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Learn dried flower arrangement

The Australian Flora

Its conservation and cultivation

We have a lot to learn about the reliable cultivation of much of the Australian flora but with this publication, and the 10,000 plus members of the Society For Growing Australian Plants, we are rapidly learning. What we do know is how to prevent what seems inevitable for planet Earth, "doomsday", at least for this large continent of ours. The action we have recommended to the federal government is a long term management plan for our ecosystem with some simple short term initiatives for the year 2001.

One problem is that our action plan comprises a group of obvious, simple remedies many of which have been implemented on a minor unco-ordinated scale. Nobody is taking us seriously. Adoption as a major national emergency has been shown by the present pilot schemes to be a very practical achievable strategy. Results are assured with a human resource base and practical experience developed by Landcare, Greening Australia, and many other organisations generated by caring Australians.

This is not a "greenie" plan but a national plan for survival. We have developed strategies that involve significant economic returns, assuring prosperity for the nation in the long term instead of "doomsday". Despite our campaign running now for five years and highlighted in our March 1995 issue, the politicians are continuing to ignore us. All we ask is some responsible politician to talk to us in a serious productive way. As is usual, while many readers did contact the politicians as requested, many more who are equally concerned did not. Why not do it now? Do not leave it to the next person.

Conservation

Our March issue resulted in an avalanche of mail most stating support for our stand. The Ipswich Branch in Queensland are very active in their area. One project, Peace Park, is a dry vine scrub area containing many butterfly host plants. In 1994 the group submitted three applications for cash grants under the Landcare Scheme and got all they asked for. Members and groups, the society supports you, the government supports you, why not prepare a submission for funding of your pet local conservation project.

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COVER PLATE Arrangement (see opposite) by Barbara Coates, photography by Bruce Devine

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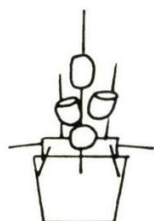


Dried Flower Arrangements

by Barbara Coates*

What could be more rewarding for a keen gardener than to be able to preserve the flowers and foliage on which much pleasurable effort has been expended?

The art of drying flowers and foliage provides a logical answer, especially for those who wish to decorate their homes with low maintenance floral arrangements. Following are two arrangements innovating persons can use as a guide for unique creations of their own.



Banksia in square terra-cotta pot
as shown in the photograph on page 141

Materials

A terra-cotta pot 16 cm (6") square and 8 cm (3") deep
A half block green or grey Oasis (a propriety name for a "sponge" to hold flowers)
Oasis pinholder complete with Oasis Fix (your dried flower shop can supply)
Four large *Banksia prionotes* dried flowers (some eastern species that are similar)
One-third bunch of *Dryandra formosa* flowers
One-third bunch *Verticordia* dried flowers, any of the Cauliflower Morrison species
One half bunch of *Eucalyptus* leaves
The flowers for this arrangement were purchased from a dried flower supply shop.

Techniques for construction of this dried flower arrangement

Fixing base materials. Make sure the terra-cotta pot's interior is dust-free, then press the Oasis pinholder complete with Oasis Fix onto the centre base of the pot. Trim the Oasis to the size of the pot and push onto the pinholder.

Foliage. Cut the first stem of eucalypt to measure 38 cm (15"). Measure 1.5 cm (1/2") in from the back of the Oasis on the centre line and insert this stem into the Oasis in an upright position. Cut the second eucalypt stem to measure 33 cm (13"). Insert this into the Oasis on a slight angle, in line with the first piece and to the right of it. Cut the third eucalypt stem 30 cm (11 1/2") long and insert into the Oasis on a slight angle, in line with the first piece but to the left. Cut two pieces of eucalypt 12 cm (5") long, inserting one into the centre of the left-hand side of the Oasis and the other into the centre of the right-hand side, see diagram above. Cut six more lengths of eucalypt no longer than that. Insert one into the centre front of the Oasis and one into the centre back. Position the remaining four stems into the four corners of the Oasis block, angled towards the centre as in the diagram above.

Continued on page 146

*Making Dried Flower Arrangements by Barbara Coates, available for \$14.95 as directed inside our rear cover. The exceptional competence of this author in the use of dried flowers in a variety of ways and her ability to communicate this skill in such a clear manner makes this 70 page book a very valuable reference. Even if you have never tried this form of art before, a little perseverance will be rewarded.



△ This wildflower garden features the white flowered bush *Mallophora globiflora* featured in the article on page 152. A clear white flowered shrub highlights the colour in the garden which in this case includes (from left to right across the centre) *Anigozanthos manglesii*, *Stipa mollis*, *Verticordia grandiflora* (yellow), *Mallophora* (white), *Grevillea didymobotrya* and *Grevillea candicans* and in front, *Baeckea* species (WA), *Hemiondra pungens* (mauve), *Verticordia chrysanthella* (yellow) in front of *Ptilotus exaltatus*, *Thomasia sarates*.

▽ *Callistemon 'Mister Foster'*

see page 180

Photography by Colin Cornford





Topiary tree of dried flowers and foliage on a wooden board, do it yourself.

Feature flowers. Cut the first *Banksia* stem to measure 20 cm (8") below the head. Insert into Oasis vertically, in front of the eucalypt stem. Cut the second *Banksia* stem to measure 14 cm (5½") below the head. Insert at a slight angle, only just leaning forward, in front of and to the right of the first *Banksia* stem. Cut the third *Banksia* stem to measure 12 cm (4¾") below the head. Insert at a slight angle, leaning a little forward in front of and to the left of the second *Banksia* stem. Cut the remaining *Banksia* stem 6 cm (2½") under the flower head and insert into the Oasis at a 45° angle, facing forward, in front of the third *Banksia* and in line with the first, following the second diagram.

Secondary flowers. Dot the *Dryandra formosa* stems evenly throughout the arrangement, moving in between the *Banksia*'s and out to the sides, back and front of your work. Vary stem lengths from long between the back *Banksia*'s to shorter at the sides. Stems should be shorter than the *Banksia*'s and the foliage.

Filler flowers. Fill in between the *Banksia* and *Dryandra*, first using *Verticordia*, Cauliflower Morrison, graduated in length like the *Dryandra*. Fill in the remaining gaps in the arrangement using the rest of the eucalypt foliage. Make sure that no one flower or piece of foliage dominates the arrangement so that your work is an even blend.

Create a Topiary tree on a wooden board, see the photograph, page 145

Materials

wooden breadboard 33 cm × 24 cm (13" × 9½")
8 cm (3") diameter half terra-cotta pot and matching half saucer
half grey Oasis foam ball, smaller than a tennis ball
quarter block green Oasis foam
small tortured willow twig approximately 14 cm (5½") long and 3 mm (¼")
handful sphagnum moss
hot glue gun and stick of heavy duty yellow glue
27 pussytails, *Ptilotus* species OR 5 small *Helichrysum*, everlasting flowers
one-quarter bunch *Verticordia*, one of the Cauliflower Morrison species OR 4 short stems of broken up *Epacris* or glycerined *Thryptomene* OR tiny gum leaves instead of *Verticordia*
*one-quarter bunch German statice OR 6 stems of *Ixodia* OR small sprigs of gum nuts
3 bushy stems tea-tree OR *Helichrysum diosmifolium* (rice or sago bush) glycerined
*3 bushy stems fern rush OR 6 tiny stems of native fine grass
tiny ceramic frog and 3 tiny ceramic mushrooms and 2 tiny brass screw eyes
length of 0.71 gauge florist's wire

*in the book and the photograph you will see I have used some non-native plants. Above I have given some native alternatives.

Fixing base materials. Lay a quarter block of Oasis down flat and place the half terra-cotta pot on top of it. Push the pot down hard onto the Oasis so that its interior becomes filled with Oasis. Cut around the shape of the pot with a knife. Cut the back of the Oasis flush with the pot removing excess foam.

Now rub the terra-cotta pot and saucer with a cloth to remove all dust. Using the glue gun, glue the raw edge of the saucer. Measuring 2 cm (¾") up from the bottom of the board, centre the saucer at the base of the board and push down firmly to glue it to the board. Glue the edges of the terra-cotta pot and all over the back of the Oasis. Centre on board inside the saucer and push firmly into place. Allow time for the glue to dry, preferably overnight.

Take the tortured willow twig and push the tip into the centre of the Oasis foam half ball. Withdraw. Push the other end of the twig down into the centre back of the Oasis inside the pot. Glue the back of the Oasis ball and the hole made by the twig. Centre the Oasis ball approximately 4 cm (1½") down from the top edge of the board, inserting the top of the twig into the hole at the same time. Press down on the ball firmly.

Moss. Glue a band on moss along the bottom edge of the board across its width. Glue moss on top of the Oasis in the terra-cotta pot, allowing some to hang over the edges. Glue the frog into place on top of the moss in the pot. Glue the mushrooms into place at the bottom of the pot, on either side of the saucer, as in the second diagram.

Outline. Take the tea-tree and break into pieces no more than 4 cm (1½") long. Insert all over the Oasis ball, following the shape of the ball. The flowers should not go beyond the top edge of the board. With the German statice go all over the ball in the same manner, alternating with the tea-tree.

Filler flowers. Fill in between the stems of tea-tree and German statice using pieces of *Verticordia* Cauliflower Morrison shorter than the tea-tree and German statice. Push clumps in all over the ball. Make sure the edges of the ball are well covered so you can not see it from the sides of the board. Now take three pussytails at a time and insert these clusters evenly all over the ball until all the pussytails have been used. The pussytails can stand out from the ball at about the same height as the tea-tree and German statice. If using the *Helichrysum* space 4 around the edge with one in the centre. Finish filling in by adding the fern rush evenly throughout the arrangement. There should be no Oasis visible to the eye.

Finishing off. At the back of the board measure down 10 cm (4") from the top edge and about 3 cm (1¼") on either side. Screw in the brass eye screws at these points. String the length of 0.71 gauge wire between the screws.

Drying cut flowers and foliages

You may dry your own flowers

The arrangements in the book were made with commercially available dried flowers, some dyed as well as dried. You may wish to dry your own material.

When to pick flowers for drying

Pick flowers and foliages on a dry day, as soon as the dew has dried from the plant's surface. Because you wish these flowers and foliages to be preserved indefinitely, always pick perfect, unblemished material, preferably just before it reaches maturity. However, foliage that is to be glycerined should be mature, as young or dying foliage is inefficient at drawing up moisture. *Helichrysum* (everlasting daisies) should be picked in bud or with only one set of petals opened if you do not wish the centres to become exposed. They keep developing even after they have been picked. If you do pick at a slightly more advanced stage, allow them to open inside where insects cannot pollinate them — otherwise the seeds will drop.

Drying methods

A variety of drying methods is available. The most common method is air drying, in which plant material is hung upside down to dry. Dessicants (drying agents) such as borax powder, silica gel or sand can be used. When supple foliage is the required result, then glycerine would be the choice. Other methods are freeze drying, pressing leaves and flowers and even ironing ferns.



△ ***Mallophora globiflora***

Described on page 152 with a detailed sketch of flower features
Photography by Neil Marriott. See also photograph on page 144.

▽ ***Lachnostachys cliftonii*** Similar to *Lachnostachys albicans* sketched with flower details on page 151
Photography by Erica Crane



Air drying of flowers and foliage

A wide variety of plant materials can be successfully air-dried. Strip the stems of as many leaves as possible from the material to be dried to speed up the process, unless of course you are drying for foliage. Tie the stems together loosely in a bunch leaving a tail of string long enough to tie over a hook or rafter. Make sure the room, shed or cupboard where these plant materials are to be dried is airy, and dark enough to preserve the colours of the plant materials. For this reason do not hang plant materials in direct sunlight.

Hanging flowers upside in this manner allows the moisture contained naturally within the stem to run down towards the flower head; in most cases the stems of the dried product will become brittle. This is not always obvious in plants such as *Leptospermum* (tea-tree), or in *Banksia* as they have naturally very woody stems, but as a general rule drying out of the stems will be an indication that the material has finished drying. This method can take from 7 to 21 days.

Some flowers will air-dry just as successfully in an upright position — flowers like *Banksia* — but care must be taken that the stems are not bent over the edge of a container during the drying process. The stem can take on a curve in this situation rather than remaining straight.

Brittleness of the dried stems can become a problem with flowers which you may wish to later wire onto a false stem. *Helichrysum* (everlasting daisies) are one such example. Not only does the stem become brittle, but the flower head itself becomes hard, making it impossible to pass a wire through. I have found the best method of wiring these flowers is not by the traditional hook method. Instead, while the flower is fresh cut away the stalk, leaving a 1.25 cm (1/2") stub below the flower head. Take a wire, usually 0.71 mm (22 gauge), and push it up through the stub into the flower head. Make sure the wire end is not visible among the petals. As the flower dries it will shrink onto the wire making gluing unnecessary. I stand the wired *Helichrysum* in groups in drinking glasses and store them in a dark cupboard until dried.

If flower heads become crushed or squashed during the air-drying process, they can generally be held over a steaming kettle to reverse the situation. Do not be surprised if during this you see the petals of flowers like *Helichrysum* close up due to the moisture. Putting them out in the sun for up to an hour to dry off will cause the petals to reopen.

Thoroughly air-dried flowers and foliage can be stored either by leaving them hanging up or by wrapping individual bunches in butcher's paper and standing in a basket or other container. Dried material must be kept away from mice and the sun. Grasses and seed pods can be sprayed with hairspray to keep them from falling.

Suggested plants for air drying

Acacia (Wattle, esp. *Acacia macradenia*), *Actinodium cunninghamii* (Albany Daisy), *Anigozanthos* (Kangaroo Paw), *Banksia*, *Beaufortia*, *Conospermum* (Smoke Bush), *Craspedia* (Billy Buttons), *Dillwynia* (Eggs and Bacon), *Dryandra*, *Eucalyptus*, *Grevillea*, *Grasses*, *Helichrysum* (Everlasting Daisies/Paper Daisies/Strawflowers), *Helipterum* (Everlasting Daisies/Paper Daisies), *Hypocalymma*, *Isopogon* (Drumsticks), *Lachnostachys* (Lambstails), *Melaleuca*, *Ptilotus* (Mulla Mulla, 'pusstails'), *Verticordia*, *Waitzia* (Everlasting Daisy).

Suggested plants for drying with desiccants

Actinotus (Flannel Flower), *Blandfordia* (Christmas Bells), *Bowenia* (Byfield Fern), *Brachyscome* (Australian Daisy), *Brunonia* (Blue Pincushion), *Castanospermum australe* (Black Bean Flowers), *Ceratopetalum gummiferum* (NSW Christmas Bush), *Cochlospermum gillivraei* (Kapok Bush), *Crinum* (River Lily), *Dampiera*, *Eriostemon* (Waxflower), *Glossodia*, *Gompholobium* (Pea family), *Hibbertia*, *Lechenaultia*, *Melastoma*, Orchids, *Sphaerolobium*, *Swainsona formosa* (Sturt's Desert Pea), *Thysanotus* (Fringed Lily).

Suggested plants for glycerining

Adiantum (Maidenhair Fern), *Athertonia diversifolia* (Blue Almond Tree — foliage), *Brassaia actinophylla* (Umbrella Tree — foliage), *Eucalyptus* (esp. *E. cinerea* 'Spinning Gum'), *Grevillea* (foliage), *Helichrysum diosmifolium* (Wild Rice/Sago Bush), *Oreocallis wickhamii* (North Queensland Tree Waratah — foliage), *Pittosporum* (Diamond Laurel), *Pteridium esculentum* (Bracken Fern), *Sticherus lobatus* (Umbrella Fern), *Thryptomene*.

Suggested plants for pressing

Acacia (Wattle), *Actinotus* (Flannel Flower), *Actinodium cunninghamii* (Albany Daisy), *Adiantum* (Maidenhair Fern), *Anigozanthos* (Kangaroo Paw), *Bauera rubioides* (Pink Dog Rose), *Bowenia serrulata* (Byfield Fern), *Brachyscome* (Australian Daisy), *Ceratopetalum gummiferum* (NSW Christmas Bush), *Dampiera* (blue fan-shaped flowers), *Darwinia*, *Daviesia*, *Epacris* (Common Heath — can press individual bells), *Eucalyptus*, Grasses, *Helichrysum* (Everlasting Daisies/Paper Daisies/Strawflowers), *Helipterum* (Everlasting Daisies/Paper Daisies), *Hibbertia* (brilliant yellow and orange flowers), *Melaleuca*, *Monotoca* (individual bells), *Patersonia* (Native Iris), *Pimelea*, *Pteridium esculentum* (Bracken Fern), *Ptilotus* (Mulla Mulla, 'pusstails'), *Sticherus lobatus* (Umbrella Fern), *Swainsona formosa* (Sturt's Desert Pea), *Waitzia* (Everlasting Daisies).

I trust that this article will make you enthusiastic enough to do your own research. ■

Growing Woollies in Victoria

Dicrastylis, *Mallophora* and *Lachnostachys*

by Neil Marriott

A number of species have been tried here in Victoria over the years. However difficulty with propagation along with one or two cold/wet winters has limited the range of plants growing successfully in our gardens.

Dicrastylis parnfolia which we collected at Paynes Find, W.A., is growing rapidly, suckering to form an attractive low grey leaved clump to 30 cms high and up to 1 metre across. It flowers throughout the warmer months with a mass of small white flowers.

Mallophora globiflora also forms a low suckering clump to 40 cms in height by up to 1.5 metres across. Foliage is dense, and grey, while the flowers are massed in dense woolly white heads throughout the summer months. It grows rapidly in a warm, well-drained site, suckering around the bases of larger shrubs, and filling gaps between other plants.

Mallophora rugosifolia with its attractive silver-grey leaves and delightful white flowers is also a showy small shrub although not as vigorous and compact as *M. globiflora*. Plants again need a hot, dry site in sandy or gravelly loam.

Lachnostachys eriobotrya is proving to be reasonably hardy when planted in a sunny, well-drained site in a sandy to gravelly loam. Flowers are held above the foliage in attractive woolly spikes for many months of the year. Leaves are stiff and olive-green in colour, and the plants grow to around 60 cms high in the garden, although they tend to be larger in the wild. ■

Woolly Heads of Flowers

White/grey Woolly Bushes with

Fascinating plants by W. H. Payne

For years I have been fascinated by a group of plants, dwarf shrubs mainly with silvery-white woolly branches and heads of white woolly flowers. The botanists have them grouped into the plant family Chloanthaceae. The two species that comprise the genus *Mallophora* are described in the article on page 152. The sketches below illustrate features that will help to distinguish between the groups of plant or genera which comprise similar species.

Flower heads or spikes — All have elongated spikes of flowers as shown for *Mallophora rugosifolia* on page 155 except *Mallophora globiflora* as shown on page 153 and some species of *Dicrastylis* such as *D. obovata* in Fig. 2 below. *Dicrastylis* species are readily identified by the deeply two branched style as shown below in Fig. 2 (a).

Flowers — The individual flowers of *Mallophora* in the sketches on pages 153 and 155 and the two species of *Physopsis* have four petals whereas those of *Dicrastylis*, Fig. 2a, often have five petals and the other genera Fig. 4a often have more than five petals.

The corolla (floral envelope of petals) is distinctly lobed for *Newcastelia* whereas for *Lachnostachys* the corolla tube is truncate, not lobed, the stamens inserted in the rim of the corolla tube.

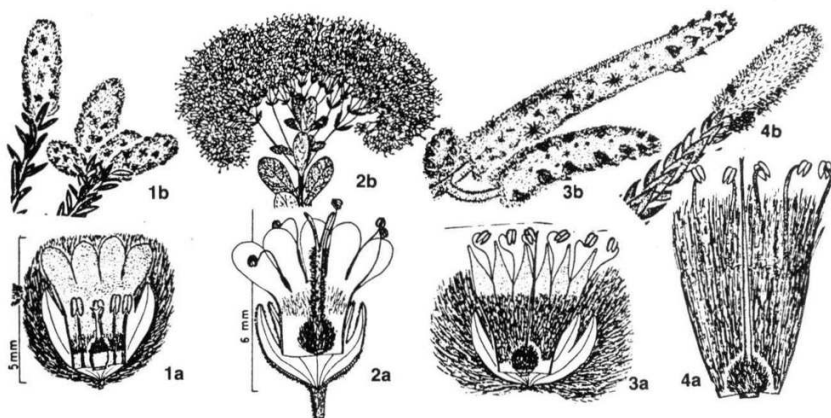


Fig. 1. *Physopsis lachnostachya* with leathery leaves, deeply revolute on the margins, rough above, leathery leaves recurved on the margins, sticky above, hairy beneath, the flowers in 3 in the axil of each bract. *P. spicata* leaves are a little longer to 3 cm, only slightly recurved along the margins, rough above, white cottony-woolly underneath, flowers solitary in the axil of each bract.

Fig. 2. *Dicrastylis obovata*. There are 26 species of attractive shrubs.

Fig. 3. *Newcastelia hexarrhena*. There are 12 species in the genus.

Fig. 4. *Lachnostachys albicans*. There are 6 species, who has grown them?

Fig. 5. see page 153. Both species of *Mallophora* are described on page 152.

Will readers please assist the presentation of these species by sending colour slides or comments. ■

Mallophora

The Genus

by Rodger Elliott, David Jones and Tony Blake

Mallophora (Greek *mallos*, wool, *phoros*, bearing: referring to the woolly flowerheads).

Shrubs with a dense covering of woolly hairs; **branches** erect to spreading, woody; **leaves** decussate, sessile, simple; **inflorescence** woolly heads or corymbs or elongated spikes; **flowers** bisexual, **calyx** 4-lobed, densely hairy exterior, glabrous interior; **corolla** deeply 4-lobed, lobes spreading and more or less equal; **stamens** 4, slightly exerted; **style** shortly 2-lobed near apex; **fruit** 4-celled, indehiscent.

Mallophora is an endemic genus of 2 species which is restricted to south-western WA. Both species are very attractive shrubs and worthy of cultivation. Propagate from seed or from cuttings.

Physopsis is very closely allied but differs in having its flowers in dense spikes and stamens are not exerted.

***Mallophora globiflora* Endl.**

0.2–0.5 m × 0.5–1.5 m

(flowers in globular heads)

June-Jan; also sporadic

Dwarf spreading **shrub**; young growth densely woolly-hairy; **branches** spreading to erect, greyish, rusty-hairy; **leaves** 0.4–1.5 × 0.1–0.4 cm, oblong to linear-oblong, decussate, often crowded near branch tips, thick, flat, initially densely grey-hairy all over, becoming glabrous and wrinkled above, margins flat or slightly recurved, apex blunt; **inflorescence** terminal cymes, often in somewhat globular heads; **flowerheads** 1.5–3 cm across, whitish, sometimes with purplish tonings when young, profuse and very conspicuous; **corolla** to about 0.6 cm long, tubular, white, densely hairy exterior; **calyx** to about 0.3 cm long, densely pale grey-hairy exterior; **fruit** 0.2 cm across, globular, dry, hairy.

An extremely decorative dwarf shrub which is found east to north-east of Perth, in the Avon, Coolgardie and Eyre Districts, where it usually grows in sandy, acidic soils. Adapts well to cultivation in semi-arid and temperate regions. It needs plenty of sunshine but also tolerates semi-shade in warmer climates. It prefers well-drained soils. Plants are hardy to most frosts and extended dry periods. They usually develop as densely foliated plants but also respond well to pruning which promotes bushy growth. Recommended for gardens or containers. Also an excellent cut flower. Propagate from seed, which usually begins to germinate 40–90 days after sowing. Cuttings of firm, young growth strike readily but sometimes *Botrytis cinerea*, grey mould, can damage growth buds. See Volume 1, page 173 for information on control.

M. rugosifolia differs in having leaves with a glabrous upper surface and revolute margins, as well as usually elongated flowerheads.

*Encyclopaedia of Australian Plants — Volume 6.

Very highly recommended is this encyclopaedia series, volume 6 being the most recently available. The series is so far ahead of other books available as a reference to Australian plants that, despite the price for a set to date, it is an excellent investment. If you are a native plant enthusiast you will undoubtedly end up buying a set so you might as well start with this volume. This volume describes the 1,200 species in genera commencing with the letters K to M.

A significant factor in the quality of the data is the authors, Rodger Elliott, David Jones and Trevor Blake, all exceptional horticulturists with the special ability to convert technical data to concise practical advice. The article above is produced as in the book except for the many colour photographs so that readers will readily evaluate the value of the book for themselves.

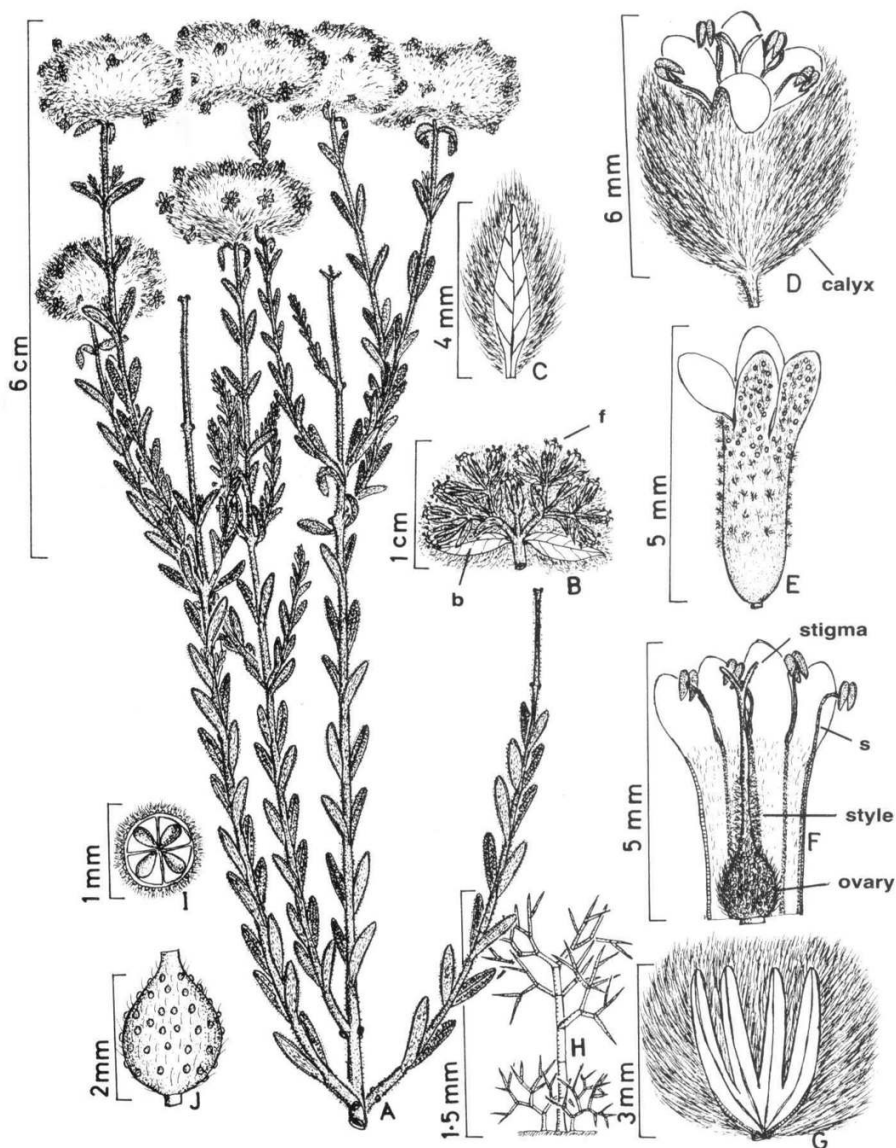


Fig. 5 *Mallophora globiflora* A, flowering branch; B, cyme flowering head of individual flowers (f); C, bract (b) viewed from inside; D, an individual flower (f) comprising the corolla (petals) tube as in detail E surrounded by the "hairy" calyx, detail G formed of numerous bracts; E, corolla-tube, an individual flower; F, corolla-tube vertically cut open showing stamens (s) and pistil comprising the style with the forked stigma on top, attached to the ovary. G, the calyx is shown vertically cut open, the outer "hairs" shown much magnified in detail H; H, calyx-tomentum; I, the ovary, at the base of the pistil is shown in transverse section, showing four ovules that mature to seed; J, when fertilised, the ovary matures to this fruit containing four seed compartments.

Mallophora rugosifolia Munir (wrinkled leaves). 0.2–0.5 m × 0.5–1 m Oct.–Dec.

Dwarf **shrub** from WA; young growth woolly-hairy; **branches** spreading to erect, densely covered with pale greyish hairs; **leaves** 0.3–1.1 cm × 0.1–0.25 cm, narrow linear-oblong to oblong, decussate, somewhat crowded, glabrous and wrinkled above, densely greyish-hairy below, margins strongly revolute, apex blunt; **inflorescence** a corymb of elongated woolly spikes or sometimes in globular heads; **flowerheads** to about 2 cm long, whitish with purplish tonings when young, profuse and very conspicuous; **corolla** to about 0.35 cm long, tubular, white, densely hairy exterior; **fruit** to 0.2 cm across, globular, dry, hairy.

M. rugosifolia is a very attractive species from the Austin, Avon, Coolgardie and Irwin Districts, and it usually occurs in sandy soils. Rarely encountered in cultivation, it needs similar conditions to *M. globiflora* but is even more tolerant of drier conditions. It has potential for much wider use in gardens and containers. Fresh or dried flowering stems are long lasting and suitable for indoor decoration. Propagate from seed, or from cuttings of firm young growth. ■

Outstanding Writers/Horticulturists of the Australian flora, 2

Editor

Roger Elliott, possibly the noblest of all. The general public know of him as the inspiration and leader of the team producing *The Encyclopaedia of Australian Plants* and many other books on the Australian flora as well as his serial writings periodicals such as "Your Garden" and "Bird Observer". The horticultural trade know him as one of the original founders of Austraflo and for years, a most gifted propagator and supplier of plants to the wholesale trade. He has been guest speakers at distinguished gatherings throughout Australia and overseas. All this testifies to his unequalled, outstanding knowledge of the vast Australian flora. What all who know him are most impressed by is his quiet authority, his understanding of other people's problems and views and his readiness to share his vast knowledge freely and with humility. Not to diminish his stature, comment must be made of the gifted knowledge and application of his wife, Gwen, an authority in her own right.

David Jones is widely known for his more than 15 books on a wide range of specialist subjects such as ferns, orchids, cycads, etc. A professional scientist, the depth of his knowledge and the capacity to share it with others is a rare gift revered by all who have been fortunate enough to meet him. A man of outstanding character and ability.

Trevor Blake has contributed to our culture based upon his artistic ability and extensive awareness of this continent of ours and its plants and creatures. He has been a major contributor to the society since the very early days and is recognised as Leader of the Banksia Study for many years. All this is complemented by a competent, helpful outlook on life and its value in all forms.

Neil Marriott is already well known to readers of *Australian Plants* because of the excellent photography he has shared with us. Lucky Victorians know him very well as a native plant nurseryman, the supplier of excellent plants, well prepared and often quite rare. Those who were fortunate enough to visit his nursery were delighted with his display gardens some being featured in colour in our journal. What is not widely known is the research and study he has undertaken to introduce new plants onto the horticultural scene. This expertise was introduced to the preparation of *The Grevillea Book* mentioned on page 171. Since taking on the project with Peter Olde, Neil has travelled Australia extensively, applying his photographic skills, his keen sense of nature and the association of plants and environment to the extent that he has joined a very competent few who may be considered to be an authority on Grevillea. His contribution to the book has been in all facets including most of the line drawings detailed plant descriptions and especially, cultivation. Without doubt he will contribute to the Australian flora and its preservation in many ways in the future.

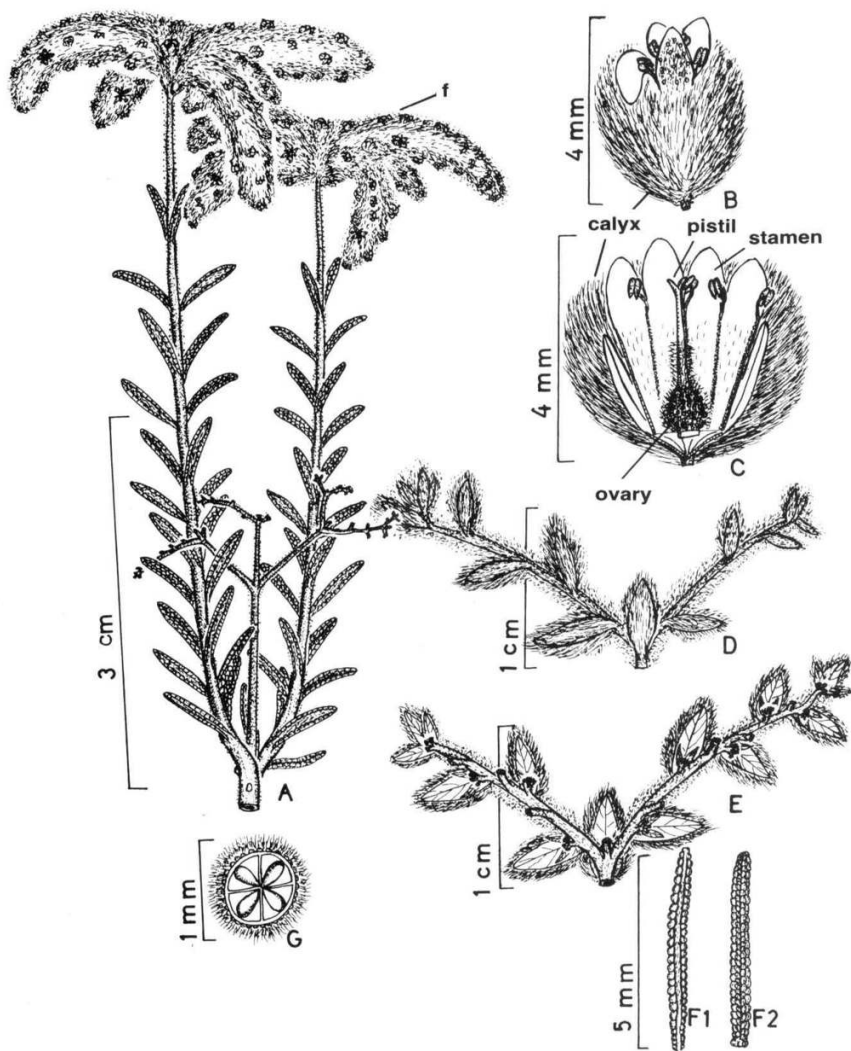


Fig. 6. *Mallophora rugosifolia* A, habit sketch of flowering twig; B, the individual flower (f) comprising the tube of four petals surrounded by a "hairy" calyx; C, flower vertically cut open to show the pistil in the centre comprising the style set on the top of the ovary and the four stamens each attached to a petal becoming unattached at the top end near the pollen bearing anthers; D, peduncles showing back view of the calyx and the arrangement of bracts, the flowers having been removed; E, peduncles showing front view of the arrangement of bracts, the flowers having been removed, each of these bracts cupped a flower as in detail B and C; F1, ventral view of a leaf showing deeply recurved margins; F2, dorsal view of a glabrous and rugose leaf; G, a transection of the ovary showing four compartments for ovules which, on maturity, become seed.

Halgania in Cultivation

by Neil R. Marriott

I can still remember the massed blue flowers of *Halgania* growing along the roadsides, as I travelled through the Victorian mallee as a boy. Little did I realise that I would be able to successfully grow these spectacular plants in my garden many years later. Since then I have found many more of this beautiful genus in travels around W.A. These unfortunately, are rarely available for cultivation, unless you can collect your own material, as I did with several species. The following notes may encourage more to try these showy small rocky plants.

Most species required a warm, very well drained site, preferably in full sun, although they will grow happily under trees in inland areas. Quite a few species grow in alkaline soils, often over limestone rubble. For these, I have had excellent results by adding garden lime to the soil for a spread of one to two metres. Digging in several buckets of concrete rubble is also very successful.

Halgania andromedifolia, 'Lavender Halgania', was confused for many years with *H. lavandulacea*, a species confined to W.A. When growing well it is a most spectacular small to medium shrub. To achieve best results, plant it in a hot, well-drained site on a mound of rubble as mentioned above. Cuttings from old or young terminal growth are extremely difficult to strike, however I have had good success using the young growth that shoots from old wood. This is usually not sticky like the terminal foliage, allowing it to strike more readily.

Halgania cyanea, 'Rough Halgania', is a widespread species, common in cultivation. It grows naturally in inland areas in alkaline sandy-loams where it often forms extensive suckering thickets. When cultivated in a sunny, well-drained sandy loam, it soon develops into a low thicket of bushy green suckers, transforming into a deep blue swathe of flower from spring to summer. It is readily propagated by cuttings or by simply digging up suckering clumps and establishing elsewhere. It tolerates extremely dry conditions, however it forms a better thicket with some subsoil moisture. Old clumps can be rejuvenated by clipping them off at ground level.

Halgania preissiana from W.A. forms an open, slightly prickly grey-green shrub, with masses of beautiful purple-blue flowers during the warmer months of the year. When grown in a warm, sunny site in a free draining sand or sandy loam, it suckers lightly. Plants can be affected by cold, wet conditions and should be heavily pruned during spring to rejuvenate the clump. Cuttings strike well at most times of the year, but resent being kept too wet or humid.

Halgania littoralis is a beautiful small shrub from coastal areas north of Perth. It has lightly hairy to silky, toothed leaves and large clusters of spectacular purple-blue terminal flowers. It requires a warm to hot sunny site and well drained slightly acid to alkaline sand. Cuttings strike well, however they are sensitive to overwatering.

Halgania sericiflora also from W.A. is a delightful low grey-green shrub with masses of terminal flowers in spring. It requires a hot, sunny site in a well-drained sand or sandy loam. Unfortunately plants tend to die back in cool, wet weather, however as cuttings strike readily, young plants should be regularly propagated to replace those that succumb to cold winters. ■



△ *Halgania andromedifolia*

Halgania cyanea ▽

These photographs by Ilma Dunn are best viewed from the side of the page



The Genus *Halgania*

Notes from W. H. Payne*

There are 16 species of *Halgania* all with a big potential in horticulture because of their purplish-blue flowers, often highlighted by the yellow anthers. They are also well suited to container culture and to pruning savagely to encourage suckering and a multiplicity of flowering heads. Most species occur in the south-west of W.A. but four extend across to N.S.W. and two to N.T.

Halgania andromedifolia, see page 156. This decorative species usually occurs in low-rainfall regions, on alkaline sands in mallee vegetation. It is best suited to sandy soils but adapts to well drained loams.

Halgania argyrophylla, has excellent potential for use in semi-arid and temperate areas with silvery, hairy foliage and sizeable flowers. It is found around Geraldton, W.A.

Halgania corymbosa, is widely distributed in heath land and woodland in southwestern W.A. The name is because it attractively presents its flowers in corymbs making it ideal for container cultivation.

Halgania cyanea, see page 156. It grows best in an open aspect in cool climatic regions and is hardy to moderately heavy frosts and extended dry periods. Its wide distribution and wide range of forms indicates its adaptability.

Halgania erecta, also a widespread species but without the form and abundance of flowers of *H. cyanea* which it resembles.

Halgania glabra, the name referring to the large glabrous (shiny, hairless) leaves that distinguish this from other species. This highly ornamental plant occurs in arid regions and will tolerate moderately heavy frosts.

Halgania gustafsenii, has densely hairy foliage and well-displayed blue-violet flowers to 2 cm across. From the more arid edge of southwestern W.A., this plant would be best suited to semi-arid or warm temperate regions and probably as a rockery or container plant.

Halgania integerrima, from the Coolgardie area of W.A., is not well known nor are most forms very floriferous.

Halgania lavandulacea, Lavender Halgania, is a decorative small shrub with greyish foliage and deep purplish-blue flowers, the yellow anthers providing contrast. It is widespread in southwestern W.A. as an understorey plant.

Halgania littoralis, is a most impressive *Halgania* growing on the coast north of Geraldton. The large blue-violet flowers in terminal clusters would suit container or rockery applications. See notes on page 156.

Halgania preissiana, is an attractive small shrub occurring over a wide range from Geraldton to Ravensthorpe, W.A. A lightly suckering plant it can be rejuvenated by pruning the older branches at ground level. It is rarely damaged by moderately heavy frosts or extended dry periods. See notes on page 156.

Halgania rigida, has stiff, erect, revolute foliage and deep blue flowers in terminal clusters. It is found in the Kalgoorlie-Norseman area of W.A.

*Editor's Note: Will readers please send notes on their experiences in growing these dainty plants and get slides over the present flowering season. To give a guide to all the species I turned to my reference 'bible' on the flora, the *Encyclopaedia of Australian Plants* by Rodger Elliott, David Jones and Trevor Blake. This exceptional series is referred to on page 152.

Halgania sericiflora, has arching to spreading densely hairy branches with profuse conspicuous deep purplish-blue flowers to 1.5 cm across. It occurs in the arid fringe to the southwestern area of W.A. See notes on page 156.

Halgania solanacea, is usually found growing on sandy soil and lower dune slopes in arid areas of W.A. extending into the N.T.

Halgania tomentosa, is a dwarf, rigid, branched, herb-like plant restricted to the area north from Coolgardie. Its main attraction could be the felt-like foliage shown to advantage in rockeries.

Halgania viscosa, from the Coolgardie district is the least attractive of the genus. ■

The W.A. Christmas Tree

Nuytsia floribunda

by Keith R. Oliver

This tree is one of the world's most spectacular flowering trees, with a reliable mass display of brilliant orange flowers, contrasting harmoniously with the usually blue skies, around November and December each year. Why is it not more widely grown. Raising young plants from seedlings or rooted cuttings, to mature trees, has always been problematic.

Mature trees seed freely after flowering, the seeds germinating the following May or June. However, in the wild such seedlings rarely, if ever, survive for long, and in the wild the trees propagate mainly by means of suckering.

Seeds germinate quite readily in cultivation. It has been easy to get quite high strike rates from cuttings (Armstrong, 1990). However, most such young plants die within the first few summers.

Following up on information from Adrian Bowden (pers. comm., 1992) that the (non-native) deciduous Crepe Myrtles (*Lagerstroemia*) make excellent hosts for Christmas Trees. I potted up 3 rooted cuttings purchased from a local nursery, each in a large (25 cm) pot, together with its own host of a miniature form of Crepe Myrtle, in January 1993. To date (April 1995) all cuttings have survived and made good growth, the largest being about 0.5 m tall. I also planted a Crepe Myrtle near an existing 2 year old seedling in the ground and this seedling also made good growth. This is much better than previous results so I think that the method is worthy of further trials.

In the wild the trees grow principally in sandy soils. In cultivation young plants need partial shade, peat-enriched soil and regular deep watering through hot summer months. Curious changes have been reported to occur as the trees grow, quite unlike the usual growth patterns of trees. At first a forest of small green suckers emerge, followed by the growth of a taller single stem with mature fleshy leaves, followed by the production of a new sucker that grows rapidly to a height of 2 to 3 metres within a season. The following year the tree will bear its first flowers.

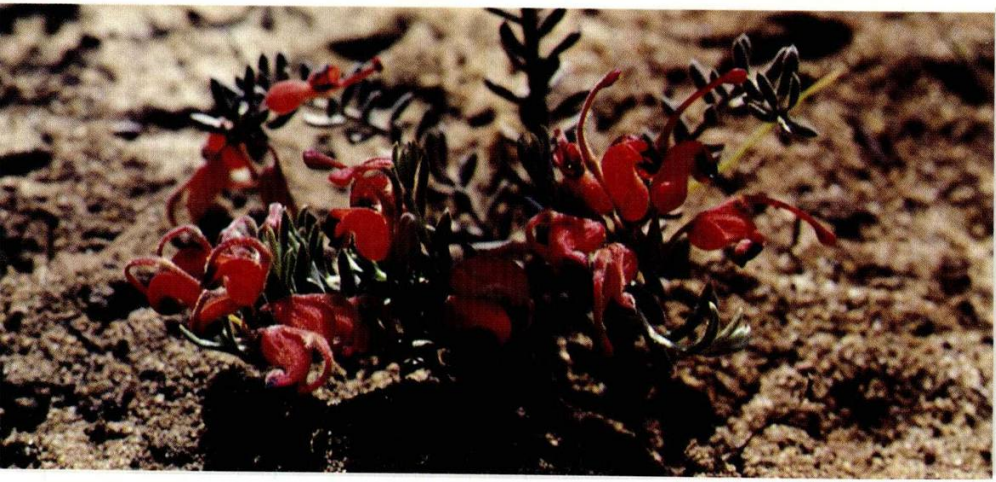
It would seem that growing the trees by cutting would be desirable, as much variation in size and form occurs in the wild trees. Superior forms could then be cloned at will. Mature trees have also been grown from root cuttings, about 30 years ago, by the late Mr Muns, when he was curator of the gardens at the University of Western Australia (Adrian Bowman, pers. comm., 1994).

Reference: Armstrong, L. J. (1990). Vegetative propagation of the Western Australian Christmas Tree, *Nuytsia floribunda*. International Plant Propagators Society Proc. 40: 64-68.

Editor's Note: Keith also sent me photographs of his strongly growing plants. I prefer to spend the money on colour plates when they flower, you will be advised. There is need for further study as there is no doubt that an Australian plant will serve equally as well as a host plant. A smaller flowering shrub at the base of this magnificent small tree will make this combination one of the most rewarding commercial landscaping plants of all time.



Grevillea pythara a plant for the rockery or container, see page 167. Photos, Peter Olde





Hypsophila dielsiana

Reprinted from Fruits Of The Rainforest*

Fruits approximately 100 mm long, hang singly or in bunches, axillary. Seeds 8–10 mm long, embedded in an orange-red aril. Fruit is not edible. Flowering/fruiting season is November to July on a tree to 10 m high. The leaves are simple, 7–17 cm long, glabrous, twigs zig-zag from leaf to leaf. It occurs on foothills to highland rainforest of NE Qld. from The Atherton Tableland to Roseville. See Vol. 17: 269 for more details.

***Fruits Of The Rainforest**

by Wendy and William Cooper

I was astonished when I discovered this incredible book. The work and dedication that must have gone into the collection of fruits of 600 species of rainforest plants would have been outstanding. Each left hand page of the book has a description of 4–5 species and opposite is a large full colour plate of the fruit of the species described. The fruits are painted full size and in authentic colour as reproduced above (this is just 1/4 of page), often with sections through them showing how they are made up. The seed from the fruits is shown the correct size. For the first time the casual ignorant observer can identify rainforest plants simply by observing the fruit. A Reader's Digest publication, but with a page size of 29 × 19 cm, it is available for \$75.

Hypsophila halleyana is a small bushy tree of the highland rainforest with smaller leaves and fruits maturing from small red flowers but also with colourful fruits. It is suitable as a garden plant in subtropical areas. There are only two species in the genus.

Revegetation, Growing The Understory

Notes by W. H. Payne from "Growing Understory Seed" by Joanna Seabrook

Plants have evolved in response to their environment with animals associated with particular plants. Revegetation should be thought of in terms of localities. The success of revegetation depends upon putting back a sufficient range of species so that an ecosystem can re-establish itself.

We are told we need a large tree cover on this earth's surface for our way of life to survive. Plant trees and more trees. As shown in our March issue we can even plant for profit creating a sustainable forest cover that will meet our needs for forest products as well as providing earth cover and a natural balance. Successful **revegetation** means **retention** of forests, planned **regeneration**, **restabilisation** and **rehabilitation** of degraded land and rehabilitation, the establishment of a natural balanced plant community that will sustain itself and dependent creatures. For this we need not only trees but a flourishing understory of plants to service the plant and animal community.

A ratio of ten understory plants to every tree has been suggested as a yardstick for regeneration. The preparation of selected species grown from local naturally occurring species, in tubes in nursery conditions will get a start in an area but it is apparent that direct seeding is really the only way to revegetate large areas. An understory of plants will contribute in many ways to a stable community:

- It softens the impact of rain beating on the ground and prevents runoff.
- The ground is porous, absorbing water, forming a healthy litter layer.
- The understory plants and litter covered ground provide shelter for creatures in a balanced natural cycle of life such as fungi, spiders, ants, etc., as well as birds and mammals.
- The underground ecosystem is stabilised to a healthy balance for plants and creatures. The health of our soil is a critical natural asset.

Direct Sowing

see also Direct Seeding on page 176

Direct sowing saves time. The number of hectares that can be seeded in half an hour would take many days to plant by hand. In addition it would take many months of hard work to prepare this tube stock before planting. There have been critics of the concept mainly along the lines that it is only successful with easily germinated species and who wants a field of wattle or ti-tree. Research into this problem is leading to a success story. Direct seeding has become an established method of revegetation. Where does such a volume of seed come from?

Seed Orchards, The concept

Rather than continually rob the wild plants, the best way of obtaining seed of understory plants is to establish a seed orchard, an area where plants are grown so that seed may be harvested from them. It will be necessary to establish small seed orchards or farms in areas throughout Australia in order to produce seed of plants that will survive and flourish in that area. The concept is critical to the revegetation of Australia and financial and practical support is available for those wishing to establish a seed orchard. You could contact Greening Australia or "Lady Direct Seeding", Joanna Seabrook, 15 Rabone Way, Boya, W.A. 6056. Just how you can do this is described by Joanna Seabrook in "Growing Understory Seed".

Growing Understory Seed by Joanna Seabrook. Available from the Wildflower Society of Western Australia, P.O. Box 67, Nedlands, WA, 6009, for \$9 inc. postage. This small book of 58 pages is a valuable guide to the establishment of a wildflower seed orchard. The whole concept has been researched by Joanna Seabrook, a marvellous lady and a leading worker in the conservation of her great love, the magnificent flora of Western Australia.

Some Fleshy Fruits of the Tropical Lowland Rainforests

A place-mat produced by Parker Pictorials, *see reproduction, next two pages.

Botanical name, Common name, Grid reference on page 164. Colour of fruit shown

"Fruits" refers to the book "Fruits of the Rainforest", see page 161.

The references such as 12:227 are to page number 227 in Vol. 12 of *Australian Plants*

The last column, Lenore Lindsay, leader of the of Australian Food Plants Study Group nominates the edible parts. Take care to check references for adequate preparation.

<i>Acmena graveolens</i> , Cassowary Satinash, H10, green, Fruits	fruit
<i>Acmena hemilampra</i> , Blush Satinash, H22, purple, Fruits 12:227	fruit
<i>Aglaia sapindina</i> , G32, orange, Fruits.	
<i>Aleurites moluccana</i> , Candle Nut, G8, pale green, Fruits, 12:227	nuts
<i>Alizia ruscifolia</i> , Prickly Lixy, H4, red with green leaves	
<i>Argyrodendron peralata</i> , Red Tulip Oak, E4, brown, Fruits	
<i>Barringtonia racemosa</i> , Freshwater Mangrove, F7-8, green	fruit
<i>Bowenia spectabilis</i> , Zamia Fern, C6, green, Fruits, 12:228	roots only after treatment
<i>Brackenridgea nitida</i> , Brown Ochna, J1, red, fruits	
<i>Calamus moti</i> , Wait-a-while, cream, 16:202	fruit
<i>Castanospermum australe</i> , Black Bean, G9, green, 13:69	seeds after extensive processing
<i>Chionanthus ramiflora</i> , Native Olive, G5, purple, Fruits	
<i>Dysoxylum alliaceum</i> , E5, orange, Fruits	
<i>Dysoxylum pettegrewianum</i> , Spurwood, H9, red, Fruits	
<i>Elaeocarpus angustifolius</i> , Silver Quandong, F12, brown, Fruits	fruit
<i>Elaeocarpus bancroftii</i> , Kuranda Quandong, F4, green, Fruits, 9:373 12:230	fruit
<i>Fagraea gracilipes</i> , H10, brown, Fruits	
<i>Ficus crassipes</i> , Banana Fig, J7, yellow, Fruits	fruit
<i>Ficus pleurocarpa</i> , Figwood, B11, brown, Fruits, 13:69	fruit
<i>Ficus variegata</i> , Cluster Fig, B2-A1, green/brown, Fruits, 16:254	fruit
<i>Flagellaria indica</i> , Supple Jack, A11, pink, Fruits, 16:195, 274	leaves/shoots when cooked
<i>Freycinetia percostata</i> , Climbing Pandan, B7, D4, Fruits	probably fruit
<i>Garcinia warrenii</i> , Native Mangosteen, B3, black, Fruits, 17:275	fruit
<i>Gmelina fasciculiflora</i> , White Beech, H7, purple, Fruits	
<i>Gomphrandra australiana</i> , Buff Beech, H6, pale brown, Fruits	
<i>Hornstedtia scottiana</i> , Native Ginger, C12, red, Fruits, 16:239, 241P, 248	fruit
<i>Idiospermum australlense</i> , Ribbonwood, C12, red, Fruits	
<i>Linospadix minor</i> , Walking Stick Palm, D2, orange and green, Fruits, 16:206	fruit
<i>Medinilla balls-headleyi</i> , Daintree Medinilla, H2, red, 17:276, 277P, 284P	
<i>Morinda citrifolia</i> , Cheese Fruit, D1, green/yellow, 16:195, 274	fruit
<i>Myristica insipida</i> , Nutmeg, G4, brown/red inside, 18:73, 80	fruit
<i>Normanbya normanbyi</i> , Black palm, A1, red, 13:300, 301 16:207	growing tips, edible "cabbage"
<i>Pandanus monticola</i> , Native Breadfruit, E6 - F6, green, 17:278	seeds and leaf bases
<i>Pandanus solms-laubachii</i> , B4, orange	seeds and leaf bases
<i>Piper caninum</i> , Pepper Vine, D6-E7, red, 13:70 16:260, 263	fruit
<i>Phaleria ciorodendron</i> , Rosey Apple, G5, red, 3:173	
<i>Pittosporum venulosum</i> , Velvet Pittosporum, J3, orange, 15:31	
<i>Polyalthia michaelii</i> , Canary Beech, H11, pink, Fruits	
<i>Pongamia pinnata</i> , Pongamia, F8-D8, green, Fruits, 8:123	fruit
<i>Pothos longipes</i> , Pothos, H8, red, Fruits, 16:267	fruit
<i>Pouteria</i> (syn. <i>Planchonella</i>) <i>castanosperma</i> , Saffron Boxwood, B9, black, Fruits	fruit
<i>Randia fitzalanii</i> , Brown Gardenia, off this picture, green/yellow, Fruits, 13:70	fruit
<i>Semecarpus australiensis</i> , Tar Tree, F9, orange, Fruits, 17:248	fruit, seeds after treatment
<i>Siphonodon membranaceus</i> , Ivory Wood, E5, pale brown, Fruits	
<i>Sloanea macbrydei</i> , Grey Carabeen, H3, green, Fruits	
<i>Solanum nigrum</i> , Black Nightshade, G10, green	fruit
<i>Synima cordieri</i> , Synima, G12, red, Fruits	
<i>Syzygium angophoroides</i> , Yarrabah Satinash, J4, purple, Fruits, 12:232	fruit
<i>Syzygium fibrosum</i> , Apricot Satinash, B11, red, Fruits, 12:232 14:84	fruit
<i>Syzygium gustavioides</i> , Water Gum, H8, pale green, Fruits, 14:86	fruit
<i>Syzygium tierneyanum</i> , River Cherry, J1-2, white, Fruits, 12:232 14:88	fruit
<i>Xylopia maccraei</i> , F2-3, red, 12:207	

*This large placemat reproduced as a double page spread on page 164/165 (it had to be reduced to 80% of full size and we missed a segment of it each side) is an incredible, painstaking task reproduced in brilliant colour. Plastic coated so as not to spoil. Sheer colourful splendour makes this a unique table setting or wall hanging. The photography is excellent. Produced by Parker Pictorials in a series, The Natural Selection For In-The-Wild Photographs, this is available from Parker Pictorials, Box 2247, Cairns, Queensland 4870.





Three Threatened *Grevillea*

by Peter Olde and Neil Marriott

Grevillea superba P. M. Olde and N. R. Marriott (1993) SOO-PUR-BA

Distribution W.A., extending from Grasspatch to Scaddan and E through the Wittenoom Hills to Mt Ney and W a few km from Scaddan. The area is now widely cleared and the full extent of the original distribution is uncertain. *Climate* Hot, dry summer; cool, wet winter; rainfall 450–500 mm. Colour photograph on page 168.

Ecology Grows in eucalypt shrubland in white sand over fine, pale brown, calcareous, clay-loam. Flowers Oct.–Dec. Nectarivorous birds seen in attendance. Regenerates from seed after fire or soil disturbance.

Variation A uniform species except variation in flower colour and leaf division.

Major distinguishing features Leaves pinnatisect, with spreading, linear lobes rectangular in cross section, the lower lobes usually with secondary division, under-surface bisulcate, midvein scarcely raised above level of lamina; confluences usually long-pedunculate, emergent above plant, cylindrical, opening from apex down; torus reversely oblique; nectary spreading, shovel-like; perianth zygomorphic, oblong below curve, hairy on both surfaces; pistil glabrous, 40 mm long; ovary with two prominent protuberances on ventral surface; style elongate; pollen presenter lateral; pericarp 2–3 mm thick. The full description given in the book is omitted here.

Related or confusing species Group 12, especially *Grevillea plurijuga* which differs in its pinnate leaves with narrow, closely aligned, linear-trigonal lobes, in its decurved or trailing peduncles with confluences mainly at base of plant and in its usually shorter pistil (35–38 mm long).

Conservation status Suggested 2VC. Truslove Nature Reserve and on road verges around Scaddan where they are dying out.

Cultivation *Grevillea superba* has not been cultivated widely although plants have been successfully grown for many years in Kings Park, Perth, the Royal Botanic Gardens, Sydney, (as *G. plurijuga*) and in the author's garden in western Vic. It has proved reliable and long-lived, tolerating almost full shade in Sydney as well as humid, summer-rainfall climate. Although tolerant of a degree of shading, it does best and will flower most prolifically if grown in full sun in well-drained, acidic to slightly alkaline loam or gravelly clay, spaced 2 m apart. Tip-pruning when young is beneficial but removal will affect flowering as the blooms arise annually from the old peduncles. It has withstood frosts to at least -3°C and extended dry conditions without ill-effect.

Propagation *Seed* Sets large quantities of seed that germinate well when soaked or nicked. *Cutting* Grows readily from firm, new growth in spring. *Grafting* Has been grafted successfully onto *G. robusta* with which it appears to be long-term compatible. Whip, top wedge and mummy grafts have been successful.

Horticultural features *Grevillea superba* is an outstanding plant, most notable for its conspicuous flowers that wave in long, branched racemes above the plant over many months. Although the flowers are usually deep pink, occasional plants have pale pink or cream flowers with a bright red style tip. The flowers are somewhat lax and, with their elongate styles, have great visual appeal. Yellow-throated miners and other nectar-feeding birds are drawn to the flowers which produce considerable nectar. The lacy green leaves also create interest, although the plant is for many years quite open and sparsely branched. This relatively long-lived, hardy shrub has great potential in horticulture and could be used effectively as a feature plant, perhaps doubling as a screen or barrier planting.

***Grevillea pythara* P. M. Olde and N. R. Marriott (1993) PIE-THAR-A**

Type: near Pithara, W.A., 29 Sept. 1992, P.M. Olde 92/173 (holotype: PERTH).

A suckering shrub 6–30 cm high. **Branchlets** terete, villous. **Leaves** 7–16 mm long, 1.5–4 mm wide, simple, villous, linear to narrowly elliptic or sometimes obovate, strongly convex, crowded, sessile, slightly discolorous; venation obscure, the midvein sometimes evident on undersurface; margins strongly recurved to revolute, entire, sometimes enclosing undersurface; apex obtuse, mucronate, slightly retrorse. **Conflorescence** erect, terminal, simple, sessile, 4–8 flowered, secund; rachis c. 3 mm long, villous; bracts 3 mm long, 1 mm wide, subtriangular to linear, villous outside, sometimes persistent to anthesis. **Flower colour:** perianth, red, blue around tepal margins near the limb; pistil red. **Flowers** acroscopic; pedicels 6–7 mm long, villous; torus 3.5–4 mm across, lateral to very oblique; nectary prominent, long U-shaped; **perianth** 10 mm long, 5 mm wide, strongly zygomorphic, ribbed, $\pm$ oblong, ventrally dilated at base, sparsely tomentose outside, bearded inside below level of ovary and above the somewhat chambered dilation, the hairs silky, strongly reflexed and mainly on ventral tepals, glabrous elsewhere, cohering except along dorsal suture; limb revolute, subglobose to spheroidal, firmly cohering at and beyond anthesis; dorsal tepals flared open below limb before anthesis; anthers misshapen, without pollen; **pistil** 20–22 mm long; stipe 7.5 mm long, adnate to torus at base, noticeably thicker than style, sparsely villous; ovary relatively inconspicuous, villous; style exerted first from below curve and looped upwards before anthesis, afterwards incurved, pubescent; style end broadly expanded, exposed before anthesis; pollen presenter lateral, flat, obovate; stigma distally off-centre. **Fruit** and **seed** not seen.

Distribution W.A., confined to the type of locality where it occurs in two small populations containing upwards of 100 individuals separated by only a few hundred metres, most likely reproducing from a single parent rootstock.

Ecology Grows in gravelly sand in a weedy road verge with *Dampiera* spp. Flowers May–Oct. Reproduction is most probably only by sucker as no fruit has set over the period it has been observed. Misshapen anthers on the few flowers examined contained no pollen, nor has any been found on pollen presenters.

Major distinguishing features Suckering habit; leaves simple, entire; conflorescence simple, <10-flowered; torus lateral to very oblique; perianth zygomorphic, hairy on both surfaces; ovary inconspicuous, villous, on elongate stout stipe; pollen presenter lateral. Colour photograph on page 160.

Related or confusing species Group 28. *Grevillea pythara* appears to have no close relatives. There are some affinities with species in Group 19 and 23.

Conservation status 2E. This species is seriously endangered requiring both in-situ bush regeneration and professional ex-situ cultivation.

Cultivation *Grevillea pythara* was first cultivated in 1992. A well-drained, sunny position in acidic to neutral sandy or gravelly loam with adequate subsoil moisture should sustain it. To enable adequate root penetration, soil structure should be reasonably open but not so as to cause rapid drying out. The suckering habit is not invasive and can be easily contained.

Propagation Seed Sets no seed. **Cutting** Strikes readily from firm, young growth taken in spring. Suckers, in particular, should propagate easily.

Horticultural features *G. pythara* is an exquisite plant, compelling because of its rarity, unusual habit and extraordinarily beautiful flowers. In the wild it flowers on suckers as short as 5 cm which pop straight out of the ground as erect branches with few or no side-shoots. The crowded foliage has an almost symmetrical arrangement, the leaves appearing to form lines along the stem. The bright red flowers are abnormally large in contrast to the leaves and general plant habit. We strongly recommend this species for the rockery or as a potted specimen if it becomes available commercially.



Grevillea superba, flowers and plant.

Photography by Peter Olde





Grevillea treueriana

Photograph by J. Eatts

Open, prickly **shrub** c. 1 m high, 1 m wide. **Branchlets** angular, striate, silky. **Leaves** 2.5–3.5 cm long, ascending, shortly petiolate, the rachis refracted at each node, divaricately bipinnatisect; primary leaf lobes 3–7, bi- or tripartite, grooved; ultimate lobes 0.5–1.7 cm long, 0.7–1 mm wide, prominently ridged, all linear-subulate to trigonous, rigid, pungent; upper surface sparsely silky to glabrous; margins scarcely discernible, smoothly to angularly revolute to a lateral groove on each side, silky in grooves; lower surface concealed with midvein prominently raised, rounded. **Conflorescence** 3.5–6.5 cm long, pedunculate, terminal, simple or branched; unit conflorescence dense, conico- to oblong-secund; peduncle and rachis silky; bracts 0.8–1.2 mm long, 1 mm wide, ovate-cymbiform sometimes with a small auricle on one side, silky-villous outside with ciliate margins, glabrous inside, falling soon after conflorescence begins to expand. **Flower colour:** perianth orange-red with yellow limb; style red turning yellowish. **Flowers** acroscopic; pedicels 2.5–4.5 mm long, silky; torus 1.5–1.8 mm across, straight, shallowly cup-shaped; nectary funnel-shaped, toothed; **perianth** 10 mm long, 2–2.5 mm wide, oblong-ovoid, silky outside, glabrous inside; tepals ribbed, cohering except along dorsal suture; limb nodding to revolute, spheroidal with impressed margins, sparsely silky, enclosing style end before anthesis; **pistil** 23–27 mm long; stipe 3–3.2 mm long, sparsely silky; ovary appressed-villous; style exerted first just below curve and looped upwards, refracted about ovary, incurved from halfway, glabrous, smoothly dilated at style end; pollen presenter oblique, elliptic, conico-convex. **Fruit** 10–11 mm long, 6–7 mm wide, erect, oblong-ellipsoidal, sometimes persistent, pubescent, with reddish-brown stripes or blotches; pericarp 0.4–0.6 mm thick. **Seed** not examined.

Distribution S.A., confined to Mt Finke. **Climate** Summer hot, dry; winter cool to mild, occasionally moist. Rainfall 150–180 mm. Photograph on page 169.

Ecology Grows exclusively in rock crevices in shallow quartzite sand, usually in exposed, open sites. Flowers spring, but continuously in cultivation

Major distinguishing features Leaves bipinnatisect with divaricate, linear-subulate, pungent lobes, the ultimate lobes with a prominent ridge on upper surface; conflorescence secund; torus straight; perianth zygomorphic, silky outside, glabrous within; ovary villous, prominently stipitate; fruit with reddish stripes or blotches.

Related or confusing species Group 35, especially *Grevillea aneura* differs in its mostly longer, terete, ultimate leaf lobes (up to 4 cm long), its longer pistil (27–32 mm) and in its more oblique (almost lateral) pollen presenter, and *G. secunda* which has a sessile ovary and decurved conflorescence. For many years, *G. treueriana* was confused with *G. anethifolia* because they have similar foliage.

Conservation status 2E. Restricted to Mt Finke.

Cultivation *Grevillea treueriana* was introduced to cultivation in 1986 by enthusiasts in S.A. and has been grown successfully both there and in western Vic., proving surprisingly adaptable and hardy. Best results have been achieved in full sun in very well-drained acidic to neutral soil. Special situations such as soil-filled hollow logs and large tubs have also produced results provided mixes are open and kept reasonably moist. Extremely dry conditions, even drought, are tolerated as well as frost to at least –3°C. Tip pruning assists to maintain shape but heavy pruning may be required from time-to-time. Grafted plants grown in full sun are extremely vigorous, forming dense, rounded, free-flowering shrubs. Occasionally sold in specialist nurseries.

Propagation **Seed** Reportedly sets copious quantities of seed that should germinate well if peeled or nicked. **Cutting** Firm, young growth has rooted in spring or early autumn. **Grafting** Has been grafted successfully on to *G. robusta* and *G. 'Poorinda Anticipation'* using less-than-perfect material as a top wedge or whip graft. Grafts are compatible and grow vigorously.

Horticultural features *Grevillea treueriana* is a remarkable plant, surviving on isolated Mt Finke which is surrounded by hundreds of square kilometres of inhospitable sand dunes in inland S.A. On the steep, rocky slopes it displays its superb, one-sided racemes of bright orange-red flowers that are strongly bird-attractive. Its yellowish green foliage is rigid, prickly and without particular merit, being adapted to withstand harsh climate and browsing animals. In cultivation, however, it grows more lushly and contrasts attractively with the prolific, almost continuous flowering. This is an outstanding shrub, ideal as a feature or specimen plant, but also useful as a barrier plant and deserves consideration for a position in the garden of any plant lover.

General comments This species would be lost to horticulture for the present were it not for an expedition in 1986 by a number of dedicated enthusiasts from the Society for Growing Australian Plants in S.A., who photographed it and collected cutting material. Wild collections should no longer be necessary.

The Grevillea Saga

Notes by W. H. Payne

Grevillea are known world wide as magnificent flowering plants. Except for a few of the 340 species, all are unique to Australia. Being such prized horticultural plants they have been collected and marketed since the time Banks came to Australia and a great deal of confusion in naming resulted. With the life's work of Don Macgilivray on the scientific classification of the species nearing a climax, the societies Grevillea Study Group became involved. Failing health by Don resulted in the premature conclusion of his work. The world is indebted to Peter Olde and Neil Marriott for the dedication and professionalism applied to a study of all the species in the field and the resulting scientific publication of their work. For the use of us without scientific training their work has been translated with the series, *The Grevillea Book*.

Volume 1 is an exceptional study as an introduction. It makes fascinating reading. The sections on cultivation and propagation are valuable and valuable information is summarised in a remarkable table listing all 340 species and their horticultural features in columns for easy reference.

Volumes 2 and 3 describe all 340 species and their variations in the manner shown for the three species presented here exactly as produced in the two volumes (botanical description omitted for *G. superba*). There is always a temptation to authors to colour their books with enlargements of photographs of tiny flowers. The colour plates reproduced here show exactly what the plant and flower looks like. Not only are there two colour photographs of each species but additional ones of forms, variations and subspecies. In all there are 1124 colour plates, some of which have been reproduced for your guidance. These volumes are each available for \$65 post free from Kangaroo Press or as directed inside our rear cover.

Conservation, Endangered Species and Cultivation

Species selected

Grevillea treueriana, a magnificent plant under threat of extinction. As shown above this is not likely now as SGAP members have collected it, propagated it and distributed plants all over Australia including to botanical gardens and carefully nurtured collections.

Grevillea superba, the "Cultivation and Horticultural Features" paragraphs indicate that this beautiful plant not yet widely available commercially, will reliably replicate the plant shown in the photographs, in your garden. This is another plant in danger of extinction.

Grevillea pythara, is a beautiful plant seriously in danger of extinction. As suggested, as well as a garden and rockery plant, it is ideal for container cultivation.

Grafted Plants

Thanks to competent propagators such as Doug Mackenzie, Neil Marriott, Paul Nixon, Phil Kearns, David Mason, Merv Hodge, and many others not known to me as well as the competent staff at Mt Annan, there are many *Grevillea* available on the market in grafted form. We have been fortunate that the reliable *Grevillea robusta* has been so adaptable as a rooting stock and has enabled the production of reliable plants for horticulture. The propagators are experimenting with other hosts for areas where *G. robusta* has not been exceptionally hardy. The dividend for the home gardener is strongly growing reliable plants of an exceptionally wide range of *Grevillea*.



△ **Scaevola**, the Fan Flower Photographs by Neil Marriott **Scaevola 'Blue Fandango'** ▽
Fan Flowers for ground covers containers, see details on pages 177 and 186.



Growing Australian Plants

Do you wonder about this? Series 2* by Kevin Handreck, FAIH, CSIRO, Adelaide

Our editor has asked me to comment on the following:

17. Is there an alternative to “very expensive” slow-release fertilisers?

I counter this one with another question. Are slow-release fertilisers really expensive? I suggest that **for plants growing in containers** the answer is definitely “no”.

At about \$8 per kg (retail) or about \$4 per kg (25 kg bags), the cost of a slow or controlled-release fertiliser (CRF) is about 2 to 4 cents per 125 mm pot. The hardware store in which I most recently looked had Thrive and other soluble fertilisers priced at about \$8 per kg, so the cost of the convenience of a CRF is zero in this comparison. When considered against the value of the plants being grown, either for pleasure, planting out, or for sale, the cost of CRF is really quite small. With potting mixes based on wood wastes, we must either include a CRF at potting or regularly apply a liquid fertiliser, or both. It might be possible to work out something based on blood and bone that would last a month or so. This certainly can work with peat-based mixes, but in my view the hassle of this is too much for the minor saving involved.

The situation is rather different **for general garden situations**. The often large areas involved make CRF's quite expensive by comparison with acceptable alternatives. Home-made compost is often all that is needed. An early boost can be provided by one of the many general garden fertilisers, which are much cheaper than the totally soluble fertilisers mentioned above. Most of these general garden fertilisers contain phosphorus at something like one quarter their nitrogen content. That means that they are unsuitable for Australian native plants that are sensitive to phosphorus. Lawn fertilisers often have lower phosphorus contents and can be a suitable alternative to general fertilisers.

One concession I would make on the use of CRF's in gardens and larger areas is where the “soil” is a coarse sand that holds little water and therefore only a tiny amount of nutrition for plants. With these sands use of some CRF when a tree or shrub is planted can help it on its way until it gets its roots deep down into the sand and to a larger pool of nutrients from which to draw. The other concession is for lawns. I find that the easiest way of keeping our tiny area of residual lawn looking good is to each year (for a few years, then each two years) give it an application of Azolon urea formaldehyde slow-release (nitrogen only), plus every two years a light dressing of potassium sulphate. The use of a mulching mower allows full return of all nutrients in clippings. This scheme is much less of a hassle than regular (each 6 weeks) applications of “normal” lawn fertiliser.

Editor's Footnote. There was considerable interest generated by the first article of this type in our No. 140 issue of Volume 17 and I have decided to make it a series. This is the reason the first question above is 17, the previous 16 questions being in the first article of the series. The first 16 questions were based upon items that bothered me or were raised in letters, etc. You will note a change in title from “Growing Wildflowers” Kevin has requested this. “My comments are for Australian native plants in general. They are hardly wild once we have them in pots or in our gardens”. There is an important message here. Many Australian plants used in horticulture have been carefully selected and some have been developed or acclimatised for use in ornamental horticulture. For this reason they perform much more reliably than recent acquisitions from the wild. Plants available from specialist nurseries will give superior performance.

As most Australian native plants have highly efficient mechanisms for extracting nutrients from soils, it is not wise to add too much in the way of nutrients from any fertiliser, including compost. Repeated application of bone to acid, sandy soils can lead to phosphorus toxicity in sensitive plants. Repeated use of pelleted poultry manure can lead to imbalances such as too much phosphorus, too much potassium and a decrease in magnesium supply.

18. You ask about "Ultraflora 2000 Bio-organic process" (Shirleys) fertiliser.

I do not know it, but from the information contained on the bag supplied, it is a mixture of urea, ammonium sulphate, superphosphate, potassium chloride, potassium sulphate, some organic matter which probably contains a little lime, judging from the stated calcium content, and a mixture of crushed zeolite rock and Wettasol wetting agent. Most of these are standard components of many mixed fertilisers, so plants will largely respond to the nutrient content, as they would to any other mixed fertiliser.

The difference from straight "chemical" fertiliser is the inclusion of a small proportion of organic matter. We are not told what type of organic matter is used. The term Bio-organic might literally mean life-carbon-containing, so the process might be that which produces compost, chook manure, blood, meatmeal, etc, all of which are organic materials formed by living things. Or could it be that the term "Bio-organic" means the inclusion of biosolids, which is the "new" term for sewage sludge?

The other components are Wettasol wetting agent and zeolite, to the extent of 5% by weight. Wettasol is an excellent, long-lasting wetting agent. At the rate of application of this fertiliser of 50–100 g/cm², one might be adding about 1 or 2 g/cm². That is about the rate recommended for overcoming dry patch in turf. The real question here is whether or not one actually needs to use wetting agent. These materials are really only needed if one's soil is water repellent. Such soils are largely restricted to sands and to highly organic soils. If your soil is easy to rewet after it becomes dry, then there is no need to use a wetting agent, no matter how it is presented.

Zeolite is a naturally-occurring mineral that has a high capacity to take up nutrients such as ammonium and potassium. Its inclusion in soils will tend to reduce leaching losses of these nutrients. The clay particles and humus of clay and organic soils have the same ability. That means that zeolite is mainly useful for addition to sandy soils.

To conclude, this fertiliser, despite the hype and inaccuracies of the advertising blurb, is well balanced for general garden use. Its best qualities would be seen on sandy soils.

19. Can phosphorus toxicity be produced through the use of horse manure, and if so, after what period?

An answer to this question requires information about the phosphorus content of the horse manure, the type of soil to which it is being applied and the sensitivity to phosphorus of the plants being grown. If the horses have been eating hay and straw, the phosphorus content of their manure will be about 0.3% of the dry matter. That is rather less than the phosphorus content of compost, so occasional use is unlikely to cause problems for most plants, and certainly not on loam and clay soils. However, for sensitive plants growing in sands, the application of almost any external material has the potential of harming young plants of sensitive species.

20. Debco market a “Rose Starter with Saturaid”. What does this do?

I have no personal experience of this product, but judging by the list of ingredients, it is a mixture of zeolite and Saturaid wetting agent. Saturaid is an effective and long-lasting wetting agent. The remarks above for wetting agents and zeolite apply here too.

21. Phosphorus toxicity, is it a major hazard for most Australian plants other than Proteaceae which we have been warned about? Can we mix fertilisers of different phosphorus levels to achieve a level?

In relation to phosphorus it is noted that the vast majority of our native plants are not particularly sensitive to phosphorus. In fact, most will grow faster with some extra phosphorus. If phosphorus is the main nutrient that is limiting growth, the extra growth produced from the addition of any source of it will be governed by the total amount applied, less any that is “fixed” by minerals in the soil or lost in drainage water. So a combination of equal amounts of two fertilisers, one with a moderate phosphorus content and one with zero, would be seen by plants as having a phosphorus content half way between the two.

22. What is the best way of ensuring that advanced plants whose rootballs are very tight and twisted survive once planted out?

I would go back one step and say that one should not buy such plants. It has been repeatedly found that young plants quickly catch up with larger plants and often grow faster than them. But if it is necessary to use a plant whose roots have circled around the pot to form a tight ball, drastic action is essential. At the very least, cut deeply down the full height of the rootball in at least 4 places around its circumference. For larger rootballs there is always a possibility that there is a second circling rootball buried inside the larger one. The only effective way of dealing with this is to cut right through with an axe, tomahawk or bush knife so that the rootball is formed into a “butterfly”. I prefer this action to an attempt to tease out roots. Butterflying is faster, and appears more effective.

Editor's Footnote

Controlled (slow) release fertiliser, CRF, question 17 is mainly concerned with their use in the garden situation and Kevin has confirmed that, for this application, they are indeed expensive. We, often easily led gardeners, are confronted with pots of beautifully flowering small plants which are growing in nothing it seems, and force fed for the flowering to suck in the gardener. We fondly hope that they will continue to do this when planted for the rest of the season and, dare we hope, for a few more seasons to come. See question 22.

Commercial fertilisers, question 18 and 19. These have arisen from new fertilisers released on the market, the manufacturer having sent me a packet or literature in the hope that I will encourage you to buy it. The trouble is the descriptions given using utopian phrases mean nothing to me. As you will see they are equally puzzling to Kevin but at least his comments will assist us. Again the problem with these products is the price.

Plants obtained from nurseries, question 22. I phrased the question to cover the extreme case and Kevin has answered it by “do not buy the plant”. How right he is. The trouble is that most plants available are half way between this extreme case and a newly rooted plant. I purchased a number of lovely plants from a large (general) nursery and took great care to firstly pot on into a large pot and finally to plant. I lost the lot. They were the usual nursery product, beautifully presented plants growing in a pot containing a light mix, a close substitute to nothing. Even teasing the roots out on the edge of the ball and potting on before planting was not successful. The plants were not pot bound as in the extreme case in question 22 but the roots were abundant and filled the pot. Without washing out the nothing material completely the plant will always live in this ball of nothing at its entry point to the ground. Even plants from competent native nurserymen can cause a problem. To survive they must use commercially available potting mixes and if the plants are not sold shortly after potting up, the roots can become over abundant and demand slow release fertiliser that compounds the problem. Does anyone know the answer? See the next page for comment. What is your experience?

Planting nursery grown plants!

Editor's Note: I showed Kevin the proofs of the article above. He responded to the last of my comments as follows:

In your last note you suggest that "light" potting mixes are "nothing". That is hardly accurate. They may well have a low mineral content, but the bark, etc of the mix is not "nothing". The secret of success in planting out is to use small plants, to cut any circling roots and to plant into an oversize hole. The hole is then part filled with water and some of the soil returned to it. The rootball of the plant is then settled down into this slurried soil so that there is intermingling of rootball and soil. Then the rest of the soil is added and the whole lot firmed down. Some additional water may then be applied. Further drinks are given daily to every several days in warm weather. The one initial drink may be all that is needed when planting out in cool weather with rain. Our 2,600 trees and shrubs were planted out this way and they are thriving with just the one watering at planting. We planted about 200 tubed plants during last summer. They got a drink at planting. The next one was one week to two weeks later, with no rain. The only one that died had been in a 125 mm pot. All the rest survived. Those that were not nipped back by kangaroos are thriving.

It is important to note that it is essential to be sure that the rootball will rewet easily if it dries out. A main cause of deaths is that the plant uses the water in the rootball. If the mix is water-repellant, any subsequent watering will not wet it. So you think that you are giving it a drink when in fact the rootball is still dry. It is essential to dunk the rootball into a dilute solution of wetting agent (1 ml of wetting agent concentrate per litre of water) within a few weeks of planting out, if there is no residual wetting agent left from potting. I add wetting agent at potting and enough survives the 5-6 months to planting to make it unnecessary to dunk before planting. ■

Direct Seeding

of Trees and Shrubs

by Greg Dalton

This exceptionally thorough 123 page book is available for \$20 plus \$5 postage from Primary Industries, S.A., PO Box 752 Murray Bridge, S.A. 5253, or from Greening Australia outlets. The presentation is in full colour on every page with easy to follow sketches and detailed advice and tables on every aspect you could conceivably think of relating to direct seeding. The easily read directions are under the headings of 1. Introduction to direct seeding; 2. Methods of direct seeding; 3. Timing of operations; 4. Weed control; 5. More site treatments and difficult sites; 6. Seed and seeding; 7. Specialist machinery; 8. Pests; 9. Follow-up procedures; 10. Planning direct seeding and with appendices on Number of seedling's per gram of seed, Commercial seed suppliers, Seed treatment details, Percentage field establishment and Suppliers of direct seeding machinery. The information is very clearly and simply presented for all levels from large seeding programmes to the local property owner. **If ever we can get the Federal Government to listen to the concerned citizens of Australia**, this book will be an essential reference manual for thousands of determined Australians, determined that "doomsday" is not just around the corner in our children's time and that future prosperity is assured. ■

Growing Goodeniaceae

Their Cultivation in Brisbane, Qld

by Colin and Vern Cornford

We have tried on a number of occasions to grow species of *Scaevola*, *Goodenia* and *Dampiera* in the ground but with mixed success. Those successful in the ground are *Scaevola* 'Purple Fanfare', *Scaevola* 'Mauve Clusters' and *Goodenia rotundifolia* all flowering well. See photographs on page 172.

Growing *Scaevola* species in hanging baskets has been very rewarding. Our first attempt was not entirely successful. We started with coir-lined wire baskets in the belief that excellent drainage was essential and that this combination would be ideal. We were right about the drainage. It was so good the baskets dried out too quickly and we had to water every day, and in hot weather as the plants got bigger, twice per day. We went to plastic baskets which are, in effect, a "water well" basket. A perforated plate about 20 mm above the base holds the soil above the base. The space below the plate holds water which plant roots can reach through the holes in the plate. An overflow aperture ensures the water can not get above the plate. We have been able to reduce watering to once every 3–4 days. Potting mix used is one of the better quality commercial mixes to which Osmocote is added. Liquid fertiliser (Thrive, Nitrosol etc.) is used occasionally after the plants are well established.

Plants which have been successful in baskets over the past 3 years are:

Scaevola ramosissima — this grew well to the stage where it was hanging about 1.5 m below the basket and was flowering heavily. On return from holidays in Sept '94 the plant was very wilted and we thought we had lost it but following a trim back and a watering it recovered and is now growing well again.

Scaevola 'Pink Perfection' — So far as I know this is a cultivar of *S. striata*. We had no success with attempts to grow this in the ground but it has been growing and flowering successfully in a basket for almost 3 years.

Scaevola platyphylla — This plant produces purple flowers up to 20 mm across. Although not quite so vigorous as the two previously mentioned it has grown and flowered well. It deteriorated slightly during a spell of hot, humid weather in early 1994 but has recovered satisfactorily from that set-back.

Scaevola striata — This plant, although it grows fairly well and flowers well, is probably the least thrifty of all *Scaevola* species being grown in baskets.

Scaevola species with affinities to *striata*. This plant produces dark purple flowers up to 25 mm across and at present (Nov. '94) is hanging about 0.5 m below the basket and is flowering heavily.

Scaevola 'Purple Fanfare'. The original basket plant of this cultivar completely outgrew a large size basket. At its peak it would have been about 1.9 m in diameter and was hanging about 1.0 m below the basket. It was trimmed back fairly severely but for some unknown reason did not recover from that treatment. As it grows readily from cuttings it has not been difficult to replace it.

Scaevola 'Mauve Clusters' — plant was as prolific as *Scaevola* 'Purple Fanfare' and was of similar size. However, unlike *S. 'Purple Fanfare'* it recovered well from severe pruning and is still growing and flowering well. ■

Editor's Note: In previous issues I have requested readers to send in notes on their experiences with the cultivation of wildflowers in the plant family Goodeniaceae. Colin Cornford's response is given above. Unfortunately good colour slides are not available of the above plants but those on page 172 will give a good idea of what most *Scaevola* look like. They are very rewarding and easy to grow. Who else can report, and who can supply slides?

Goodenia ovata

by Lucinda Davall

After we came to live in Ashbourne, S.A. I found it necessary to have a close look at the plants along local roadsides to try and discover what might have been the native vegetation of this largely cleared and closely grazed area. I saw that some dense green bushes with yellow flowers were *Goodenia ovata*. Previously this plant was only known to me as a straggly plant about knee high growing along creeklines in stringybark scrub. Here, on a roadside bank and facing west in the hot afternoon sun, was a stand of stout bushes to shoulder height and with a sprinkling of flowers year round, and a mass of gold in the spring.

To my delight I discovered how easy it is to propagate goodenias and soon put plants in various strategic spots in my garden. Then I started a *Goodenia* hedge along the drive where the garden stood in need of a windbreak. It took two years to become a good hedge and needs trimming two or three times a year. Because it gets water from the garden it is always in flower. It faces up the valley looking north-west and takes the full force of the prevailing north-west winds but never looks worn. The flowering branches last well in water.

Little birds and mice love it for shelter and food. Lizards and, unfortunately, snakes use the hedge as a highway, and rosellas sit on the fence behind the hedge and nibble its fruit. Grown as a separate shrub, the Bull Creek form of *Goodenia ovata* makes a dome of about 1.5 m diameter and seems to become dense enough to suppress most weed growth under its spread.

Recently I have acquired some cuttings of the form which grows in the mid north of S.A. It is scarcely recognizable as the same species. A good shrub about knee high with comparatively tiny leaves but the same prolific golden flowers. I wait to see how this performs here.

I am planting *Goodenia ovata* on my taller roadside banks in the hope that its roots will do something to stabilise the earth that is steadily undermined by roadside spraying and grading undertaken by the Highways Department in a mistaken effort to keep the roadside tidy.

It looks as though I have just found South Australia's best kept floral secret. I acquired a plant of *Goodenia albiflora* at the SGAP Spring plant sale, and it is slowly opening. The white flowers on its flowerspike are about twice the diameter of the usual yellow flowers. The three lower petals form an arch at the top of the flower giving an orchid-like appearance to the flower. The foliage and stems of this plant are glaucous — as though the whole plant had been dipped in milk.

Editor's Note: I receive comments that *Australian Plants* is too technical. I immediately know that the comment comes from someone who does not make an effort to read those segments that would be of interest. The above is response to my plea for articles of this type and in particular on species of Goodeniaceae. I do not have a slide of the above species but published photographs of two other species in Volume 17, page 336, very spectacular plants that are easily grown. Who else can supply comments such as above and colour slides?

***A Field Guide To Australian Butterflies** by Robert Fisher, Published by Surrey Beatty & Sons

The 250 page field guide describes and illustrates 200 of the 385 species of butterflies found in Australia. Butterflies were a feature of our last issue and some beautiful pictures were reproduced from this guide for your advice as to its value to you. The photographs were not just of numerous butterflies but also of the pupae and larvae in the evolutionary stages. The captions for the photographs on page 96 that were taken from the book carried an error, the centre left showed the larvae of *Theclinesthes serpentata* with the pupa in the adjacent photograph. Available for \$29.95 as suggested inside our rear cover or from Surrey Beatty & Sons, 43 Rickard Rd, Chipping Norton, NSW, 2170.

New Species of Epacridaceae for Victoria

by Y. Menadue
and R. K. Crowden*

Richea victoriana is an erect, multi-branched shrub 0.3–2 m high with creamy white flowers. It occurs on the Baw Baw plateau and the Blue Range between Marysville and Taggerty where it is locally abundant in wet heath or scrub land and on the fringes of cool temperate rainforest growing near streams or bogs with *Epacris* species. It has affinities with *Richea gunni* of Tasmania, both losing leaves early leaving clear annular leaf scars a feature that will distinguish the plant locally. *Richea victoriana* is a larger more robust plant with longer (5–10 cm) wider (5–11 mm) leaves that have a distinctive twist to them. The inflorescence has lateral branches bearing many more flowers (3–20).

Epacris celata is an erect to spreading shrub 20–60 cm high, the young stems red-brown, ridged with raised leaf scars. It differs from other *Epacris* species that have similar companulate flowers clustered in heads in having rounder flatter leaves that are rather smooth with conspicuous margins. The leaves are smaller than those of *E. breviflora* which are more spreading and often recurved, and larger leaves than *E. petrophila* whose leaves are more appressed to the stem, distinctly keeled with an inflexed acute apex.

Monotoca

Two new species endemic in Victoria

by David Albrecht*

Both species have female and functioning male flowers on separate plants.

Monotoca oreophila is exclusively a montane-subalpine species occurring at altitudes of 1,000–1,620 m usually under an open canopy of high country Eucalyptus, from Mount Baw Baw to Mount Kent. It is a densely foliated procumbent to erect plant 0.2–2.5 m high. *M. oreophila* has been confused with *M. submutica* has pungent leaf apices and strictly single-flowered uniflorescences. Similar to *M. scaperia* and *M. elliptica*.

Monotoca billawinica is restricted to two small areas of the Grampians on summit ridges of the Victoria Range on sandstone. It is a densely branched shrub to small tree, 2–4.5 m high. It closely resembles *M. glauca* but has larger flowers and fruit that are red-orange when fully ripe. It has been confused with *M. scoparia* but has a more robust habit with broader leaves.

Dianella — The Flax Lilies

by G. W. Carr and P. F. Hornsfall*

Dianella callicarpa (Swamp Flax-lily) has been identified with *D. tasmania*, the very long, lorate, strongly occluded leaves being thin and frequently arching or bent down, especially in situations of heavy shade. It is more closely related to *D. caerulea*. The generally blue-violet coloration of the perianth (petals) and often maroon suffusions on the subaxial side of the outer tepals, combined with the deep orange strumae and the pale yellow anther colours are distinctive. Flowers are weakly fragrant. The abundant brilliant, glossy, deep purple-blue of the fruits resemble those of *D. caerulea* complex.

Dianella amoena (Matted Flax-lily) is a distinctive plant with long, very slender, wiry and much branched rhizomes and narrow, tapering and thin lax or stiff leaves that are summer deciduous when water stressed. The leaves have peg-like projections or teeth on the leaf midrib and margins. The pale to deep blue-violet flowers are highly fragrant.

Dianella tarda (Late-flowered Flax-lily) is a robust, evergreen, densely tussock forming plant with narrow, smooth, erect, moderately glaucous, deeply channelled fleshy leaves. The very pale blue flowers are smaller than those of *D. longifolia* to which it is clearly related but have a strong fragrance, very similar to the garden carnation.

Dianella brevicaulis was previously relegated to a variety of *D. revoluta*. The very short dense heads of flowers hide in the longer leaves, always within the tussocks.

Dianella porracea, previously relegated to a variety of *D. longifolia*, the leaves are smooth, broad, flat, rather soft and fleshy, distinctively ribbed and strongly recurved.

*Based upon Muelleria 8(3) 1995 where the new species were formally described.

My Garden No. 22

by Peter Lindley

My garden at Alexandra Hills in the Redland District of S.E. Queensland gives us great pleasure at any time, but in spring we feel it is magnificent. "I wanted to create a bit of bush". The garden is 12 years old on a 24 perch suburban block with a northerly aspect, fairly level with a slight fall to the south. The soil is a silty clay containing moderate amounts of quartzite gravel. Local rock was used to form a retaining wall of approximately 1.2 metres high and some 3 metres from the rear boundary. The lower terrace between the retaining wall and the rear fence is where the garden shed, vegetable garden etc., is located. Drainage for the front yard has been improved by the installation of a rock filled drainage trench running from the edge of the driveway (on the western side of the block) across the front garden and down the eastern side to terminate at the rear retaining wall. Depth of this varies from 0.5 metres at the commencement point to 1.5 metres at the outfall end. Width is about 1 metre. It was dug by hand! The trench is filled with broken rock up to 200 mm in size. The top of the trench is the pathway across the front garden and down the eastern side. Spoil removed from the trench, together with other local soil, has been used to form mounds up to 1 metre high in the front garden and, to a lesser extent, along the eastern side. We add a little sulphate of ammonia to the soil when planting and then give plants an occasional dressing of slow release fertiliser until they are established. After that they are on their own.

A permanent watering system was installed a few years ago and this has improved plant growth probably because a more even watering rate and coverage is achieved. Most plants are pruned after flowering each year as it promotes fresh growth and prevents plants from becoming straggly. It also improves flower production.

The plant list covers five foolscap pages a few favorites will be sufficient here.

Melaleuca fulgens subsp. *fulgens* is growing along the top of the retaining wall and in the front garden. They are up to 2 metres tall and flower prolifically each spring. Colour range is dark red, salmon, cerise and deep purple.

Melaleuca fulgens subsp. *steadmanii* is 0.6 metres high and flowered well.

Other *Melaleuca*, all growing and flowering well include, *Melaleuca scabra*, *M. holosericea*, *M. elliptica*, *M. radula*, *M. gibbosa*, *M. pulchella*, *M. filifolia*, *M. nesophila*, *M. thymifolia*, *M. incana*, *M. tamariscina*, *M. calothamnoides*, *M. hypericifolia*, *M. lateritia*, *M. diosmatifolia*, *M. radula* × *diosmatifolia*, *M. erubescens* and *M. armillaris* × *M. diosmatifolia*, *M. wilsonii*, *M. glabberima*, *M. spathulata*, *M. foliolosa*, *M. tamariscina* subsp. *pallescens* and *M. minutifolia*.

Callistemon species are an important part of this garden and virtually all of the 20 species planted have thrived in this environment. Of particular note are *Callistemon* 'Fairy Floss' (pink), *Callistemon* 'Mr. Foster' (photo on page 144) and *Callistemon* 'Aileen Black' (dark red), *Callistemon* 'Wilderness White' (clear white), *Callistemon* 'Pink Ice' and *Callistemon* 'Wolumbin' (orange).

Grevillea provide good colour and attract birds to the garden. *Grevillea formosa* and *G. pteridifolia* from N.A., *G. rivularis*, *G. dryandri*, *G. biternata*, dwarfs such as *G. sericea* 'Miss Muffet', in addition to a number of the *G. banksii* hybrid plants.

Other genera represented are *Banksia spinulosa* var *collina*, *B. conferta*, *B. marginata*, *Banksia* 'Giant Candles', *B. robur*, *B. oblongifolia* — *Calytrix*, *Kunzea*, *Dampiera*, *Homoranthus*, *Bauera* (pink, white), *Prostanthera*, *Boronia*, *Baeckea*, *Thryptomene*, *Angiozanthus*, *Darwinia* and *Oxylobium*. Of the *Hakea* species a grafted plant of *Hakea bucculenta* is well established. ■



△ *Grevillea sericea* 'Miss Muffet'

Photo by Colin Cornford

Callistemon 'Aileen Black' ▽



'Flinders Fire'

by Peter Carrigy (artist/wood sculptor) Adelaide, S.A.

A Landscape Vessel; depicting the macro and micro aspects of the Australian landscape using river red gum, ochre, iron glass. The art work is a thematic piece 130 × 230 × 450 mm using materials which depict the action of fire and the regeneration of the Australian bush. It combines the dual functions of a free standing sculptural piece or functional vessel. The ancient river red gum surface texture makes reference to an aerial view of the Flinders Ranges landscape in S.A. A flaming technique was used to indicate that fire has passed through. Glass artist Alex Wyatt was commissioned to create the orange/red glass insert which was blown into the red gum form then re-worked while hot to achieve the final shape. The red gum was joined and re-shaped with ochres and oxidised iron applied to the surface. The iron refers to iron ore originally mined near the Flinders Ranges (Iron Knob) being returned to the earth. See photograph on page 188.

Fire is followed by soaking rain and the cycle of life begins again with renewal. The waratah flowers displayed in the vessel, although not native to S.A., have a flame-like colour and are indicative of a native Australian plant able to survive bushfire conditions. The vision of the artist is to illustrate the vastness of the Australian landscape and the uniqueness of its flora. He would like to work with a flower arranger* with an "Australian Style", using our native flora in a creative way as part of the evolution and expression of cultural identity.

The 'Flinders Fire' piece is in a private collection in Okayama, Japan displayed in a company boardroom. The Japanese client appreciated the "Australian essence" of the work and felt comfortable with its dual function whether as a sculptural form or containing a floral arrangement (Ikebana).

***Editor's Note:** Peter has written to me "Perhaps the feature in the journal will bring to light individuals who feel the way I do about the Australian landscape in a creative sense. Your suggestion of creating a more professional flower arrangement in a specific setting is a good one and something I would like to develop with the appropriate person". Who would like to take up this challenge? Peter mainly works with aged wood being a sculptor with a deep reverence for nature. He carves birds, fish or animals with abstract emphasis on simplicity and shape. Those interested in purchasing or commissioning his work may discuss it with him by phone (08) 363 1979. ■

Flora of Australia Supplementary Series

This new series of publications will comprise bibliographic and monographic works that are necessary as precursors to the main Flora of Australia series. This series will be published irregularly, probably at a rate of about 1-3 parts per annum and marketed direct by mail order by Australian Biological Resources Study, GPO Box 636, Canberra ACT 2601. The Flora of Australia series, of principal interest to our botanically trained dedicated readers, will now be published and marketed by CSIRO Publications.

Flora of Australia Supplementary Series now available are:

Number 1 — The Marine Benthic Flora of Southern Australia, Rhodophyta Part IIIA, by H. B. S. Womersley, a 508 page book, part of a series on the marine algae of southern Australian shores. It is available for \$50 from Australian Biological Resources Study as above.

Number 2 — Register of Type Specimens of Mosses in Australian Herbaria by H. P. Ramsay and J. Seus. The content is indicated by the title. This 140 page book is available for \$20.

Number 3 — Atlas of the Vascular Rainforest Plants of The Northern Territory by D. T. Liddle *et al.* This 164 page book provides distribution maps for 585 species native to the top end of the Northern Territory, a separate map for each species with a precise indication of the locality where certified species have been collected. It is available for \$24 from the ABRIS.

Australian Native Grass in Landscaping — 2

The first article in this series was in Vol. 18, page 38, together with a private garden using grasses as feature plants. This article is based upon "Plants of the Merri Merri", details at foot of page.

The Horticultural Use of Grasses Native to the Northern Suburbs of Melbourne*

Agrostis avenacea, Common Blown Grass — Around ponds and bog gardens, most effective when planted in groups.

Bothriochloa macra, Redleg Grass — Ground cover, rock gardens and under trees.

Chionochloa pallida, Silver Top (Red Anther) Wallaby Grass — Ground cover, specimen plant and under trees.

Chloris truncata, Windmill (Umbrella) Grass — Lawns, specimen plant and rock gardens.

Danthonia caespitosa, Common Wallaby Grass — Ground cover, rock garden and under trees.

Danthonia duttoniana, Brown-back Wallaby Grass — Ground cover and bog gardens.

Danthonia linkii, Wallaby Grass — Rock gardens, ground cover and under trees.

Danthonia setacea, Bristly Wallaby Grass — Rock gardens, ground cover and under trees.

Deyeuxia quadriseta, Reed Bent-grass — Rock gardens and specimen plant.

Dichanthium sericeum, Silk Blue-grass — Ground cover and specimen plant.

Dichelachne crinita, Long-hair Plume-grass — Rock gardens, under trees, beside ponds and pots.

Enneapogon nigricans, Pappus Grass — Rock gardens, specimen plant and pots.

Microlaena stipoides, Weeping Grass — Lawns, ground cover, rock gardens and under trees.

Poa labillardierei, Common Tussock Grass — Rock gardens, ground cover and beside pools.

Poa morrisii, Velvet Tussock Grass — Ground cover, rock gardens and under trees.

Poa rodwayi, Tussock Grass — Rock gardens and ground cover.

Poa sieberiana, Grey Tussock Grass — Rock gardens, ground cover and under trees.

Stipa elegantissima, Feather Spear-grass — Ground cover, specimen plant, rock gardens and under trees.

Stipa rudis, Veined Spear-grass — Specimen plant and under trees.

Stipa scabra, Slender Spear-grass — Ground cover, rock gardens and under trees.

Stipa semibarbata, Fibrous Spear-grass — Specimen plant, rock gardens and under trees.

Themeda triandra, Kangaroo Grass — Ground cover, rock gardens, specimen plant and under trees.

*Plants of the Merri Merri

Produced as a home gardener's guide to the use of indigenous plants in the northern suburbs of Melbourne by the Merri Creek Management Committee with the support of many people and the local government authorities for the area, this book is a practical guide for those who would like to use indigenous plants to shape the character of their home gardens. The bulk of the book describes 180 species native to the area. The 22 grasses above are included, three to a page with an identifying sketch for each species, its occurrence and preferred habitat and cultivation advice together with its use as given above. The study that has gone into the preparation of this book is evident with serious thought given to even the effective use of grasses of the area. It can be surprising just how effective many of our common ignored flora can be if cultivated and presented to produce a spectacle.

The use of indigenous plants in the home garden is the thrust of this book and the introductory 35 pages give advice of preparation and care of the plants, even their seed collection and propagation. **Bring the bush into your backyard by the cultivation of the local flora.** Available from the Merri Creek Management Committee, P.O. Box 91, Preston 3072 for \$15.00 plus \$3.00 postage and from some bookstalls.

Flora of Victoria Volume 2

Ferns and Allied Plants, Conifers and Monocotyledons

Volume 1 is an introduction only to the series on Victorian plants and Volume 2 is the first of three volumes describing plant species. The presentation is excellent as it concerns the non scientifically trained reader. The plant is first briefly described in the simplest botanical terms followed by a short readable reference to parts of interest. For each species there is a map and reference to distribution and many have exceptionally clear line drawings. The book is designed as a reference to all especially those amateurs who are not put off by the essential minimum botanical terms. The book is really a must for those interested in ferns or in orchids. The line drawings of the orchids alone make the book a particularly valuable reference. Volume 2 has 945 pages and is excellent value for \$165, post free. Volume 1 is available for \$75.00.

Recent Changes in *Gompholobium* and *Pultenaea* Based upon *Muelleria* 8(3) 1995

by Michael Crisp and M. G. Corrick

Gompholobium inconspicuum is a diffuse wiry erect, spreading or prostrate shrub with stems to 45 cm long. It is closely related to *G. uncinatum*. Features held in common and which distinguish these from other *Gompholobium* species include a low diffuse habit, trifoliate leaves with linear uncinata leaflets, glabrous but densely tuberculate young stems, small flowers to 1 cm long and a glabrous keel. It has yellow petals whereas *G. uncinatum* has more or less red petals and appears to lack stipules. Other species that appear similar to *G. inconspicuum* are *G. minus* and *G. ecostatum* but these have larger flowers and dense short spreading hairs along the stems. The most distinguishing feature of *G. inconspicuum* is the strongly recurved stipules.

Pultenaea williamsonii, previously a variety of *P. paleacea* it is distinguished by its broad, flat, widely and irregularly spaced leaves which are usually more than 3 mm wide and less than six times as long as wide and by the broad bracteoles 1.5–2 mm wide. The confusion with *Pultenaea williamsoniana* (confined to the Grampians) is regretted.

Pultenaea sericea, previously a variety of *P. paleacea*, is distinguished by its narrow linear leaves not more than 3 mm wide and more than eight times as long as wide and by the narrow bracteoles, 0.75–1 mm wide, attached 2–3 mm above the base of the calyx tube. The pale straw coloured floral bracts are also distinctive, the longest exceeding the length of the calyx in contrast to the broad shorter floral bracts of *P. williamsonii*.

Pultenaea forsythiana was previously included under *P. juniperina* from which it differs chiefly in the leaves that are wider above the middle, narrowing gradually towards the base and with a mucronate tip.

Pultenaea mollis was previously included under *P. viscosa*. It is distinguished by having smaller bracteoles, bracts and stipules and narrower leaves than *P. viscosa*. The plant is widespread in the Grampians. ■

The Australian Bush Heritage Fund — is a national non-profit organisation devoted to the protection of ecologically significant areas and the diversity of life they support. Modelled on the highly successful Nature Conservancy in the US. The objective is to identify the best and most important examples of Australia's ecosystem types and rare species habitats and to provide protection for the most threatened of these through acquisition by gift or purchase. Land bought by the Bush Heritage will remain secure from destruction irrespective of the vagaries of government or industry pressure. It will be accessible to all who delight in the preservation of nature and will be here for future generations to delight in as well. It will remain an asset, not only for Australians, but for the planet.

Bob Brown, prominent Tasmanian conservationist, used his 1990 Goldman environmental prize money of \$49,000 and, borrowing the remainder from friends and the banks, purchased at auction two privately-owned forest blocks (a total of 241 hectares) on the flanks of Drys Bluff, the most north-easterly projection of the Great Western Tiers in Tasmania. With the purchase of these forest blocks, Bob Brown and friends have now established the Australian Bush Heritage Fund, to buy and protect land of out-standing conservation value. Bush Heritage has a board of directors, a list of prominent Australians as patrons, a panel of scientific advisors and some 2,000 supporters. All donors will receive a regular newsletter and will be kept updated on other land purchased by Bush Heritage. Please give generously.



△ *Pultenaea paleacea*

Photography by Colin Woolcock

Pultenaea mollis ▽



A New Wildflower Cultivar

***Scaevola* 'Blue Fandango'** is a selection from a batch of seedlings raised from *Scaevola aemula* 'Diamond Head'. Maintaining its prostrate habit, it is more compact, tight enough to form a low shrub. The flower colour is purple rather than mauve, the throat being marked with yellow, not white. Photograph on page 172.

In cultivation it has proven to be far hardier than *Scaevola* 'Diamond Head' or *Scaevola* 'Purple Fanfare', withstanding both colder conditions and frosts to at least -2°C , as well as increased summer humidity and reasonable dry conditions; either is normally enough to kill *Scaevola* 'Purple Fanfare'. It forms a compact heavy flowering shrub to 0.4×0.6 m that begins flowering freely while in the pot for 6–8 months of the year. Report by Neil Marriott who developed this new cultivar.

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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.–5.00 p.m. Fairhill Native Plants, Fairhill Rd., Yandina, Qld 4561. Tel. (074) 46-7088.

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Australian *Brachyscome*

by Australian Daisy Study Group

This 270 page book (A4 page size) has 8 pages of coloured photographs. It describes 74 species of *Brachyscome* with their varieties and forms and cultivars, illustrated by 100 full page sketches drawn full size. Enlarged sketches $\times 20$ of their fruit, capably done by botanical artist, Gloria Thomlinson will simplify identification. A lift out chart (90 $\times$ 60 cm) of fruit species is a major feature of this easily read book. It is available from the Australian Daisy Study Group, C/- 38 Pinewood Drive, Mount Waverley, Victoria 3149.

"Australian Plants", The Australian Flora Periodical

Past issues are available in volumes 4-10/11, each volume is bound and cased, beautifully presented with green vinyl covering and gold lettering for \$21.00, plus \$5.00 post. Volumes 12, 13, 14 and 15 are available only from The Editor, Australian Plants, 860 Henry Lawson Drive, Picnic Point 2213, for \$40 each plus \$6 postage.

Binders to hold the eight separate issues of Australian Plants in a volume are \$5.50, plus \$3 post.

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Flinders Fire
by Peter Carrigy

A landscape vessel
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