damage of the apex. Dead leaves persist and clothe the stem. The leaves form a crown and are up to 1.5 m long with long twisting tips. The inflorescence is axillary and hidden among the leaves. The flowers are about 3 mm wide, on short pedicels less than 1 mm, the stigma reaches the centre of the anthers, sepals about 0.8 mm long exposing the nectary scales. Flowers appear in summer. It grows in high rainfall areas from sea level to alpine, mainly in the south and west of the state, including Mt Field. The subspecies *ramosa* is a slender shrub or small tree rarely exceeding 4 m, with several to numerous branches. Photos on pages 216 & 232.

Very few leaves persist on the branches, and the lower trunk is bare or covered with rough bark, not clothed by dead leaves as in the subspecies *pandanifolia*. Flowers are slender, 2 mm wide, on pedicels 1.5–2 mm long, the stigma projecting above the level of the anthers, and sepals about 1.4 mm long hiding the nectary scales. Flowers appear in early summer. It grows in the south-west, predominantly, but not exclusively on river-banks, under rain forest. In some areas, eg. Lower Gordon River, the two subspecies coexist.

Richea procera is an endemic sparingly branched shrub up to 3 m high with small (8–25 mm long), pungent, recurved leaves. The small terminal flowers appear yellow because of the thick, conspicuous, papillose filaments on the anthers. Flowers appear spring to early summer. It grows in southern and central regions in sub-alpine scrubland and forest. Photo on page 216.

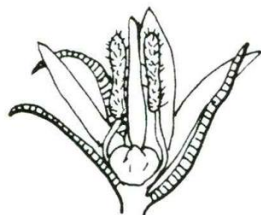
Richea sprengelioides is an endemic shrub similar to *R. procera* but with smaller leaves (8–12 mm long) and the flowers have filaments of uniform thickness and are not papillose. The flowers appear in late spring and summer. It grows in woodlands and heaths in all high mountainous regions of the state. Photo on page 213.

Richea scoparia commonly forms rigid, dense, compact shrubs to 1.5 m high, but taller and looser amongst scrub or woodland vegetation, in all sub-alpine and alpine areas. Leaves rigid, spreading or recurved and pungent. Very attractive candle-like inflorescences in a range of colours from red through orange, pink to white appearing in summer. It is a variable species whose description now embraces the former *R. angustifolia* B. L. Burt (Menadue and Crowden, 2000). *R. scoparia* is considered to be the seed parent of the natural hybrid form, *R. x curtisiae* (*R. pandanifolia* is the pollen donor) occurring spontaneously, but rarely in areas where the two species co-occur. Usually there are single plants only.

Sprengelia

The flower

Sprengelia distichophylla is an endemic prostrate, sparsely branched shrub of the south-western mountains, mostly found amongst loose gravel in the feldmark zone. The tiny, distichous leaves are firmly appressed to the stems, the white flowers solitary and terminal on the main stems.



Sprengelia incarnata is a shrub of variable habit, usually erect with few branches, mostly less than 1m, but in habitats with crowded vegetation may reach 2 m or more. It is found in wet peaty heathlands from sea level to alpine. The flowers (mostly pink/white) are terminal, usually on short lateral branches, crowded at the ends of the main stems into ovate heads. The number of flowers comprising this head reduces at higher altitudes to a solitary flower in the extreme form. Flowers in spring through early summer.

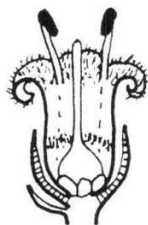
Two formerly named variants (*S. propinqua* and *S. montana*) have not been recognised by Curtis (1963). While the extreme forms of both variants have distinctive features, intermediates occur with character combinations of both the variant and *S. incarnata*. The so-called *S. propinqua* is robust, with usually large, all white flowers, the anthers spreading and papillose-hairy (mostly in *S. incarnata* they cohere to the style and are glabrous). It occurs most abundantly in the high rainfall areas of the west. Photos, pp 228 & 232.

The *Sprengelia montana* form appears to be a diminutive *S. incarnata*, in the extreme form of which the inflorescence is reduced to a single floret. This form is a common resident of alpine cushion plants. It has at times been incorrectly identified as *S. distichophylla*.

Styphelia

The flower

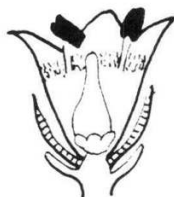
Styphelia adscendens is a prostrate mat-forming species of sandy heathlands. The leaves are elliptical to oblanceolate with scabrous, ciliate margins and a tapering, pungent point. The creamy-yellow flowers, with strongly recurved anthers, appear in mid to late winter. Photo on page 228.



Trochocarpa

The flower

Trochocarpa cunninghamii is a small, straggling shrub to 1 m, or it may trail over the ground. The leaves are in opposite rows, ovate, 7–10 mm long. The flowers are in terminal spikes, the corolla dusty-pink or white with a small tuft of hair at the base of the lobes. Flowers in summer. Fruit is a flattened, purplish drupe, 10–12 mm diameter. Frequent in wet patches in montane forests of the west and centre. Photo, page 225.



Trochocarpa disticha is a tall shrub to 4 m high, with slender, spreading branches. Very similar in all respects to *T. cunninghamii*, but more robust. Perhaps the two species do not warrant separation at this level. It grows in wet sclerophyll in the extreme south of the state.

Trochocarpa gunnii is a much branched tall shrub or small tree, usually to 3 m high but as tall as 6 m in protected areas. Leaves more or less in two opposite rows, elliptical to ovate, 6–10 mm long, with prominent longitudinal veins on the abaxial surface. The flowers are white, glabrous in spherical spikes, which are terminal or axillary. Flowers in summer. Fruit is a flattened drupe, 6–8 mm diameter, purple to white. Widespread in the wettest sclerophyll and in western rainforests. Photo on page 225.

Trochocarpa thymifolia is an erect, much branched shrub, to 90 cm high or spreading over boulders. Leaves ovate or elliptical 2–4 mm long. Flowers crowded in terminal spikes and drooping. Corolla pink or red, bearded inside. Fruit is a drupe, oval, purple about 8 mm diameter. Flowers in summer. Widespread and frequent in montane & sub-alpine habitats. Photo, page 225.

Cultivars and their naming, continued from page 194.

Plants from the Australian flora will not receive PBR rights unless it can be shown that significant development work has been undertaken. This condition was not enforced early in its operation but is strictly adhered to now. If you can show that the plant you have produced came directly from a wild source, even though it appears to have the attributes of a plant with PBR, it is unlikely that legal action to restrict your sales will prevail. There is great concern that PBR will confer ownership of significant sections of the natural flora to private concerns. This must not occur. A precaution would be to have the best forms of wildflowers registered as cultivars with the ACRA, protecting also the cultivar name.

Propagation of epacrids

Epacridaceae in Great Britain

Jeff Irons

I have a small collection of epacrids all of them either grown from seed or propagated from turgid cutting material using the methods below.

I work on the principle that all fine seeds require light for germination. Consequently all **epacrid seed** is surface sown. The bottom part of the pot is filled with my usual compost, but the top inch (2.5 cm) or so is sphagnum moss that has been dried, then rubbed through a sieve. It is a moisture retentive substance that discourages growth of liverworts and moss. At the same time it is sufficiently open for seeds to sink into it and still receive light. They are in little pockets of moist air. My usual method is to stand the pot on a bed of wet grit, but recently I have tried putting the potting mix into screw top containers. The latter method eliminates the need for constant topping up of the capillary bed. All pots are in my glasshouse, which is kept frost-free.

Seed usually germinates after two winters, though occasionally a batch will germinate after one winter. I find that unlike *Gaultheria* which stagger germination over several years, other epacrids all germinate at once. The tiny seedlings are very sensitive to drying out, even a few hours of dryness will kill them. This is where the sealed containers have an advantage over the capillary bed. They do not need the constant attention required by the former. Epacrid root hairs are extremely fine, and the seedlings are slow to form a mycorrhiza association.

I find that it is at least a year before they can be transplanted and some species take three years before they can be handled safely. Even then it may be safer to transplant a group of seedlings instead of splitting it up. There is another advantage in transplanting groups. Epacrids can be unisexual, and some are self-incompatible. Transplanting a group increases the likelihood of fruit production. I also put a pinch of soil taken from an established plant on the surface of the pot containing the new transplants. My reasoning [entirely without proof] is that it will inoculate the compost with mycorrhiza. My compost is well aerated and moisture retentive. Excepting the fact that it must be acid, I do not believe the actual composition to be very important. At the moment I am using equal parts of sphagnum, leaf mould and Perlite. After that it is simply a matter of waiting for the plants to grow. All I can say is that I have never lost a seedling.

Since I live in Britain my imported **cutting material** is always received in a slightly dried out state. On receipt it is put into water containing a small amount of hypochlorite (household bleach) and left for a day or so before use. I always take tip cuttings, about an inch (2.5 cm) or so long. Each time a leaf is removed there is a wound, through which infection can enter, so in order to minimise the number of possible infection sites I take off only those necessary for creation of a bare stem to insert in the cutting medium. Another factor in favour of leaving on as many leaves as possible is that the cutting needs its leaves in order to gain the energy needed to produce new roots.

If the atmosphere around the cutting can be kept moist, transpiration will not be excessive, and cuttings will not wilt. Cuttings are stuck into the cutting medium as shallowly as possible. I want to keep their bases in a highly aerated place. Inserting them deeply always introduces the risk of the base rotting, because it is under anaerobic conditions.

With plants already in the garden it is possible to take cuttings at the optimum time. Under my conditions epacrids root most easily when cuttings are taken towards the end of winter, before flower bud initiation begins. *Trochocarpa* is different and I use new growth, formed while the plants are in flower. The timing is critical. If it is just right, cuttings take only a few weeks to root. A few days out and they can take as long as two years. My experience with *Richea* is very limited. One attempt with *R. sprengelioides* resulted in failure. At the time of writing *R. continentis* cuttings have been in my propagator for 11 months and have not rooted. New growth of *Pentachondra involucrata* taken after flowering 10 months ago has also not rooted. Until these species do make new roots I shall not know the best time at which to take cuttings. Slow rooting can be a feature of vegetatively propagated epacrids.

Most of my plants are grown in pots, and I have to admit to being rather slapdash about the actual mix. It depends on how I feel! My belief is that provided it is acid anything that is both well aerated and water retentive will do. I have used equal parts of soil and shredded plant material, but for the past few years have been using equal parts by volume of peat, leaf mould and Perlite. Feeding is also rather casual. Most plants have had nothing at all, if they do get anything it is a once a year treat of liquid seaweed fertiliser. Plants in the ground are never given any fertiliser.

Like all growers I have had a mixture of successes and failures but I have kept my optimism and enthusiasm going.

Epacrids in Antipodean Gardens

Jeff Irons, Great Britain

It is not surprising that I like epacrids, because their relatives provide some of the most popular plants in northern-hemisphere gardens. Epacrids simply extend the range available, and introduce striking new leaf shapes. Over 100 years ago various forms of *Epacris impressa* provided valuable winter colour in the conservatories of the British Victorian middle classes. Sadly they have disappeared from cultivation, and can no longer be bought. In fact the whole sub-family is very much a specialist niche. The current English Plant Finder lists only *Epacris microphylla*, *paludosa* and *petrophila* along with *Richea dracophylla*. In a way this is not surprising because northern-hemisphere climates are very different from any in Australia. Only the most adaptable species are grown. A few years ago Kew Gardens exhibited *Epacris serpyllifolia* in what turned out to be a tender form. Faced with their non-availability, the keen amateur has to resort to cultivation from imported seed and cuttings. Unfortunately both are extremely difficult to get hold of even through APS contacts. I have grown many species from seed and cuttings.

Quite often epacrids in my garden die at the end of summer. We have three months of the year when evaporation exceeds precipitation and I suspect that death is the consequence of upward migration of alkali from the underlying clay. Be that as it may, I have taken to growing them in pots, only trying plants in the ground after they have been propagated so that spare specimens are available. The plants are not fed, the only nutrients supplied being those in water. During winter the pots are plunged in the ground, in summer they stand in partial shade.

Richea species. One of my garden successes is *Richea scoparia*. It has a long history of cultivation in Britain, and at the Royal Botanic Garden, Edinburgh, there are plants over 70 years old. Most of the plants sold have been propagated from them, and in consequence are white flowered. My own 1983 seedling produced its first orange-brown flowers in 2001. The eight year old *R. gunnii* are in pots, because no parts of the garden were considered sufficiently wet. They are quite small, only about 5 cm high, and obviously have not flowered. I think that *R. sprengelioides* could be grown in the garden, but since my only attempt at vegetative propagation was not successful it is still in a pot. Nine years old it is about 40 cm high and across. Having germinated in 1999, *R. acerosa* is a mere stripling. The only seedling was transplanted in 2000. *R. dracophylla* is not sufficiently cold tolerant for me to consider it. Once I did carry out an experiment and was surprised to find that the plants survived two of our winters before dying in the third. The long outward arching leaves of the sub-alpine *R. pandanifolia* would make an excellent feature in any garden, both as a pot plant and in the ground. I have never been able to germinate seed. Photos, pages 212, 213, 216, 228 & 232.

Trochocarpa species. *Trochocarpa thymifolia* is reasonably well known and then only in alpine circles. This strange scarcity is not confined to Tasmania, for even though New Zealand's alpine plants are popular in Britain, that country's epacrids also remain almost unknown. Cuttings of *Trochocarpa thymifolia* sometimes root in a few weeks, yet at other times they can take two years to form roots. My seedlings of this species turned out to be the white flowered form. Until now commercial plants have been red flowered. The same clone has been around for at least 50 years. I suspect that it was introduced by Comber in 1930. The white form is now available from one alpine nursery. This species is quite quick growing, and in the ground will make a plant 30 to 50 cm across within 10 years. I have never seen fruits on the red flowered form. My plants do form fruits, and they stay on the plants through the winter, but always drop off in the spring, just as they are changing colour. *T. gunnii* is also quick growing, and has made a specimen about 30 cm high and wide. Its bronze coloured young leaves are particularly attractive. Young foliage and stems of *T. thymifolia* are red. See page 225 for photographs.

Epacris species. The British Alpine Garden Society awards a "Farrer Medal" to the most floriferous plant in each of its shows. One leading exhibitor believes that *E. myrtifolia* is a potential Farrer Medal winner. Having given him a specimen that fills a 19 cm pot, I hope that 2002 will see his prediction fulfilled. In the garden this species has survived being under water for a week. It has also been unaffected by sudden frosts of -9°C, when continuous warm wet weather in autumn had not given it a chance to lay down a thick cuticle.

In late spring the white flowers make it a thing of beauty for about three weeks. The long flowering season of the double form of the white flowered *E. gunnii* makes it desirable both in the garden and for pot culture.

In spite of its name *E. paludosa* grew well in the garden for several years. When lifted for a display it died, and has never been replaced. Two other *Epacris* were raised from cuttings given to me by Dick Burns. I call them sp. Gog Range and sp. Union Bridge. Neither is very cold tolerant and both have to be over wintered in a glasshouse.

Pentachondra species. The fringed flowers of the upright *Pentachondra involucrata* are gorgeous. Pink when in bud, they open to display a white interior. This small upright shrub comes from wet forests in Tasmania, and should be able to be grown in most of the cooler parts of south eastern Australia. The prostrate alpine *P. pumila* is equally desirable, and often displays both white flowers and red fruits at the same time. I have tried both New Zealand and Tasmanian seed without success. Some pots have been in my garden for eight years without a single seed germinating. In the past it has been grown by British amateurs, but is now another of our 'lost' plants.

Dracophyllum milliganii is a very showy and desirable species. Some years ago I was able to germinate seed of its arborescent form. Unfortunately the only specimen died at the end of its third summer in the garden. Both forms have large heads of white flowers. Their young leaves are an attractive reddish colour, and old leaves turn red as they die. *D. minimum* was imported last year. This cushion plant is easily grown, and is ideal for pot culture. Flowers are a bonus.

Leucopogon hookeri and *L. montanus* are both recent imports. Both are small shrubs with white flowers. Probably hermaphrodite, they may be self-incompatible. Since neither has yet flowered their sexual proclivities remain undiscovered.

Prionotes cerinthoides is another recent import. Several years ago it was grown at Kew Gardens, being kept under a bell jar for three years. It was even exhibited that way at the Chelsea Flower Show. A few plants did escape into private hands, but apparently have now been lost. The species has two forms that keep their habit when in cultivation. One climbs up tree trunks in Tasmania's wet forests, the other grows on forest margins, and straggles out into the light as a prostrate plant. Both have the same bell shaped flowers. High atmospheric humidity is essential for successful cultivation.

Monotoca elliptica is an unusual epacrid that can be seen in the conservatory at the University of Liverpool's Ness Botanic Gardens. The specimen was first shown in the Australian Garden at the 1984 Liverpool International Garden Festival. After the festival it was given to Ness Gardens, and is now about 1 m high. Unfortunately it never fruits.



↑ *Trochocarpa thymifolia*

J. Simmons

← *Trochocarpa cunninghamii*

R. Crowden

↓ *Trochocarpa gunnii*

R. Crowden

See page 220



Flindersia brayleyana F. Muell. Qld. Maple, Maple, or Maple Silkwood

A tall tree from well developed rainforests of north east Queensland from the Windsor Tableland to Townsville and reaching 30 m with a spreading crown. It occurs from sea level to 1150 m but reaches its best development at higher altitudes. The trunk is grey or slightly brown, becoming scaly on ageing. The glossy, opposite, pinnate leaves are up to 75 cm long with 4–12 elliptical leaflets bearing very conspicuous oil dots. The panicles of scented white flowers are borne terminally in summer. The brown capsule is about 10 cm long and almost smooth on the outside. The seed is winged at each end up to 6 cm long. Perhaps the most beautiful of all the *Flindersia* spp., the pinkish timber is well known for cabinet making and indoor panelling and is very easy to work. Some reforestation plantings have been made and woodlots as far south as Coffs Harbour, NSW, have shown excellent development. My tree is twenty years old, about 15 m high, with a straight trunk, flowers at Christmas. Ideal for parks or large rural properties it produces a spreading crown and its shiny foliage is attractive all year.

Flindersia collina F. M. Bailey Leopard Ash, Broad-leaved Leopard Tree, Leopardwood, Leatherwood, Bastard Crow's Ash

Occurring naturally from Bundaberg, Queensland to the Richmond River in NSW, this tall tree inhabits drier rainforest areas. It will reach 40 m with a spreading crown and has distinctive flaky bark, which when it is shed leaves a prominent depression on the trunk, giving the tree its common names. The opposite, pinnate leaves are also distinctive as the mid-vein and petiole are winged, more prominently in young trees and in coppiced growth. The 3–7 leaflets are broadly obovate and up to 9 cm long, glossy on the top surface and paler beneath with very faint oil dots. The white hairy flowers are borne in terminal panicles in spring. Capsules are small to 5 cm long with tubercles on the outer surface. It breaks into five segments when mature. The seed is winged at both ends up to 2.5 cm long. The pale yellow wood is used for flooring and tool handles. Useful as a park tree in areas of poorer soil and more seasonal rainfall. My own tree has been slow to grow.

Flindersia dissosperma F. Muell. Domin

A tall shrub or small tree rarely exceeding 10 m high, it occurs in dry forests of east central Queensland some distance from the coast. It has grey and salmon rough and scaly bark and opposite, trifoliolate or pinnate leaves with a winged mid-vein. They are up to 6 cm long with oblong, dark green leaflets to 3 cm. Small panicles of white flowers are seen in spring. The reddish brown capsules are up to 3 cm long with prickles on the outside. The winged seeds are up to 2 cm long. Too small for timber it may have value as an ornamental tree for tropical and sub-tropical areas of seasonal rainfall.

Flindersia iffiaiana F. Muell. Cairns hickory, Hickory Ash

From north Queensland and Papua New Guinea, this tall tree reaches 30 m high and inhabits seasonally dry rainforests from sea level to 1100 m, often associated with kauri pine [*Agathis robusta*]. It forms a spreading crown and has deeply fissured bark on ageing. The opposite, pinnate leaves are up to 34 cm with 6–10 elliptical, somewhat leathery leaflets.

The leaves of *F. afflaiana* are bright green on the top surface and paler beneath. Very large, spreading, terminal panicles of white flowers are produced in summer and autumn. The brown prickly capsules are up to 5 cm long, splitting into five segments, which remain attached similar to *F. australis* at maturity. The seeds are winged at each end and about 3 cm long. The tree has been used for its hard yellowish-brown durable, heavy timber, which lasts well in the ground and in weather. Used as sleepers and fence posts it has been described "as the most important structural hardwood of the north". Suitable for woodlots, it is fast growing. My trees are 12 years old, 10 m high with spreading crowns. Suitable tropical and sub-tropical use.

Flindersia laevis C.T. White & W.D. Francis Scented Maple, Rose Ash

The variety *laevis* occurs in various rainforest habitats in north Queensland from Tully to the Daintree River. The other variety, *F. laevis* var. *heterophylla* is restricted to Papua New Guinea. The Australian variety is a medium sized tree to 20 m with aromatic bark resembling the odour of guavas. The opposite, pinnate leaves are up to 30 cm long with 4–6 lanceolate leaflets to 12 cm long. They are dark green on the top surface and with prominent large oil dots. The red flowers are borne in terminal panicles in autumn and spring. Capsules are smooth and about 4 cm long, splitting into five boat-shaped segments. Seeds are 3 cm long and winged at each end. More durable than *F. brayleyana* it is used for weatherboards, flooring and other building purposes. Suitable park tree for tropical & sub-tropical regions.

Flindersia maculosa [Lindl.] Benth. Leopardwood

Distributed in inland areas from central Queensland to western NSW, this small tree reaches 15 m with pendulous branches. The trunk is spotted, a jigsaw puzzle of grey, brown, orange, cream and white, where the scaly bark has been shed at different times. The opposite leaves are mostly simple, rarely lobed, narrow elliptical to almost linear and up to 8 cm long. They are shiny on the upper surface and duller beneath with obscure oil dots. Flowers are white and borne in small terminal panicles in spring. The capsules are dark brown with short prickles over the surface and about 2.5 cm long. The seeds are winged at both ends to 2 cm long. It begins as a thorny much-branched shrub with tiny lanceolate leaves and tangled habit producing a leader, which becomes the main trunk. As an ornamental plant for dry areas, there are few to surpass its graceful habit and picturesque trunk making it an ideal feature plant for gardens of arid and semi-arid regions. The plant germinates readily from fresh seed. It requires a sunny situation in well-drained soil to thrive. The foliage has been used as stock feed.

Article to be continued in the next issue.

Farm forestry is a continuing theme through issues of *Australian Plants*. *Flindersia* are a valuable timber harvest. Others are listed with the type of timber they yield. This is helpful for the home wood turner, carver and cabinet-maker. These timbers are especially valuable in the select timber market. We need to grow trees to stave off the day when salt engulfs us and to temper the greenhouse effect on our atmosphere.

Forest Farmers Association of Queensland advises that the footnote on page 126 of our June 2001 issue could indicate that they endorse the Jack Mitchell method of farm forestry. They have encountered many problems with it and for the record they will be submitting a report on their experiences in a pending issue.

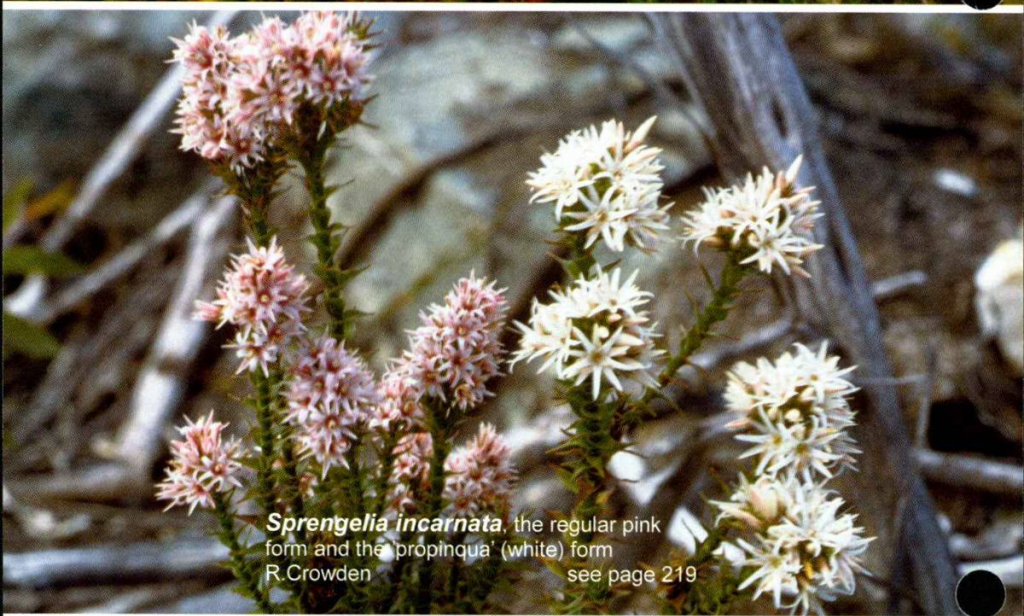
Editor.



Richea gunnii

R.Crowden

see page 218



Sprengelia incarnata, the regular pink form and the 'propinqua' (white) form

R.Crowden

see page 219



Styphelia adscendens

R.Crowden

see page 220

Our Garden No. 37

In Greendale Victoria

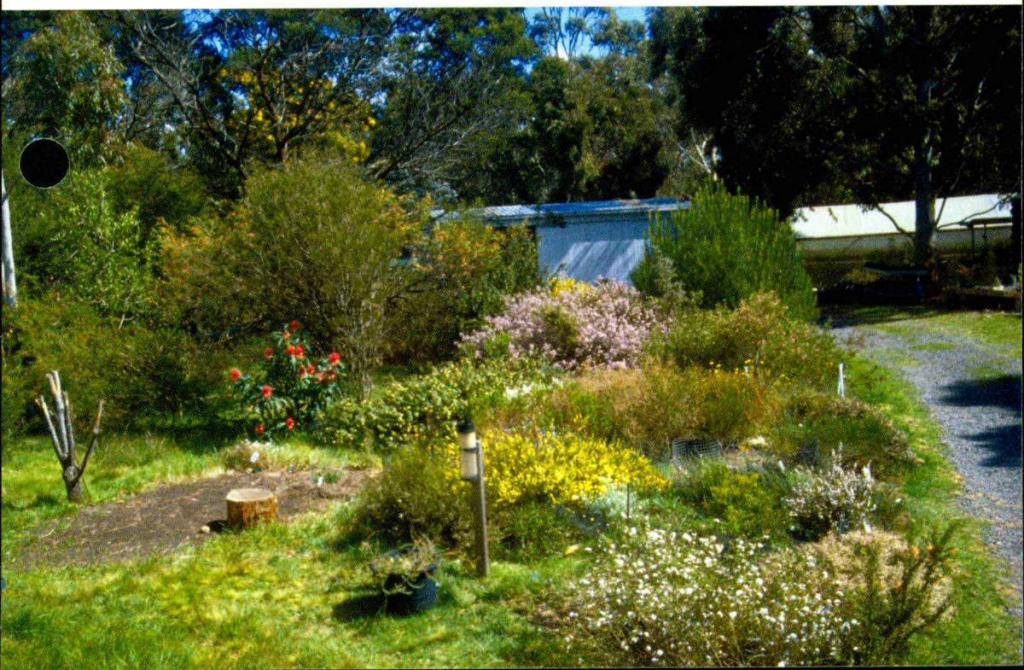
Don & Jean Weybury

Our garden at Greendale is on the south western slope of Mt Blackwood, about 50 km from Ballarat. The elevation is 500 m above sea level and we get snow every year that hangs around for a few hours to a day each year. The soil is a clay loam of volcanic origin and is very well drained. Our weather pattern is similar to other parts of south-western Victoria with rain (when it comes) in the winter and dry summers. A drought means purchasing water.

While the soil is well drained, good results were obtained by mounding of places we wish to grow plants and mulching to preserve moisture. However the mounds become weed infested. We now plant in a dug over area about 600 to 800 mm diameter. We use a long handled post hole shovel for all digging, spades are banned, too back-breaking. We have planted over 2200 species (many repeated) and been successful with a wide range especially *Melaleuca*, *Grevillea*, *Banksia*, *Boronia*, *Correa* and *Hakea* all self seeding.

We propagate mostly by cuttings 90% and 10% from seed with good success. We have a Corflute House with bottom heat and regular spray for cuttings. Potted on plants then go into a shade house, 6m x 3.5m with 75% shade cloth walls and a curved poly roof. Shade cloth (75%) is placed above the poly roof in October and removed in March. The pots are off the ground on tables with a galvanised steel mesh top.

***Telopea* 'Shady Lady', *Zieria* 'Pink Crystals', *Philotheca verrucosa*, double flowered, *Persoonia mollis* and various *Verticordia* and *Calytrix*.**



Wattle, *Acacias of Australia*

A compact disc that provides ready identification of all 1165 species of Australian *Acacia* is the culmination of years of work by Bruce Maslin and his associates at CALM WA, the Australian Biological Resources Study and the CSIRO. It is available for \$110 from CSIRO Publishing, PO Box 1139, Collingwood, VIC 3066. Using this compact disc anyone can easily and quickly identify any specimen from 1165 species presented. Follow the tutorial first to get up to speed or just jump in, click on the characters of the wattle that are obvious to you and there is its name. It cannot be that simple you say, what are these characters? A booklet comes with the disc and this illustrates the characters of the leaves etc. The help key illustrates them as well. You do not have to understand the botanical terms. In fact you can carry out the whole operation by simply following the pictures. The CD has some sketches that illustrate the different variants of *Acacia leprosa* where considerable additional information is given as it is with all 1165 species. Exceptional value and fun to use.

Review by the Editor.

Wildflower Nurseries in Queensland

Fairhill Plants and Botanic Gardens — Huge range; rainforest plants, grafted grevilleas, rare plants, wildflowers, ferns, orchids, revegetation trees. Extensive display gardens. Open every day 8.30 a.m. to 5.00 p.m. Fairhill Native Plants, Fairhill Rd, Yandina, Qld 4561. Tel. (07) 5446 7088.

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Annangrove Grevilleas — 98 Annangrove Rd, Kenthurst 2156. Tel. (02) 9654 1380. Wide range of natives including hundreds of different species in tubes — many hard to get. Ten percent discount to APS members.

Bryants Native Plant Nursery — Cosy Camp Rd, Bexhill, NSW 2480. Tel. (02) 6628 4323. 15 kms north of Lismore. Open 7 days (from 11 a.m. on Sundays). Extensive range. Excellent quality and service.

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Illawambra Native Growers — PO Box 89, Cobargo, NSW 2550. Tel. (02) 6493 7398, mail order specialist. Send 2 x 45c stamps for catalogue of our large range including rare species.

Newcastle Wildflower Nursery — 260 Lake Rd, Glendale 2285. Tel. (02) 4954 5584. Extensive range of native plants including rare and endangered species.

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Wirimbirra Native Nursery — Hume Hwy, between Bargo and Tahmoor E. side 2574 (3 km from Freeway entry). Wide range including unusual plants. Tel. (02) 4684 1112.

Wirreanda Nursery — End of Wirreanda Rd, Ingleside 2101. Tel. (02) 9450 1400. Growers of advanced and semi-advanced native trees and shrubs. Open 7 days.

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Kuranga Native Nursery — 393 Maroondah Highway, Ringwood 3134. Tel. (03) 9879 4076. www.kuranga.com.au
For Australia's largest range of Australian flora including rare and unusual forms. Delivery to most states. Free stock list on request.

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R. Horner — 1 Grundy St, Alice Springs, NT 0870. Seed of trees and shrubs of Central Australia. Please sent 45c stamp for a list.

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The Grevillea Book, volumes 1, 2 and 3 by Peter Olde and Neil Marriott, is a complete reference to all species of *Grevillea*. The Australian Plants Society NSW ensured that they were published to a very high standard with at least one large colour photograph of each of the 340+ species, an easily read description of each species and details of its occurrence and cultivation. They are available from the Australian Plants Society NSW, PO Box 744, Blacktown NSW 2148, at \$44 per volume plus postage and handling of \$7.50 for 1 or 2 volumes and \$15.00 for 3 volumes within Australia.

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Richea pandanifolia ssp. *ramosa*
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See page 218



Sprengelia incarnata
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