

PUBLISHED BY THE SOCIETY FOR GROWING AUSTRALIAN PLANTS IN 11,000 COPIES

# Australian Plants

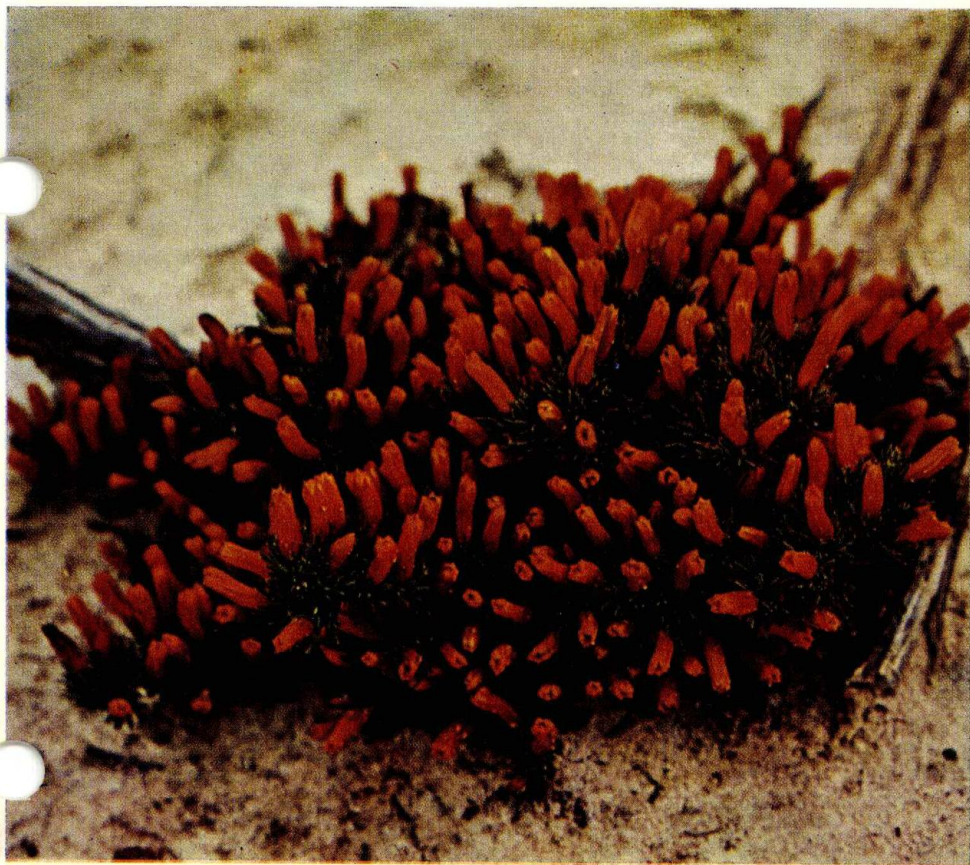
Registered at G.P.O., Sydney, for transmission  
by post as a periodical.

MARCH, 1970

Volume 5, No. 42

Volume 5 will comprise issues 37-44

Price: 30c



*Photography by J. Wrigley*

## LESCHENAUTLIA TUBIFLORA

AUSTRALIAN WILDFLOWERS FOR ROCKERIES

AUSTRALIAN ORCHIDS—METHODS OF PROPAGATION AND CULTURE

## WILDFLOWERS FOR THE GARDEN—CONTENTS OF THIS ISSUE

Many wildflowers have considerable horticultural value. This issue presents some suitable for rockeries and small gardens but other plants are described also:

- CORAL TREES OF AUSTRALIA—Street Trees—page 283.  
 EPACRIDACEAE—The Heaths—*Sphenotoma*, a W.A. Epacrid—254, 257.  
 EUCALYPTS IN COLD COUNTRIES—Gum trees for rigorous conditions—263.  
 GOODENIACEAE—LESCHENAUTLIA—Ideal garden plants. See Family Goodeniaceae below.  
 IRIS FAMILY PLANTS—*Iridaceae*—243, 274.  
 KANGAROO PAW FAMILY—*Haemodoraceae*—244, 246.  
 LILY FAMILY PLANTS—*Liliaceae*—262, 273.  
 ORCHIDS—*Dendrobium kingianum*—275, 276, 277.  
     *Gastrodia*, the "Potato Orchids"—278, 279.  
     Terrestrial orchids, *Caladenia*, *Glossodia*—288.  
     "Orchids From Seed"—Details of a method by a housewife—270.  
 PROTEACEAE—*Dryandra*, *Grevillea*, *Petrophile*—pp. 250.  
 PUSSY TAILS—*Ptilotus*—pp. 246, 249.  
 STURT'S DESERT PEA—*Clianthus*, Cultivation in container—pp. 259.  
 TASMANIAN WILDFLOWERS—*Isophysis*, pp. 273—Wattle, pp. 280.  
 WATTLES—The Wattles of Tasmania, pp. 280.  
 CULTIVATION & PROPAGATION OF WILDFLOWERS  
     Each article above gives information on cultivation and some on propagation but very interesting special articles are:  
 SEED GERMINATION—A Novel Small Capillary Bed—pp. 260.  
 INSECT PEST CONTROL—By the use of insects—pp. 276.

## THE PLANT FAMILY GOODENIACEAE

- Anthotium humile* R.Br. Perennial herb flowers pink or white/pink. *A. rubriflorum* (F. Muell.) Benth. See page 246.  
*Calogyne*. Herbs with yellow flowers. Eight species across northern Australia.  
*Catosperma goodeniacea* (F. Muell.) Krause. The only species of the genus.  
     A prostrate hairy leaved herb with yellow flowers growing in spinifex areas.  
*Dampiera*. There are 58 species of which 40 are restricted to the south-west corner of Australia. Most are beautiful rock garden plants as described and illustrated in colour on page nos. 251, 252.  
*Diaspasis filifolia*. The only species is described on page 246.  
*Goodenia*. There are 115 to 120 species only one of which is found outside Australia. 57 are confined to the south-west corner of Australia but others are quite widespread. Two species are described on page 247.  
*Leschenaultia*. There are 19 species, only one of which is found outside Australia. The species *L. biloba*, "Blue Leschenaultia" has made these plants quite famous. See page 248.  
*Neogoodenia minutiflora* C. A. Gardn. & A. S. George. The only species of the genus is recorded as a prostrate annual with inconspicuous flowers growing in mulga country of south-western Australia.  
*Pentaptilon careyi* (F. Muell.) E. Pritzel. The only species of the genus is an erect herb 6-16 inches high with yellow flowers growing in the sand heath country between Shark's Bay and Northampton of S.W. Australia.  
*Scaevola*. Of the 70 Australian species 50 occur in the S.W. Beautiful small plants, some described and illustrated on page no. 253.  
*Selliera exigua* F. Muell. is a prostrate dwarf herb with blue flowers found in the S.W. Will readers please report on the only eastern species.  
*Symphobasis*. The only two species are found in the S.W. *S. alsinoides* S. Moore is a tufted herb with yellow flowers and *S. macroplecta* (F. Muell.) Krause is a viscid annual with yellow flowers.  
*Velleia*. The 19 species are widespread throughout Australia. Two species are described on pp. 247 and *V. spatulata* is described and illustrated in full colour in our No. 37 issue.  
*Verreauxia*. The three species are small woody plants with yellow flowers all being confined to S.W. Australia. *V. paniculata* is a subshrub or herb with a basal rosette of leaves. *V. reinwardtii* is a slender shrub to 3 feet and *V. villosa* is similar.

## WILDFLOWERS FOR THE ROCKERY

John Wrigley, Curator, Canberra Botanic Gardens

Many Australian plants have enormous potential for rockeries, but until now have been tried only rarely in cultivation. At Canberra Botanic Gardens, many species are now undergoing trials and this article describes some of those which have shown the most promise.

It should be noted that when a species is declared frost hardy, it means that it is hardy in Canberra Botanic Gardens. Minimum temperatures, here are usually not as low as those experienced in other parts of Canberra. As a guide a frost hardy species is one that will not be damaged by grass temperatures of 20°F (7°C).

### SOME NATIVE IRIS

#### *Diplarrena moraea* (Butterfly Flag or White Iris)

As the common name suggests this plant is a member of the family *Iridaceae*. It is common in Tasmania and extends into Victoria and the South Coast of N.S.W. *D. moraea* has been in cultivation in Canberra for a number of years and for the last two years has been successfully used in mass plantings. Propagation is from seed which sets readily and germinates well. The species flowers best in full sun, responds to watering and is frost hardy. A well grown plant forms a thick clump, 6" or 8" across in a few years with thin, stiff iris-like leaves about 18" long. The white flowers are borne on 2 ft. stems in Spring and are displayed well.

#### *Patersonia occidentalis* (Native Iris)

This is a common plant of the South West Province of Western Australia. It bears a profusion of purple flowers during spring and early summer. As for all *Patersonia*, the best method of propagation is from seed which germinates readily without treatment. A massed planting at 15" centres has flowered well this spring (1969) after being planted in spring of 1968. The species is frost hardy, enjoys full sun and appears to stand dry conditions once established. Several plants have been noted to die back in early December 1969, but some of these are shooting again from the base. The cause of die back has not yet been ascertained. The species makes an ideal individual rockery plant, with a long flowering period. Flowering height 12"-15". See colour plate on page 245.

#### *Thysanotus juncifolius* (Fringe Lily or Fringed Violet)

This delightful almost leafless plant of the East Coast grows best in full sun and damp conditions. A massed display in the car park area of the Botanic Gardens has proved a spectacle this spring and summer. The purple flowers open in the mornings and flowering continues for some months. Propagation is easy from seed and the species is frost hardy. In a rockery, single plants or groups of 3 or 4 at 9" centres would make attractive placements. Flowering height is about 12".

#### *Thysanotus multiflorus* (Fringed Lily)

A Western Australian member of the genus which is more showy as an individual plant than the former species, but does require some protection from frost. The species will survive the winter in Canberra if it is covered with hessian at night or if it is grown under some tree cover or against a wall. Again propagation is from seed but unlike *T. juncifolius* it prefers a drier, well drained situation again with full sun. Leaves are reed-like and about 9" long and flowers are borne in Spring and Summer in closely packed heads on stems about 12" high.



Colour photography by P. Fetherstone

**BLACK KANGAROO PAW (*Macropidia fuliginosa*)**

This curious flower is not actually black, the petals and stamens being green but densely covered with black hairs. It is placed in a separate genus from the other Kangaroo Paws and has much larger seeds.



**MANGLES' OR KING'S PARK  
KANGAROO PAW**

(*Anigosanthos manglesii*)

Is Western Australia's Floral Emblem. It is well distributed throughout the south-west but is particularly common in, and characteristic of, the bushland areas of King's Park.

**WHAT ROCKERY IS  
COMPLETE WITHOUT  
KANGAROO PAWS**

Our Vol. 2 No. 6 issue describes all the paws and gives details of their cultivation.

## A LOVELY PLANT FOR THE ROCKERY



Photography by J. Glass

### *Johnsonia pubescens*

Characteristic of the three species in the genus all of which only grow to two feet, this plant is an ideal character form for a rockery. *Johnsonia lupulina* is described on page 262. The other species *J. acaulis* is similar although sometimes a little larger.



### *Patersonia occidentalis*

A typical "native iris". See page 243 for description or issue No. 38 for a closer photograph of this type of flower.

Block donated by N. B. Thomson.

**KANGAROO PAW FAMILY PLANTS FOR ROCKERIES (Haemodoraceae)**

What rockery is complete without Kangaroo Paws. See pp. 244.

***Conostylis aculeata***

A number of *Conostylis* species are under trial at Canberra and one species, *C. aculeata*, has been used successfully in a massed display for two years. Growing in one of the coldest and most open sections of the Gardens, these plants have withstood grass temperatures of 18°F and have shown no ill effects. The yellow heads of flowers were borne in profusion this Spring on stems 12" high. Plants may be grown singly or massed at 15" centres in a well drained situation. Propagation is from seed and flowering does not occur until the second season. Other species on trial are *C. setigera*, *C. caricina*, *C. candicans*, *C. setosa* and *C. stylioides*.

***Blanca canescens* (Red Bugle)**

The superficial appearance of this quaint little plant is reminiscent of the Christmas Bells (*Blandfordia*) of the Eastern states. In fact, the species is in the Kangaroo Paw family (Haemodoraceae) and seems to grow well in a well drained medium.

**PUSSY TAILS*****Ptilotus exaltatus***

Belonging to the *Amaranthaceae*, the genus *Ptilotus* includes a number of valuable but almost completely neglected garden plants, particularly suited to dry areas. *P. exaltatus* is a perennial with dark green leaves and long spikes of feathery pink flowers in spring and summer. The species has been grown successfully in Canberra from both seed and cuttings and plants are now flowering in large containers with flower spikes 18" high. It is not yet certain if the species is completely frost hardy. Propagating material for this species was collected from near Kimba (S.A.) and in the Flinders Ranges.

***Ptilotus spathulatus***

This species forms a much smaller plant than the former but makes an interesting and attractive item for the front row of the rockery. From a central rosette of leaves, the flowering branches are pushed out some 6" from the centre. The flowering spike is then sent up vertically as if coming straight out of the ground. Flower colour is greenish and the spike is about 3" long with again a feathery texture. Propagation is from seed and plants will flower within 6 months of sowing. Frost resistance has not yet been established. See page 249 for other species and colour plate.

**GOODENIACEAE—IDEAL FOR SMALL GARDENS AND ROCKERIES*****Diaspasis filifolia***

A member of the *Goodeniaceae*, this plant would seem to be ideal for the soggy corner of the rockery. It is endemic to the S.W. Province of W.A. and grows on the edge of swamps often with its roots in water. Plants in Canberra have been propagated from cuttings from which they seem to strike readily. The species displays masses of white star-like flowers in Spring and Summer and specimens here have flowered well in plastic bags in their first season. It is not yet certain if this species can withstand frost but it has been determined that ample watering is a must for continued growth. A fully grown plant may reach 12" high and 12" diameter.

***Anthotium rubriflorum***

Another member of the *Goodeniaceae*, this little plant has heads of brilliant red flowers in the Spring and Summer on stems about 8" high. The plants growing in Canberra were collected as transplants from the Lake King area of West Australia and are still in pots. It is hoped that

these plants will set seed this year to enable further propagation to be carried out. Little is known of the species requirements but from its habitat, a well drained, dry and sunny position is suggested. Superficially the flowers are reminiscent of the exotic, red *Kalanchoes* but the inflorescence arises from a basal rosette of leaves.

### ***Dampiera diversifolia***

This prostrate, dark blue, flowered plant is becoming well known to many native plant enthusiasts. Like most of the *Dampieras*, it has a suckering habit and a single plant will cover 2 or 3 square feet in a year under favourable growing conditions. Full sun and plenty of water seem to be ideal for best growth in Canberra. The species is also frost hardy. Propagation is from cutting and late work (as yet unpublished) indicates that use of Seradix (hormone) on this species promotes rooting. As the plant is becoming readily available it should be in every garden. Flowering period is mainly spring and summer but odd flowers may be seen at other times of the year.

### ***Dampiera wellsiana***

No *Dampiera* is more showy than this somewhat unusual member of the genus. Flowering spikes come from a rosette of greyish leaves on the ground. A well grown plant in nature may be 12" or 15" across and 9" to 12" high, rounded and covered with heads of blue flowers. The colour is variable but always considerably paler than the former species. Plants now in pots in Canberra were propagated both from transplants and cutting material obtained from removing rosettes from larger plants. Plants are not thriving although a number have flowered. Natural conditions suggest that the species requires dry, well drained sand and perhaps winter conditions in Canberra have kept plants too wet. The species is well worth persevering with and perhaps future reports may be more encouraging.

### ***Goodenia hederacea* (Braidwood form)**

This is a very variable species and undoubtedly some forms show much more horticultural merit than others. The best form that has been found so far was one growing by the roadside between Braidwood and Nerriga. It is a tightly growing prostrate ground cover, very floriferous during the summer months but with some flowers for most of the year. It may be propagated from cuttings and does well in full sun cascading over a rockery wall. Flowers are yellow and the species is frost hardy.

### ***Goodenia affinis***

A small perennial with densely woolly leaves forming a rosette at the base, this species is useful to fill the small rock pockets in a rockery. Plants in Canberra were grown as transplants from West and South Australia but it would be expected that propagation from seed could be readily achieved. The yellow to apricot flowers are borne on 4" stems in spring and summer. No information is yet available as to frost hardiness.

### ***Velleia paradoxa***

*Velleias* belong to the family *Goodeniaceae* and are closely related to the *Goodenias*. *V. paradoxa* is a common species widely spread over the southern parts of Australia. Plants in Canberra were propagated from seed collected locally and have been used for 2 years in a massed planting in the visitor's car park. Yellow flowers are displayed on 12" stems rising from a rosette of radical leaves in Spring and Summer. The species could be useful as a "fill-in" for the rockery.

Issue 37, pp. 13 for a colour plate of a similar species from Queensland.

### ***Velleia trinervis***

This species is more floriferous than the former but has not been used in the Gardens for sufficient time to prove its hardiness. Flowers are smaller

than *V. paradoxa* and slightly more orange in colour with some darker markings. Plants were obtained as transplants from W.A. but again propagation from seed should be satisfactory.

### ***Leschenaultia tubiflora***

This outstanding species rivals the established garden favourites *Leschenaultia biloba* and *L. formosa*. Forming a compact mat, some 9" to 12" diameter, the species has a wide variety of colour forms ranging from cream through pinks to red and with many differing bicolour forms. Flowers are tubular and stand erect above the tight mat of foliage, the bicolour forms resembling small lighted cigarettes glowing in the sun. Propagation is easy from cuttings and preliminary indications point to a good tolerance to frost. Built-up sand supplying perfect drainage would seem essential for good cultivation. Plants have only been in the open garden for several months but no losses have yet been recorded. This species will develop into one of the most sought after rockery plants of the future.



Photography by C. D. Walton

### ***Leschenaultia tubiflora***

The front cover shows a red form of this plant and the closer up photograph of the orange and yellow form above will give a clearer idea of how the flowers look. These colour forms with many other variations are found in *Leschenaultia formosa* also an ideal plant for rockeries. The queen of *Leschenaultia* however is the "Blue *Leschenaultia*", *L. biloba*.

***Ptilotus obovatus***

Very widely spread over the dry areas of Australia, this shrubby member of the genus possesses silvery grey foliage and masses of small pink feathery flowers. It strikes readily from cuttings and seed germinates well. Plants have been in the open ground in Canberra for nearly 12 months and have grown well and flowered. They have received some protection from direct frosts from an overhanging tree so it is not certain whether they are completely frost hardy here. A well grown plant will form a rounded shrub about 2 ft. high and flower for most of the year. Page 246 for other species.

(Continued on page 266)



Photography by J. Wrigley

This plant was found growing along the roadside near Kimba, Western Australia, is typical of the effect that can be obtained with our "Pussy Tails", species of *Ptilotus*. Thirty species of *Ptilotus* are described with many illustrated in colour in our No. 31 issue—Vol. 4. A feature of our No. 31 issue is the descriptions and colour plates of species of *Hypocallyma* beautiful rockery plants.

## WEST AUSTRALIAN PLANTS WITH HORTICULTURAL POTENTIAL

by I. G. Holliday

The species described briefly in this article represent just a very small sample of the many Western Australian plants which have great potential as garden subjects but which are rarely seen in cultivation. This is not an attempt to elevate these species above many of the other western wildflowers which have not become well known—they are merely some that mainly happened to be in flower during the author's trip to Western Australia and which appealed for various reasons. In many cases there is no evidence to assess a particular plant's reliability away from its wild habitat—the aim is to interest some readers into attempts to obtain and grow plants of these species if at all possible so that more knowledge can be gained on their potential as garden plants.

### PROTEACEAE

#### *Dryandra*

These need no introduction to the native plant enthusiast but some of the very dwarf species took the eye as potentially fine pot or tub plants because of their lovely foliage.

*Dryandra pteridifolia* particularly appealed for its rich green fern-like leaves arising from a common base. The bush only grows 12"-18" high and inhabits sandy soils in the south western districts.

*Dryandra calophylla* appealed for the same reasons although the leaf shape is quite different and the new leaves a deep purplish-red in colour. It is found in the Stirling Range.

Both species have yellow flowers although they were not flowering during this trip.

#### *Grevillea*

There are a number of fine yellow flowering grevilleas which, to my knowledge, have not become well known even among native plant enthusiasts. Three we saw in the eastern sand plains (rainfall 10"-15") were:-

*Grevillea biformis* a bushy shrub 8' high with very narrow needle-like leaves and numerous heads of bright yellow cigar-shaped flowers which make a conspicuous show in spring. Individual flowers are about 3" long x  $\frac{3}{4}$ " in diameter. See page 252 for a colour plate.

*Grevillea integrifolia*, usually a bush only 3'-6' high with silvery-grey, but hairy leaves and clustered heads of narrow, cigar-shaped lemon yellow flowers on long erect stems arising above the foliage.

*Grevillea shuttleworthiana* is somewhat similar but the grey-blue leaves are glabrous and more rounded (cuneate), sometimes heart-shaped (cordate).

*Grevillea annulifera* is another *Grevillea* noted for the beauty of its flowers but seldom seen away from the wild. It is a tall shrub with very prickly pinnate leaves, spectacular when in flower. The flowers which appear in large plumes high above the foliage, are creamy coloured turning reddish-gold as they age. The seed capsules of this *Grevillea* are round about the size of a large grape. The plant is found in sandy soils in the Geraldton-Murchison region.

#### *Petrophile*

Fine plants noted for their drumstick like flower heads and seed capsules.

*Petrophile media*. This plant (which may not have been correctly identified) was prevalent alongside the Great Eastern Highway from Kalgoorlie to Perth in the sand plain areas near Tammin. In flower, as we saw it, it was quite

spectacular. Usually a bush no more than 3' high by about the same across it was completely covered with open bright golden flowers with orange styles. The narrow leaves were quite prickly and uninteresting and when not in bloom this species may have little to recommend it as a garden plant. Seed collected took 3 years to germinate and the seedlings never grew beyond the cotyledon stage.

*Petrophile longifolia*. This species was found near Albany and appealed as a good rock garden plant due to its small rounded tussocky habit and long, terete leaves. The yellow flowers which cluster at the base of the leaves in an unusual manner add interest during spring months.

## GOODENIACEAE

The Goodeniaceae family produce some of the most colourful dwarf flowering species in Australia, outstanding among these being *Dampiera*, *Leschenaultia* and *Scaevola*. See pages 242, 246 and 253.

### Dampiera

Named after William Dampier who collected the first species (*Dampiera incana*) and was particularly impressed with the wealth of blue flora in "New Holland", the *Dampiera* species are virtually unsurpassed in their contribution of deep blues and purples (also yellow in *Dampiera luteiflora*) to the Australian bush and roadsides.

*Dampiera* practically always inhabit sandy soil which gives them a free root run to produce underground suckers from which new plants are formed in a chain-like process (in many species). Given a sandy top soil among rocks in the garden this characteristic can produce plants or runners in the most unexpected places and which can give a wild, colourful look to the rock garden during the flowering season (usually late winter-spring).

My experience with a few species has led me to believe that many *Dampiera* would be easy to grow if given about 12 inches of sand over normal soil. Their suckering habit provides a ready-made method of procuring additional plants. The greatest problem with most western species is obtaining that first plant.

There are about 50 species native to Western Australia many of which appealed as ideal subjects for the native garden. Unfortunately we were not able to identify some of these during our travels in that State. One beauty encountered only a few miles from Kalgoorlie formed a semi-spherical or domed bush 3'-4' in diameter by about 2' high entirely covered with sky-blue flowers which contrasted magnificently with the orange coloured soil in which it was growing.

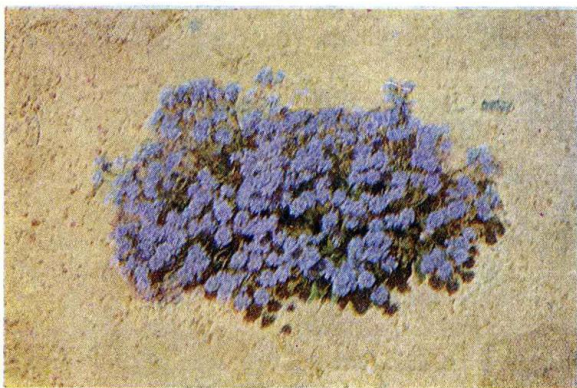
Some fine species which were identified included:-

*Dampiera diversifolia*. A completely prostrate, mat forming plant with small purple-blue flowers and small, bright green, leaves. We found it clothing road-side verges in sandy soils abutting the Stirling Range but do not know its full habitat range.

*Dampiera luteiflora*. An attractive species to 2' high which differs from other members of the genus in that its flowers are bright yellow rather than the characteristic blue or purple. These contrast well with the grey-coloured foliage which is soft and woolly. It is native to the sand plains extending from the Goldfields region westwards.

*Dampiera wellsiana*. The bright blue or purple flowers of this species are in clustered heads on erect stems which rise from a base of broad, tufted, but hair-less leaves. A good rock garden plant to 12 ins. high naturally found in similar localities to *Dampiera luteiflora*.

*Dampiera eriocephala*. A very similar species to the preceding but easily distinguished from it by its leaves which are clothed in fine hairs. It inhabits gravelly soils from Tammin to the Stirling Range.



### *Dampiera wellsiana*

Unfortunately the photograph is not quite in focus but it gives an excellent idea of the form of this beautiful plant.

Block donated by  
N. B. Thompson.

### *Grevillea biformis*

See page 250 for a description of this plant and other yellow flowered Grevillea.



Photography by G. D. Walton

## Scaevola

There are many fine *Scaevola* species in Western Australia, two of which we noted particularly for different reasons.

*Scaevola oxyclona*. This species inhabits very hot, dry, alkaline soils in the Goldfields area and further east and for this reason should be suited to many gardens in South Australia. It is a dense, prickly bush, 2'-3' high by about the same across, with masses of small, mauve, fan-shaped flowers during spring.

*Scaevola phlebopetala*. This was found in the higher rainfall Darling Range where it formed a lovely prostrate trailing plant which flowered well even in very shady situations. Flowers are bright purple with a yellow centre and the fleshy, lobed leaves are covered with soft hairs. It flowers in spring and through the summer months.

(Continued on page no. 261)



Photography by Ken Newby

### *Scaevola crassifolia*—Thick-leaved Fan Flower

A spreading shrub 2 to 3 feet, flowers being the size shown. It inhabits many miles of Southern Australian coastline forming spreading bushes several feet across but rarely more than 2 feet high. The flowers are typical of the species in the genus and it is easy to see why they have become known as the "Fan Flowers". Most *Scaevola* are blue or mauve and species are found in the bushlands in many areas of temperate Australia.

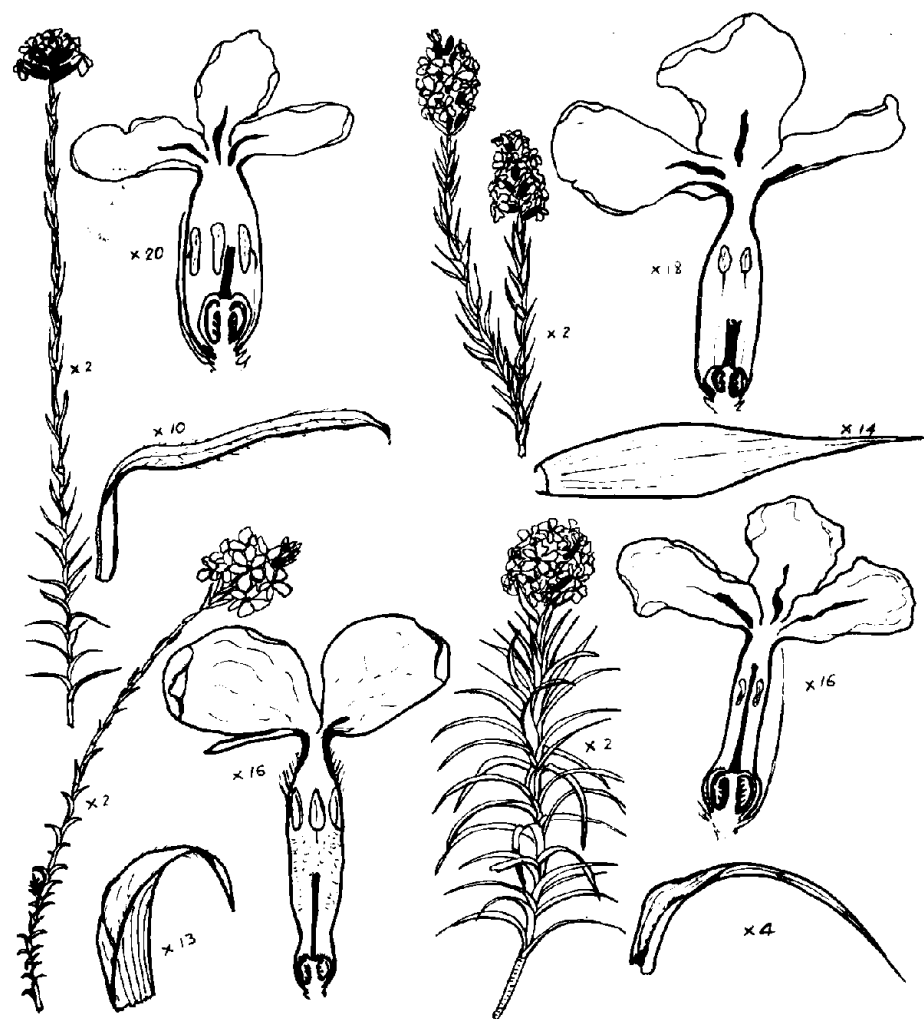
*Scaevola crassifolia* has evolved for the rigorous conditions of the coast and its leaves are thick and relatively large making a good ground cover. Other species are more delicate, free flowering and easy to grow.

# SPHENOTOMA (R.Br.) G. Don

A series on Epacridaceae by Betsy R. Jackes (Mackay, Queensland)

*Sphenotoma*, which is endemic to Western Australia, is very closely allied to *Dracophyllum*. The most conspicuous difference is the constriction of the throat of the corolla-tube by longitudinal folds of tissue which arise on the base of the lobes. The dorsifixed anthers frequently adhere around the stigma, which is five pronged, the prongs separating as the flower matures.

Habitats range from swamps to well-drained mountain slopes. Of the six species, *S. squarrosus*, occupies the greatest variety of habitats, being found in swampy areas as well as on exposed mountainous areas.



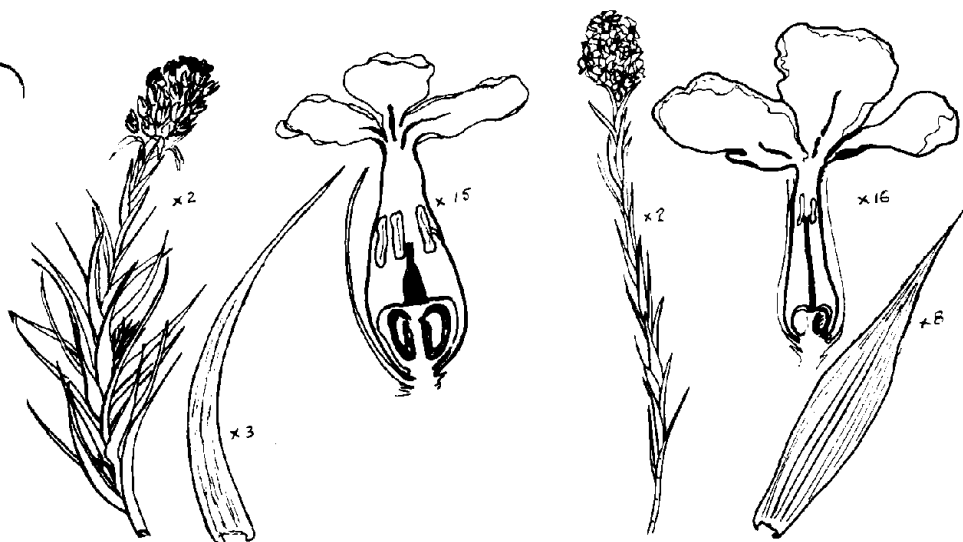
Top: *Sphenotoma parviflorum*  
Bottom: *Sphenotoma gracile*

Top: *Sphenotoma capitatum*  
Bottom: *Sphenotoma squarrosus*

The flowers of all species are white, flowering occurs in late spring and early summer.

## KEY TO THE SPECIES

- |                                                                                                           |                              |
|-----------------------------------------------------------------------------------------------------------|------------------------------|
| A. Leaves on flowering branch closely appressed to the stem .....                                         | B                            |
| Leaves spreading and extending to base of inflorescence .....                                             | D                            |
| B. Corolla-lobes nearly as long as the tube .....                                                         | C                            |
| Corolla-lobes much shorter than the tube; upper leaves $\pm$ straight, under 1.5 cm. long .....           | 1. <i>S. parviflorum</i>     |
| C. Leaves straight 1.5-2.5 cm. long .....                                                                 | 2. <i>S. capitatum</i>       |
| Leaves recurved, less than 1 cm. long .....                                                               | 3. <i>S. gracile</i>         |
| D. Corolla-lobes much shorter than the tube. Spikes mostly cylindrical. Leaves usually 2-3 cm. long ..... | 4. <i>S. squarrosus</i>      |
| Corolla-lobes nearly as long as the tube. Spikes mostly ovate .....                                       | E                            |
| E. Leaves mostly over 5 cm. long, spreading and recurved .....                                            | 5. <i>S. drummondii</i>      |
| Leaves 1-2.5 cm. long; straight or scarcely recurved $\pm$ spreading ...                                  | 6. <i>S. dracophylloides</i> |

*Sphenotoma drummondii**Sphenotoma dracophylloides*

## NOTES ON THE SPECIES

1. *Sphenotoma parviflorum* F. Muell.

An annual, this small, slender shrub may grow to 30 cm. high. Long thin hairs are sometimes found on the leaves, particularly on the margins. The corolla-tube is often more than twice the length of the corolla-lobes.

2. *Sphenotoma capitatum* (R.Br.) Lindl.

This species favours moist areas where it attains its maximum height, sometimes exceeding 1 m. The appressed leaves below the inflorescence are less than 1 cm. long, whilst the others may be up to 2.5 cm. long and either spreading or erect. The flowers are in globular or ovate-oblong heads.

3. *Sphenotoma gracile* (R.Br.) Sweet—See over page.4. *Sphenotoma squarrosus* (R.Br.) G. Don

A poorly branched shrub ( $\pm$  1 m. high) with spreading, recurved leaves. The young shoots as well as the inflorescence are always somewhat pubescent, as are the leaf margins if not the entire leaf. The flowers are in dense cylindrical spikes 2.5 cm. long. The ovary is slightly pubescent.

5. *Sphenotoma drummondii* (Benth.) F. Muell.

Favours exposed montane areas where it forms dense cushions. A robust, much branched shrub with long leaves it may grow to 30 cm. high with a diameter to 1 m. The large flowers form ovate-oblong spikes often exceeding 2.5 cm. long.

6. *Sphenotoma dracophylloides* Sond.

Similar to *S. capitatum*, but the flowers are larger and the leaves are spreading to the base of the spike, as well it prefers a drier habitat. Average height is 60 cm.



Photography by Ken Newby

***Sphenotoma gracile***

3. *Sphenotoma gracile* (R.Br.) Sweet

Prefers moist localities within several miles of the coast; although not confined to these areas. This slender, often straggly shrub usually grows to about 50 cm. but occasionally may reach 1 m. Hairs may occur on both surfaces of the corolla-tube as well as on the leaves.

## SPHENOTOMA

by Ken Newby

This genus of six species belongs to the family Epacridaceae. It is confined to Western Australia and is found almost entirely in damp places on the low-lying plains of the south coastal and the upper slopes of mountain ranges. In common with *Andersonia* and *Cosmelia*, which are members of the same family, the leaves are stem sheathing in their lower portion. The petals of the flower are united from  $2/3$  to  $3/4$  of their length to form a corolla. It is usually slightly constricted at the base and just below where the petals become free and bent out at right angles. Flowers are all bright white in colour and usually surrounded by fairly rigid and triangular bracts about the same length as the corolla and may be brown, greenish or cream in colour. The flowers are usually in fairly dense, terminal heads and as they are bright in colour, last for a considerable period, they should be ideal for cut flowers.

Seed has only been observed of *Sphenotoma drummondii* and it is small, angular and light yellowish brown in colour. Little or nothing is known about the germination of seed of this neglected genus or propagation by cuttings. All species are very ornamental in flower and most have interesting foliage. As some occur in small pockets of soil in cracks in the rocks, often in shade, they may be suitable as pot plants.

### *Sphenotoma capitatum*

A single or few stemmed, not much branched, upright or spreading, slightly open to open, rigid and leafy shrub or undershrub 1 to 2 ft. high and 6" to 12" across. It is a common species occurring on either coastal areas of sand which are usually associated with some seepage, or inland on sand or stony sand; usually amongst other dense or fairly dense low growing shrubs in 20" to 35" rainfall. Occasionally found growing on gravel ridges as a smaller plant about 9" high. Leaves are  $1/4$ " to  $5/8$ " long,  $1/8$ " wide at the base, tapering to a point, upright or recurved, flexible to fairly rigid, slightly pungent to pungent and dull to medium green in colour. Flowers are at first basically tubular,  $1/4$ " to  $3/8$ " long,  $1/8$ " or slightly more in diameter, opening abruptly into 5 petals which form a flower  $1/4$ " to  $3/8$ " diameter, bright white in colour; surrounded the full length of the tube by brown and narrow bracts, single, sessile, axillary, opening from the base outwards and forming fairly dense spikes,  $1/2$ " to 3" long and at the ends of almost all of the branches during spring.

A very good ornamental species with interesting and attractive foliage and very attractive flowers. Reasonably hardy, will stand some poor drainage and should be suited for deep sand or sandy loam. Ideal for cut flowers.

### *Sphenotoma dracophylloides*

A single or few stemmed, little branched, rigid, upright, open, leafy shrub or undershrub from 1 to 5 ft. high and 6" to 18" across. Found growing on the plains, usually around or near the base of mountains; on the plains amongst other low to medium growing scrub or occasionally as an understory to medium sized trees, on sand or sandy loam in 20" to 25" rainfall. The leaves are  $1/2$ " to  $5/8$ " long,  $1/8$ " wide at the base, tapering to a point, covered with very short hairs on the lower portion, recurved, flexible and light green in colour. Flowers are basically tubular,  $1/2$ " long,  $1/8$ " diameter, opening abruptly into 5 petals which form a flower  $1/4$ " diameter,

bright white in colour; surrounded the full length of the tube by cream triangular bracts, single, sessile, axillary, forming dense and leafy flower spikes 1" to 2" long at the ends of the few branches during the spring.

A very good ornamental species with attractive foliage and very good in flower. Fairly hardy, requires reasonable drainage and should be suited for deep sand or sandy loam. Ideal for cut flowers.

### ***Sphenotoma drummondii***

A few stemmed, well branched, mounded, dense, leafy shrub or undershrub 6" to 10" high and 1 to 4 ft. across. Found growing on the upper slopes and summits of mountains above 2,000 ft. or more, amongst rocks or on cliff faces which are often windswept, in loam or sandy loam in 20" rainfall. Leaves are 1" to 2" long,  $\frac{1}{4}$ " wide at the base, tapering to a point, with fine hairs on the margins, recurved, flexible, crowded on the last 2" to 3" of the branches and light green in colour. Flowers are basically tubular,  $\frac{3}{8}$ " long,  $\frac{1}{4}$ " diameter, opening abruptly into flowers  $\frac{1}{2}$ " diameter, bright white in colour; surrounded by triangular bracts which are slightly longer than the tube and brown in colour; forming dense heads or spikes which are 1" to 1½" diameter, 1" to 2" long, held 2" to 4" above the foliage and numerous to very numerous during spring.

An outstanding ornamental species with good habit, good foliage and very attractive in flower. A hardy species, requires good drainage and should be suited to shallow or deep sand to loam. May require some shade and possibly will not stand up to excessive heat. As this species often grows in small pockets of soil in crevices in the rocks, it may be suitable to use as a pot plant. Makes excellent cut flowers.

### ***Sphenotoma gracile***

A single stemmed, little branched, upright to spreading open, leafy shrub or undershrub 9" to 18" high and 6" to 12" across. Usually found growing within a few miles of the coast on deep sand which is often subject to some seepage and usually amongst other low growing scrub in 30" to 35" rainfall. Leaves are about  $\frac{1}{4}$ " long,  $\frac{1}{8}$ " wide at the base, tapering to a point, recurved, flexible and bright green in colour. Flowers are basically tubular,  $\frac{1}{4}$ " long,  $\frac{1}{8}$ " diameter, opening out abruptly into a flower  $\frac{1}{2}$ " across, bright white in colour; surrounded by bracts about the same length as the tube and green in colour with reddish margins, forming dense heads 1" in diameter,  $\frac{3}{4}$ " to 1" long and at the ends of branches during the spring.

An average ornamental species with average foliage and good but small flower heads. Fairly hardy, will stand some poor drainage and should be suited to deep sand or sandy loam.

### ***Sphenotoma squarrosus***

A single stemmed, little branched, upright shrub or undershrub 1 to 4 ft. high and 6" to 24" across. A coastal or nearby inland species usually found growing amongst other low growing scrub in damp situations but it may also be found growing on mountain slopes or summits; often in small amounts of soil in cracks in the rocks, on sand in 22" to 35" rainfall. The leaves are  $\frac{1}{2}$ " to 1¼" long, almost  $\frac{1}{4}$ " wide at the base, tapering to a point, recurved, flexible, usually close together on the last 6" to 8" of the branches and medium to bright green in colour. Flowers are basically tubular,  $\frac{3}{8}$ " to  $\frac{1}{2}$ " long,  $\frac{1}{8}$ " diameter, opening abruptly to  $\frac{1}{4}$ " diameter, bright white in colour, surrounded by greenish bracts, single, axillary, sessile, forming fairly dense, and leafy flower spikes on the last 1" to 3" of the branches during spring.

A very good ornamental species with good foliage and outstanding in flower. Fairly hardy, will stand poor drainage and should be suited to deep sandy soils and may be suitable for growing as a pot plant.

## STURT PEA IN CONTAINER

Experience in growing *Clianthus formosus* at 3,000 feet altitude, where frost and snow are legend by A. Walker, Orange, N.S.W.

I followed the method recommended by D. Sands in the September '62 issue of "Australian Plants". The seed is boiled in water for one minute and allowing to cool and stand for 48 hours. As predicted the root had begun to show. The single seeds were then placed in 2 in. Jiffy pots with a sharp sand, vermiculite medium and grown to the 2 inch stage indoors behind a window with a northerly aspect. The seed was sown in mid September.

The complete pots were then placed in half x 4 gal. drums containing a strong bassalt soil made friable with bush sand. No transplanting took place, as the species is notorious for its difficulty in transplanting at any stage.

Of three plants grown, one flowered profusely and died. The remaining two have been over-wintered under half shade conditions, with protection from frost and snow and a fortnightly foliage application of Aquasol. These plants are now green, healthy and strong, and are already showing heavy bud formations for the coming season.

Despite extremely cold winter conditions, the little care afforded these plants promises to be amply repaid by the satisfaction of successful growing and flowering at an altitude which is surely well out of the natural environment of what is certainly one of the gems of our Native Flora.

## BOOK REVIEWS

All books reviewed are available by mail from the Editor, 960 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

**A Field Guide to Australian Trees** by Ivan Holliday & Ron Hill — Price \$3.75 + 20c postage  
A 230 pages with a hard cover and a colourful glossy jacket, this new book will be of interest to those bush lovers who admire trees. The presentation is to illustrate in large black and white photographs on 110 right hand pages, a specimen tree with line drawings below giving details of leaves, flowers and fruit as a means of easy identification. Opposite on the left hand page is a description of the tree in simple terms together with interesting features and its habitat. At the foot of this page is also briefly mentioned other trees of similar characteristics and how each may be distinguished. In this way 282 species of Australian trees spread over a wide range of plant families and habitats, are presented and illustrated by the 110 black and white photographs.

**What Flower is That?** by Stirling Macoboy — Price \$4.95 + 55c postage  
This book is produced to answer the question, "What flower is that?" It includes not just Australian native flowers but most of the flowering plants that could be found in gardens throughout the world. The presentation is to enable the reader to identify the flowers, not from obscure botanical features but from full colour plates. To achieve this there are over 1,000 full colour plates, logically arranged through the 318 pages. Australian wildflowers are well represented although because of our amazing diversity of plants, it would need all 1,000 colour plates to give some idea of the breadth of the Australian floral range. The book is not meant for the specialist however, but for the lover of flowers who notices the wide range of flowering plants that are grown in Australian gardens and wonders, what is the name of that plant? What country does it come from and how should it be grown? For this person the book is the most remarkable I have ever seen.

**West Australian Native Plants in Cultivation** by A. R. Fairall — Price \$10.50 plus 50c postage  
This book was reviewed in our last issue. For various reasons it will not now be available until the end of March. For those who have not already ordered a copy, I recommend that you send an order to the editor immediately. See page 282.

**Australian Wildflowers in Colour** by Douglas Baglin and Barbara Mullins — Price \$3.95 plus 40c postage  
A book aimed at the popular market as an introduction to the Australian flora for those who are not already familiar with it. A feature of this 112 page book is that each right hand page carries up to four full colour plates and their descriptions are given opposite on the left hand page. The flowers are arranged in plant families and in this way 32 families and over one hundred species are illustrated. The photography is superb and there are a number of plants, principally from Northern Australia, never before illustrated.

**Andalusian Flowers and Countryside** by Lt. Cdr. C. M. Stocken — Price \$3.00 including postage  
A small 180 page book on the wildflowers of Southern Spain, Gibraltar and Morocco, with a "trampers" description of the countryside and trails.

## A Small Capillary Bed for Seed Germination

D. K. McINTYRE, J. W. WRIGLEY, C. GREEN, Canberra Botanic Gardens, Parks and Gardens Branch, Department of the Interior, Canberra.

Capillary beds are widely used for seed germination. The principle being, a constant moisture level is maintained in the vicinity of the seed during germination by capillary action of water.

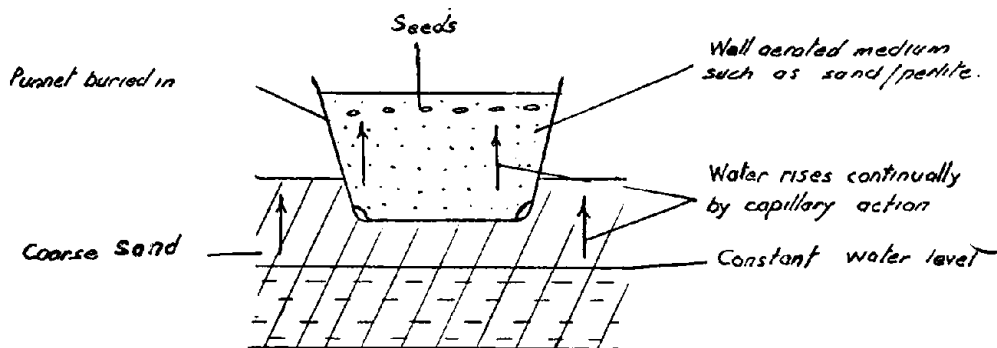


FIG. 1—Principle of Capillary Bed

Capillary beds have certain advantages in the germination of seeds. The seeds are always well aerated and moist (not over or under watered). Experience with the large scale use of this method at the Canberra Botanic Gardens has shown that damping off at the young seedling stage has been almost eliminated.

A simple capillary bed can be made by using a small tray, e.g. a deep baking dish, filled with washed coarse sand ( $\frac{1}{4}$ "– $\frac{1}{8}$ " dia.). The dish is then about half filled with water. Seeds are sown in a punnet filled with a freely draining medium (a 50/50 mixture of washed river sand and perlite is recommended). The punnets should have holes in the bottom to allow the water to enter freely.

The punnets are buried in the coarse sand (but above the water level). Ensure the water rises to the top of the punnet. If the capillary is broken this is easily noticed because the top will quickly dry out.

A constant water level can be maintained by filling a bottle or some other suitable container with water and inverting it with the top of the bottle at the required water level.

Supplementary bottom heat can be added as a useful modification, by placing the capillary tray on top of a completely enclosed box with a galvanised iron top and heated by one (or more) electric light bulbs. The size and number of light bulbs used will depend on the size of the tray being used.

By this means an optimum temperature of 70–75°F can be maintained in the region of the germinating seeds. The temperature in the sand bed may be up to 10°F higher than this.

The heating box is not necessary but it will greatly speed up germination in cold areas and during the winter.

This capillary bed will give excellent results in the germination of most seeds. It is suggested to keep it in the light to prevent seedlings etiolating.

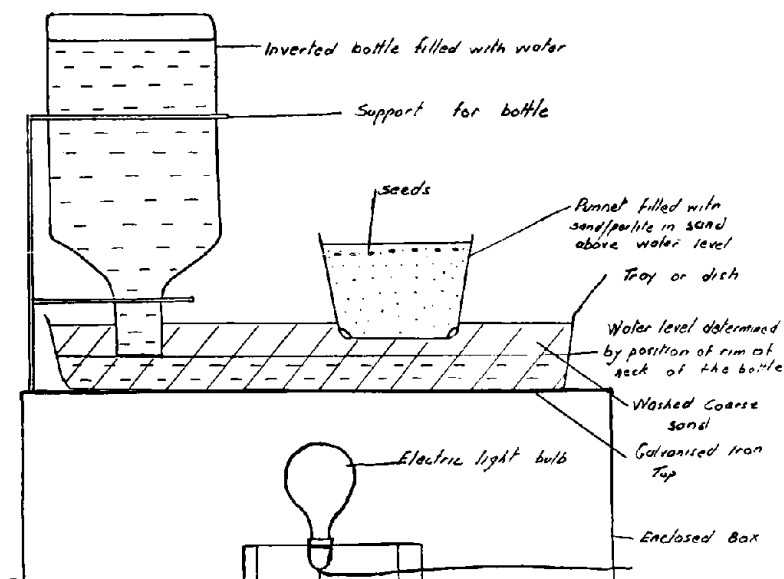


FIG. 2—Diagram of capillary bed showing constant water level device, and a heated box to keep temperature constant for rapid seed germination during winter.

SOME W.A. PLANTS WITH HORTICULTURAL POTENTIAL—cont. from page 250

### Some plants from the higher rainfall districts (20" to over 40")

*Beaufortia heterophylla* (*Beaufortia cyrtodonta*). A dwarf shrub common in clearings in the Stirling Range where it develops to a neat 2' bush of very handsome appearance when in flower in October. The deep red flowers appear in staminal bundles along the full length of each branchlet in a showy display. Leaves are tiny and linear. Indications are that this is not an easy species to grow.

### Hibbertia

There are over 60 *Hibbertia* species indigenous to Western Australia, most of which are worthy of garden culture for their wealth of bright yellow or orange, open-petalled flowers in spring months. They are particularly common in the gravelly laterite or granite soils of the Darling Range where many fine species, including the following, can be found.

*Hibbertia lasiopus*. This lovely prostrate plant reminds one of the eastern species *Hibbertia scandens* (syn. *volubilis*) except that the large, yellow flowers are more numerous, the bush much smaller and the leaves are hairy. An ideal rock garden plant.

*Hibbertia miniata*. A rare species native to the Darling Range north of Perth which is noted for its dark orange black-centred flowers. It is a small bush under 12" high with soft grey leaves which contrast well with the flowers.

*Hibbertia montana* and *Hibbertia montana* var. *major*. These two similar species (the latter has much larger flowers) are fairly common in rocky areas of the Darling Range. The flowers which vary from creamy-yellow to a bright cadmium yellow are displayed prominently on erect stems 12"-30" high.

## PLANTS OF THE LILY FAMILY

*Johnsonia lupulina*. An interesting member of the lily family found in the wetter areas near Albany in the south west. A small plant with rush-like leaves and drooping spikes of flowers hidden by over-lapping, pale pink scales. Another fine rock garden plant. See page 245 for colour plate.

*Dasyogon bromeliaefolius*. Another member of the lily family found in similar localities to the preceding species. This is also a rush-like bush but the flowers are borne on tall erect stems like white drumsticks prominent above the foliage.

### Some Plants from the Lower Rainfall Areas (usually under 15")

*Cyanostegia angustifolia*. This, with the following species, is one of the most commonly encountered plants along the roadsides of the Eastern Goldfields and also between Wongan Hills and Mullewa, north of Perth, and it is therefore rather surprising that neither species has gained much attention from the native plant grower. *Cyanostegia angustifolia* can be seen in massed displays in the wild which reveal its potential for similar plantings in cultivation. It is usually a dense bush 3'-5' high with open, papery flowers, mauve to violet in colour with deep yellow anthers and which completely cover the bush. See page 284 for colour plate.

There are four species of *Cyanostegia*, each having purplish flowers which appear in spring and early summer.

*Keraudrenia integrifolia*. This is a very common plant in the sandy gravelly soils of the south west and is very prevalent in open areas along railways and in gravel pits. A small shrub to 4' high it has small, narrowly oblong leaves and panicles of small purple-violet flowers which clothe the bush from August to October.

*Eremophila calorhabdos*. A medium-sized shrub of outstanding merit as a structural plant in the native garden. The bush produces many vertical branches sometimes 8' or more high which are clothed in red to pink tubular flowers over a long period. As the branches grow the flowers are continually produced at each node along the new growth. The leaves are small and serrated, shiny dark green with a white reverse.

This plant can be found on red, alkaline, loamy soils east and south of Norseman in association with mainly the mallee eucalypts encountered in these areas.

It appears to be fairly adaptable under garden conditions but results are best achieved in a fairly friable alkaline loam or clay soil in full sun such as much of South Australia's wheat country and where annual rainfall is about 10"-17". Quite large cuttings strike fairly easily.

*Eremophila densifolia*. Found growing near Ravenstharpe in red alkaline soil this appeared as a plant which should adapt to most South Australian conditions. Only a small bush to 3' high it stood out as being exceptionally floriferous among the *Eremophila* genus, the small, mauve, flowers appearing abundantly over the entire bush.

*Hemiphora elderi*. An interesting dwarf shrub from the low rainfall areas between Menzies and Southern Cross. It grows to only about 18" high with spiky branchlets covered with thick felted gray leaves. The loose, woolly, tubular flowers occur in terminal racemes of a vivid crimson.

*Wehlia coarctata*. Another low rainfall species which inhabits the lighter soils of the Goldfields and surrounding districts. Growing no more than 2' high it is a twiggy shrub with tiny leaves and profuse terminal clusters of vivid pink starry flowers with yellow anthers. It closely resembles the *Calythrix* genus to which *Wehlia* is related.

## EUCALYPTS IN COLD COUNTRIES

Based on catalogue and report from Sandhurst Nurseries, Surrey, England.

All the well-known, old-established, collections of *Eucalyptus* in this country are in the milder Western countries. Here in the South-East we get 20-25 degrees of frost several times in winter, alternating with rain and cold winds. Under these conditions, *E. gunnii*, *E. glaucescens*, *E. niphophila*, *E. perriniana* and *E. de beuzevillei* all make good specimens, although some wind-shelter may be necessary the first winter after planting. *E. glaucescens* makes a particularly attractive tree, with a better habit than *E. gunnii*, which tends to shoot up fast and thin, especially on heavy soils, and often has to be pruned before it is blown out of the ground. *E. perriniana* is the only *Eucalyptus* that will tolerate light shade here. *E. vernicosa* would be hardy.

After these come several species that will survive all but our worst winters provided they have some protection from North and East winds in winter—the sort of protection that most gardens have, with other trees and shrubs; but they would not survive in the middle of a flat open field. These include *E. mitchelliana*, *E. stellulata*, *E. johnstoni*, *E. aggregata*, *E. parvifolia*, *E. kybeanensis*, and some forms of *E. pauciflora* and *E. viminalis*. *E. pauciflora* will stand all the frost we get, but spring gales may damage it. *E. mitchelliana* grows like *E. pauciflora nana*, no larger than a shrub, but a most attractive one. *E. stellulata* is frost-hardy but sensitive to East winds. *E. johnstoni* is the hardiest of the taller species, and although one can see occasional 60 ft. specimens of *E. gunnii* in this area, few gums exceed 30-40 ft. without having their tops blown out. *E. viminalis* from Rose Tiers, Tasmania, stood 25 degrees of frost in mid-winter, but succumbed to an early autumn frost a few years later. This makes a beautiful tree as it sometimes turns a fine coppery colour for nine months of the year, but only in some gardens, not all. Does it do this in Australia? I find *E. dalrympleana* slightly less hardy than this Tasmanian *E. viminalis*, and apt to be killed once every 10 years. *E. kybeanensis* seems very hardy, but so slow—2 ft. in 3 years! *E. cordata*, *E. cinerea*, *E. simmondsii*, *E. urnigera* are all too tender here (*E. urnigera glauca* is hardy) but can be grown nearer the South coast. *E. rubida* and *E. ovata* are very tender. Much of our trouble is lack of a hot summer. This year we have had a good summer followed by a dry autumn, and I doubt whether any gums will be damaged this winter, as their young stems have ripened better. *E. acaciaeformis* and *E. nicholi* are hardy, given a good summer, but only form shrubs here. Provenance is of course very important with some. *E. niphophila*, *E. mitchelliana*, *E. viminalis*, *E. johnstoni*, *E. pauciflora* vary in hardiness more than others, and Tasmanian forms are preferable to mainland forms, where species occur in both.

### Flowering

*E. gunnii*, *E. glaucescens*, *E. niphophila*, *E. perriniana* flower regularly here (usually alternate years) but seed is very poor and erratic. The others form buds, but these rot during winter, although they flower better further South and West.

One cannot plant out *Eucalypts* the same year that they are raised here. We pot them up in 3" soft polythene pots in June/July for selling and planting 1½-2 ft. high the following April/May. This means growing them slower than they might be grown, and harder. If planted out too soft, they grow too fast (6-8 ft. per year on heavy soils) and become top-heavy and frost tender.

Eucalyptus have become very popular during the past few years, now that more species are available from nurseries, but many gardeners still think of *E. gunnii* as the only hardy one, and we have to grow more of this than any other (12,000 this year). But as they become better known, more people are planting *E. glaucescens* and the Snow Gums.

The following is reprinted from the catalogue of The Sandhurst Nurseries, Surrey, England:

**Planting and Cultivation.** The ideal position for Eucalyptus is in full sun, and if possible with some shelter from the worst north-east winds in winter. Before planting dig the soil deeply. Eucalyptus are not fussy about the type of soil, but there should be reasonable surface drainage. Immediately on receipt of your plants, before removing the pots, water them. Remove the pots without letting the soil fall off the roots; plant about 1½ inches deeper than the plants are in their pots; tread in, give a short stake, and water again. Plants should be kept watered for the first month or two after planting, but no water is required when established. Never give stakes more than 3 ft. high as it only encourages legginess. If plants shoot up too fast and become top-heavy, prune hard in early March to make the plants bushier. Mixing in some peat (or peat and sand in heavy soils) is a help, but avoid manures or mulches. Protection should not be necessary even during the first winter but if that is an exceptionally severe winter, a sack supported on three sticks to form an L-shaped screen on the windy side is a help.

**Hardiness.** Of those listed in Part 1, all of which should be suitable for the Home Counties, the following have stood more than 25 degrees of frost: *E. de beuzevillei*, *E. glaucescens*, *E. gunnii*, *E. johnstoni*, *E. kybeanensis*, *E. niphophila*, *E. pauciflora*, *E. perriniana*, *E. stellulata* (*E. gunnii* and *E. niphophila* have stood 35 degrees of frost). The others in Part 1 have all stood more than 18-20 degrees of frost.

In Part 2, some species have a fair degree of hardiness (e.g. *E. cinerea*, *E. cordata* and *E. simmondsii* have all stood 15 degrees of frost), but although they may grow satisfactorily for a few years in the London area, they are not hardy enough for a permanent place in gardens except in the milder counties. Some in this group are very fast and make excellent temporary filling-in plants (obliqua once grew 20 ft. in two years here), while species such as *E. globulus* and *E. bicostata* are too tender for all but the mildest gardens. As a general rule all Eucalyptus will stand more frost if sheltered from cold winds in winter.

**Foliage.** Eucalyptus have basically two types of foliage, the juvenile and the adult. Juvenile leaves are usually short, wide and stalkless. Adult leaves are longer, narrower and with a leaf-stalk. Some species have a prolonged intermediate stage. Some develop adult foliage during the first summer, while others may stay three or four years in the juvenile stage.

**Flowers.** All the hardier species have sweetly scented white flowers, in some species these are produced 2-3 years after pruning.

The English names given below are the colloquial Australian names. Sizes refer to growth in this country, not in Australia.

**PART 1. The Hardier Species.** These are generally suitable for planting in the Home Counties, although a few (*E. delegatensis*, *E. acaciaeformis*, *E. nicholi*, *E. nitens*) require sheltered position.

*E. acaciaeformis*. Wattle-leaved Peppermint. Very narrow leaves, large shrub or small tree.

*E. aggregata*. Black Gum. Medium-sized tree. Adult leaves green, oval, 4 in. x ½ in. *E. bridgesiana* (*stuartiana*). But But. Glauous, tall thin tree.

*E. de beuzevillei*. Giant Snow Gum. Related to *pauciflora* and *niphophila* but larger and stouter, with larger foliage. Bark peels in patches on thin branches, in huge long strips on thick trunks. Young wood white. The largest of the Snow Gum group.

*E. coccifera*. Mt. Wellington Peppermint. A graceful large shrub or small tree up to 12-15 ft., slow-growing, with small silvery willow-like leaves.

*E. dalrympleana*. Broad-leaved Kindlingbark. Round glaucous juvenile leaves. Adult leaves up to 10 in. x 2 in. A tall stately tree, the bark peeling in patches like a plane tree, often a mixture of cream, pink and silver-grey. After a hot summer the foliage may also acquire pinkish or lilac tints. Bark and foliage fragrant.

# THE ENDEMIC FLORA OF TASMANIA

## PART III

Lord Talbot de Malahide, Malahide Castle, Co. Dublin, Ireland, is hoping to publish this book in 1970 and has chosen the following 41 plants for inclusion in it.

He would be glad to hear of the experiences of anybody who has grown any of them, covering in particular the following points:

- (1) Whether dead or still alive, size;
- (2) Whether grown outside or under glass;
- (3) Origin, i.e. seed, cutting, graft, layer, wild plant, collected in the wild, obtained by purchase or by exchange;
- (4) Cause of death, length of survival;
- (5) Recommended treatment as regards soil, drainage, wind shelter, shade.

Lord Talbot would also be glad to hear from anybody with significant information to supplement or modify that given in the Appendix to Part II.

*Acaena montana* Hook. f.  
*Aciphylla procumbens* (F. Muell.) Benth.  
*Actinotus moorei* Rodw.  
*Agastachys odorata* R.Br.  
*Anemone crassifolia* Hook.  
*Angianthus eriocephalus* Benth.  
*Archeria comberi* Melville  
*Archeria serpyllifolia* Hook. f.  
*Bellendena montana* R.Br.  
*Cyathodes abietina* R.Br.  
*Dacrydium franklinii* Hook. f.  
*Drapetes tasmanica* Hoak. f.  
*Epacris corymbiflora* Hook. f.  
*Epacris exserta* R.Br.  
*Epacris myrtifolia* Labill.  
*Epacris virgata* Hook. f.  
*Eucalyptus coccifera* Hook. f.  
*Eucalyptus linearis* Dehn.  
*Eucalyptus urnigera* Hook. f.  
*Forstera bellidifolia* Hook. f.  
*Gaultheria hispida* R.Br.  
*Helichrysum costatifructum* R. V. Smith  
*Helichrysum reticulatum* (Labill.) Less.  
*Hibbertia hirsuta* (Hook.) Benth.  
*Ixodia angusta* (N. A. Wakefield) N. T. Burbidge  
*Lomatia tinctoria* R.Br.  
*Milligania densiflora* Hook. f.  
*Orites acicularis* R.Br.  
*Orites milliganii* Meisn. in Hook.  
*Pentachondra ericifolia* Hook. f.  
*Pernettya tasmanica* Hook. f.  
*Pimelea pygmaea* F. Muell.  
*Ranunculus pascuinus* (Hook. f.) Melville

*Ranunculus setaceus* Rodw.  
*Richea scoparia* Hook. f.  
*Rubus gunnianus* Hook.  
*Spyridium gunnii* (Hook. f.) Benth.  
*Spyridium serpyllaceum* (Reissek & F. Muell.) F. Muell.  
*Tetracarpaea tasmanica* Hook. f.  
*Westringia angustifolia* R.Br.  
*Westringia rubiifolia* R.Br.

Orders may be placed by filling in the form below

### THE ENDEMIC FLORA OF TASMANIA

A Monograph in 5 or more parts, which together will present over two hundred colour plates depicting the plants native to Tasmania alone, drawn from life by the artist

MARGARET STONES

with botanical and ecological text by  
WINIFRED M. CURTIS

and an Appendix on cultivation by  
LORD TALBOT DE MALAHIDE

Format: 16" x 12", Full linen boards. 24 plates in 6-colour litho offset, with 64 pp. of text.

Price per part so far published ..... \$50.00 Aust.

### ORDER FORM

To THE EDITOR—SOCIETY FOR GROWING AUSTRALIAN PLANTS

860 Henry Lawson Drive, Picnic Point, N.S.W. AUST. 2213

Please supply the following for which I enclose the sum of ..... including 80c per copy to cover postage.

|                                                | Price in<br>Great Britain | Price in<br>Australia | Price in<br>U.S.A. |
|------------------------------------------------|---------------------------|-----------------------|--------------------|
| 1. THE ENDEMIC FLORA OF TASMANIA, Part I       | £15.15.0                  | A.\$50.00             | U.S.\$45.00        |
| 2. THE ENDEMIC FLORA OF TASMANIA, Part II      | \$15.15.0                 | A.\$50.00             | U.S.\$45.00        |
| 3. Unbound Sets of the Plates of Part I .....  | £ 6. 6.0                  | A.\$20.00             | U.S.\$18.00        |
| 4. Unbound Sets of the Plates of Part II ..... | £ 6. 6.0                  | A.\$20.00             | U.S.\$18.00        |

Name .....

Address .....

*Some Extracts from Reviews . . .*

. . . With the publication of the first part of THE ENDEMIC FLORA OF TASMANIA . . . one of the greatest of our contemporary botanical artists is putting Tasmania again on the map of botanical illustration in no mean way. Margaret Stones' illustrations, Winifred Curtis' knowledgeable text, the Ariel Press' artistry in layout and design and the efforts of one of the master colour printers of Europe combined, have resulted in a flower book of a quality and splendour which is almost unthought of today . . . Books like this become exceptional. The times when patronage for sumptuous illustrated botanical folios was relatively easy to find are over. The cost of producing a really superior work of this kind has grown prohibitive. Craftsmanship and dedication are rare. The publication of this splendid first part of THE ENDEMIC FLORA OF TASMANIA is therefore a source of joy to botanist and bibliophile alike.

*Taxon*

It is rare indeed that fortune brings together an outstanding botanical artist, a munificent patron, and an expert botanist to work together on a single project. To such a lucky chain of events we owe the publication of this delightful volume . . . Margaret Stones has portrayed a selection of thirty-eight species with great charm and skill: the meticulous accuracy of the drawings and the excellent colour rendering add to the pleasure of any plant lover who turns the pages, be he botanist or layman. Dr. Winifred Curtis, from her wide experience of the flora, with short descriptions puts the plants into the context of their native habitats and so completes a happy collaboration . . . It is greatly to be hoped that Lord Talbot will be able to continue with this project and attain his ambition to portray all of the Tasmanian endemics.

*The Journal of the Royal Horticultural Society*

. . . The last book on the island's flora is some 60 years old, so a new record is valuable to begin with; the dangers of extinction make such an impeccable combination of art and botanical accuracy particularly valuable. Apart from these considerations, the volume is a splendid example of the "great flower book" with perfectly produced plates on good paper and typographical treatment to match.

*Country Life*

. . . My enthusiastic review of Part I of this sumptuous work in the January/February, 1968, issue of *Garden Journal*, gives considerable background information that needs not be repeated here. Suffice it to say that Part II is as attractive as Part I, if not more so. The map of Tasmania that ornaments the end-papers has been redrawn; it is now more accurate and aesthetically pleasing. As in Part I, the splendid plates of Part II illustrate the appearance of the flowers and the general habit of the plant so accurately, yet so artistically, that any intelligent person could recognize them easily. The readable and accurate descriptions by Winifred Curtis emphasize the more important features of each species and thereby complement and reinforce the beautiful paintings by Margaret Stones.

. . . These magnificent books have a great aesthetic appeal, in addition to their didactic usefulness to botanists and horticulturists; I would predict that the demand for them will be far beyond that originally planned.

*The New York Botanical Garden Journal*

. . . At the supreme pinnacle of this kind of publication is "The Endemic Flora of Tasmania" Part II (Ariel Press). For most Australians the charm of the book largely derives from Margaret Stones' botanical paintings . . . There is perhaps no finer nor more exacting botanical artist anywhere in the world.

. . . Lord Talbot's contribution has added a domestic dimension to a volume that is almost inhumanly beautiful. It is fundamental, of course, to any collection of Australian botanical literature.

*Australian Book Review*

. . . For the keen plantsman and lover of great books alike Part II is every bit as exciting as its predecessor. It contains 24 quarto plates illustrating a further 41 specimens, and each plate—through the beautifully detailed artistry of Miss Margaret Stones—could be framed and hung for its own merit. Lord Talbot has added a valuable appendix on the cultivation of all the plants illustrated in the first two parts. I hope . . . this will stimulate others to contribute their findings on these plants so that a greater understanding of them can be achieved.

*Gardeners Chronicle*

. . . This beautifully produced volume is an important addition to the record of Tasmania's endemic species.

*Times Literary Supplement*

. . . Miss Stones's paintings maintain the outstanding quality of the first volume. Dr. Curtis's botanical descriptions and notes compiled from her wide knowledge of the Tasmanian flora are often fuller than in Part I and contain additional fascinating historical, ecological and distributional details.

. . . Artist, botanist and patron must be congratulated on their enthusiasm and persistence. We now eagerly await the promised third and fourth parts.

*Journal of the Royal Horticultural Society*

. . . The Endemic Flora of Tasmania . . . was published *in folio* and superbly printed by the Ariel Press. Part II of this magnificent book is now ready . . . apart from the fact that every botanist will want and need a copy, this is very much a book for the bibliophile, a collector's piece when complete.

*Illustrated London News*

## "AUSTRALIAN PLANTS"

The periodical "Australian Plants" is produced quarterly on a non-profit-making basis with honorary officers. As man extends his domain in the thrust for survival, our areas of natural vegetation, already invaded by introduced weeds and grazed by animals is shrinking alarmingly. Methods of its survival include the replanting and protection of reservations. To do this successfully we must first study and understand the requirements of our flora. The periodical is devoted to this aim. Special emphasis is placed on the preservation and development of the best forms of species as horticultural subjects and the encouragement of the home gardener and parks superintendent to propagate and cultivate our wildflowers.

Available for an annual subscription of \$1.20 Aust. (plus 40c postage if overseas), from the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W., 2213, Australia.

- E. delegatensis* (*gigantea*). Gum-top Stringybark Ash. Tall grower with large oval leaves which are often tinted pink or bronze after a hot summer. Rather tender for the East of England, but so attractive that it is worth trying as a temporary "filling-in" plant. Fast.
- E. glaucescens*. Tingiringi Gum. A lovely hardy small tree of good habit with silvery scented leaves, oval or slightly sickle-shaped, and a peeling bark. Slightly shorter than *gunnii* and bushier.
- E. gunnii*. Cider Gum. The best known of all. A very handsome and easily grown tree from Tasmania which has stood 35 degrees of frost here. Fast-growing while young, with beautiful blue-grey foliage which keeps a clean fresh appearance. The best for cut foliage as it stands pruning well.
- E. johnstoni* (*subcrenulata*). Johnston's Gum. Juvenile leaves round, adult leaves slightly sickle-shaped, glossy green, fragrant. Tall, narrow and dense. Lovely peeling orange trunk when established.
- E. kybeanensis*. Kybean Mallee Ash. The only hardy "Mallee". A sub-shrub up to 6 ft., forming a tuberous rootstock with erect thin green stems and dark green leaves. Slow.
- E. mitchelliana*. Weeping Sally. Small tree or large shrub, the ends of the branches weeping. Foliage willow-like, slightly sickle-shaped. Peeling white trunk. Graceful and rare.
- E. nicholi*. Nichol's Willow-leaved Peppermint. Very narrow foliage tinged purple in spring.
- E. niphophila*. Snow Gum. The famous Snow Gum is probably the hardest of all, and suitable even for very exposed sites. Slower than most species, it forms a large shrub or small tree, as wide as it is high, usually with several stems. Large thick grey-green leaves, slightly sickle-shaped, which are pinkish or copper-coloured as they start growing in Spring. Bark peels similarly to *E. de beuzevillei*, the dark grey old bark contrasting with the silvery white new wood.
- E. nitens*. Silver Top. Long glaucous adult leaves, scented stems. Stands a fair amount of frost, but not much wind.
- E. parvifolia*. Small-leaved Gum. Small dark grey-green leaves, dark grey trunk. Narrow, dense and comparatively slow.
- E. pauciflora*. Cabbage Gum; Snow Gum. Rather variable. Leaves 4-9 in. long, thick, slightly sickle-shaped. Peeling bark gives a clean white trunk. Hardy. Forms a more-or-less round-headed tree.
- E. pauciflora nana*. Wolgan Snow Gum. A shrubby version of the above, good for small gardens. Leaves 6-8 in. x  $\frac{1}{2}$  in., slightly more sickle-shaped than the type.
- E. perriniana*. Round-leaved Snow Gum. Another species suitable for small gardens, growing to about 15 ft. x 4 ft. Juvenile leaves round, blue, with the stem growing through the centre of the leaf. Young foliage at first purplish. Adult leaves long, narrow, sickle-shaped. Fragrant. The only species to grow well in light shade. Very hardy.
- E. stellulata*. Black Sally. Small spreading tree or large shrub. Spear-shaped adult leaves, light green at first, becoming glaucous. Peeling bark.
- E. viminalis*. Ribbon Gum. Very fast and tall. Long, narrow, slightly sickle-shaped adult leaves, which often turn a lovely coppery colour on the sides exposed to the sun, although this varies with the weather and time of year. Scented. Trunk peels in long ribbons.
- PART 2. Some of the following are moderately hardy, but are mainly suited to the South and West (see introduction).
- E. bicostata*. Eurabbie. Tall. Adult leaves up to 2 ft. long.
- E. cinerea*. Argyle Apple. Silver-blue permanently juvenile leaves. Shrubby. Moderately hardy.
- E. cordata*. Heart-shaped Silver Gum. Stem-clasping silver leaves. Moderately hardy, stands pruning.
- E. cordieri*. Mealy Bundy. Silvery, medium grower.
- E. cypellocarpa* (*goniocalyx*). Spotted Mountain Gum. Narrow leaves, scented.
- E. deanii*. Dean's Gum. Long narrow leaves.
- E. globulus*. Tasmanian Blue Gum. Fast, tender.
- E. huberiana*. Rough-barked Ribbon Gum. Narrower leaves than *viminalis*.
- E. kitsoniana*. Bog Gum. Small tree, large glossy green leaves. Moderately hardy.
- F. leucosylon*. White Ironbark. Flowers vary from red to pink or white.
- E. macarthurii*. Paddy's River Box; Camden Woollybutt. Dense habit, scented.
- E. neglecta*. Round-leaved Omeo Gum. Small-leaved shrubby species.
- E. nova-anglica*. New England Peppermint. Glauous juvenile leaves.
- E. obliqua*. Messmate. Very tall, varies in hardness. Huge intermediate leaves.

- E. ovata*. Swamp Gum. Medium-sized tree, green leaves.  
*E. pulverulenta*. Silver-leaved Mountain Gum. Small tree with large glaucous stem-clasping adult leaves. Moderately hardy, attractive.  
*E. radiata*. Grey Peppermint. Fragrant, pale green, bushy.  
*E. regnans*. Giant Gum. Tallest tree in the world. Green.  
*E. resinifera*. Red Mahogany. Tall, spreading.  
*E. rubida*. Candlebark Gum. Related to *dalrympleana* but smaller and more brightly coloured in all its parts.  
*E. sieberiana*. Mountain Ash. Immense tree. Narrow leaves.  
*E. simmondsii*. Simmond's Peppermint. Medium-sized tree, moderately hardy. Narrow adult leaves, open habit.  
*E. urnigera*. Urn-fruited Gum. Fragrant green leaves. Bushy tree.  
(*Hybrids*. Various hybrids are usually available, but stocks vary. Details on request).

WILDFLOWERS FOR ROCKERIES—cont. from page 249

### ***Frankenia pauciflora***

This is a summer flowering prostrate ground cover of considerable merit. With small pink flowers covering the plant in the warmer months, the species enjoys a full sun situation. Foliage is slightly grey and even when not in flower the plant has a handsome appearance. Propagation is easy from cuttings or from plant division as the species roots as it spreads. It is hardy to both frost and drought and may be found bordering salt flats in South and West Australia. If used in mass displays, spacing should be at 18" centres or perhaps more distant in areas with a faster growth rate than Canberra.

### ***Brachycome rigidula***

This small, blue daisy from the A.C.T. makes a compact plant about 9" high when grown in full sun. It may be propagated from seed and will flower in its first year. Either massed at 9" centres or as individual plants, the species makes a good display during the summer months. It is frost hardy and tolerates relatively dry conditions. Plants in Canberra have been subject to green aphid attack, but, this may be controlled with the usual insecticides.

### ***Helichrysum apiculatum***

This species is very variable and differing forms occur throughout the Continent. A prostrate form collected by Adelaide Botanic Gardens staff is now well established in Canberra and is proving to be a valuable and showy ground cover. Flowers are golden yellow and well displayed in dense heads during spring and summer. This form is frost hardy and is readily propagated from cuttings. Growing quickly, plants have formed a tight mat, 2' 6" in diameter in the first year and may be used either as a ground cover or tumbling over rock walls.

### ***Olearia teretifolia***

The minute dark green leaves give this shrub the appearance of a conifer. However, in Spring when it bursts into white daisy flowers the appearance is transformed. In Canberra, a compact form of the species is being grown which may be propagated from cutting. The slow rate of growth makes the plant a worthwhile rockery subject as after 18 months well grown plants make a rounded shrub of 12" high. When fully grown it will reach 2' 6"-3' in a full sun position. Unlike many *Olearias* it does not become woody at the base on ageing.

### ***Prostanthera saxicola* var. *montana***

This is one of the few *Prostantheras* that can be regarded as a ground cover. Plants at Canberra are about 18 months old and in this time have

spread to about 2 ft. across with a height of about 6". Flowers are large, white with dark blue markings and borne in large numbers over the summer months. Propagation is from cuttings and the species is frost hardy. Our plants were collected in the ranges to the west of the A.C.T.

### ***Hemiandra pungens* var. *glabra***

Some Sydney growers have this plant in successful cultivation and several plants are being grown in Canberra. It is a showy although somewhat sparse prostrate ground cover with large, pale mauve labiate flowers produced in early summer. Propagation is from cutting and although indications are that the species is frost hardy, further information is required to make this certain. Those plants being grown in large containers are doing well but difficulty is being experienced in establishing the species in the open garden. Some losses have been attributed to root rot attack.

### ***Pityrodia axillaris***

Little is known of the performance of this plant in cultivation but it has been included because of its outstanding flower colour, magenta, and the contrast between flower and foliage. The latter being silver-grey. Our plants are being grown in containers until sufficient material is available to plant in the open garden. Propagation is from cutting. Plants have flowered at about 12" but ultimate height could be expected to be about 2 ft.

See colour plate page 284. Colour is poor but style of plant is shown.

### ***Pityrodia dilatata***

As for the previous species, little can be said for its performance in Canberra but much can be said for its potential. Flowers of this species are orange-red and are borne for many months during spring and summer. Foliage is pale green and slightly glaucous and the container grown plants are forming a more compact bush than the former species. Many cuttings have been taken from these bushes which were originally grown from cuttings collected in W.A. It is hoped then in 1 or 2 years more information will be available concerning its performance in the garden.

### ***Veronica gracilis***

Under good, soil conditions, this plant will cover very quickly and may have to be checked. However, it is worth growing for its pale blue flowers, held on leafy stems about 6" to 9" high. The main flowering period is in the late spring and early summer. Plants in Canberra were collected from the South-East of South Australia and were propagated from cuttings. The species withstands frosts and appears to require full sun for best flowering. It is suggested as a vegetative "mulch" amongst other shrubs.

### ***Stylidium uniflorum*, *S. piliferum*, *S. breviscapum* (Trigger Plants)**

Several species of *Stylidium* were collected as transplants and 3 or 4 as cuttings from W.A. Of those that have succeeded the above 3 species are showing promise as unique garden subjects. *S. uniflorum* is a small tufted plant forming 4" high cushions 6" to 12" across. Salmon-pink flowers are borne in profusion in late Spring. The species would make an ideal pot plant or a rockery plant for a dry location. *S. piliferum* is a member of the rosetted group and forms a small, tight rosette of leaves about 1" long. The cream flowers, however, are borne on a 9"-12" stem and are well displayed. *S. breviscapum* is a prostrate white flowered creeping member of the genus. All three species were collected as transplants and have since flowered as potted specimens. Some plants of *S. uniflorum* are being used in the open garden but little is yet known of their cultivation or frost hardiness.

***Mimulus repens***

This prostrate, rooting perennial should prove an ideal ground cover for a wet situation. Flowers are yellow and mauve and growth rate seems moderately fast. The plant may be propagated from cuttings or by root division but no information is yet available as to frost hardiness. It occurs near creeks and swamps in many parts of Australia.

***Boronia scabra***

Much more should be known of this plant's performance in the garden before a recommendation may be made. However indications are that it is a top class *Boronia*. Cuttings were collected near Cape Le Grand in W.A. and plants from these have flowered in containers. Growth is stiff and erect, flower colour pink and overall height in nature is only about 12". Flowers are crowded towards the ends of branches in spring and early summer.

***Halgania cyanea***

It is surprising that the *Halganias* are not used more in cultivation. *H. cyanea* is perhaps the commonest and most widespread of the genus but is rarely seen in gardens. It forms a compact rounded shrub about 12" high with intense blue flowers for long periods of the year. Propagation is from cuttings and present indications are that it is frost hardy. A well drained full sun position is suggested by its natural habitat.

***Cheiranthra cyanea* (syn. *C. linearis*)**

This species has been grown successfully for a number of years in Canberra. It may be propagated from cuttings or seed quite readily although seed may take 8 or 9 weeks to germinate. It is a small, loose shrub about 18" high with fine leaves and dark blue flowers. The 1"-1½" diam. flowers have 5 bright yellow anthers reminiscent of the fingers of a hand and give the plant its common name of "Finger Flower". It occurs naturally in South Australia, Victoria and N.S.W. and most plants in Canberra were propagated from a collection near Burrinjuck Dam.

***Microcachrys tetragona* and *Diselma archeri***

These two species have been grouped together because they have much in common. They are both conifers, both hail from sub-alpine areas of Tasmania, both may be propagated from cuttings and both make useful additions to the rockery. They are slow to grow and despite the fact that *Diselma* may reach 12 feet, it would take many years to do so. *Microcachrys tetragona* on the other hand is almost prostrate, and could be used to hang over rock walls. Foliage is a bright dark green and both species are frost hardy. In the garden, they appreciate plenty of water and indications from pot culture are that they appreciate a rich, heavy soil mixed with some leaf mould.

***Lotus australis***

Pea flowers are often neglected in garden culture but many worthwhile shrubs, climbers and ground covers are included in the family. *Lotus australis* is a pink flowered, small shrub which may be readily propagated from seed. The form being grown in Canberra tends to form a compact shrub about 15"-18" high and flowers in late spring. It accepts full sun or partial shade and prefers to be kept reasonably dry.

***Pultenaea microphylla* (prostrate form)**

This species varies considerably in habit but it is the prostrate form which is of most use in the rockery. It may be used to hang over rocks and in spring gives a fine display of yellow pea flowers. Propagation is from seed or cutting and with the form grown in Canberra there is no

problem with frost. It was collected from the Braidwood area. At least half sun and good drainage are essential for good cultivation. The species is widely spread over N.S.W. and into Queensland.

***Pultenaea* sp. undescribed**

The fact that this plant has not been given a name should not prevent its being grown in gardens. It occurs naturally in the Diamond Head area of the mid-north coast of N.S.W. and may be readily propagated from cuttings. As a tight ground cover with light green, slightly hairy leaves, it is attractive even when not in flower. However, in summer when the yellow pea flowers are produced in profusion the plant is at its best. Plants in Canberra are about 2 years old and the largest would have a diameter of 3 ft. and a height of 3 inches. The species is frost hardy and responds to blood and bone fertiliser. It does well in full sun.

***Oxylobium tricuspidatum***

This is another prostrate yellow pea flower which has a place in the rockery. With pretty almost holly shaped leaves it is less vigorous than the former species, but it too forms a tight mat. Flowers are produced in spring and propagation is easy from cuttings. The species is slightly frost tender and needs some protection from the heaviest frosts here in Canberra.

***Dodonaea procumbens***

Very few *Dodonaeas* are known as ground covers, but this Victorian species has attractive bright green cuneate leaves and forms a moderately tight mat some two feet or more in diameter. Male flowers are insignificant and fruits are less attractive than some of the shrubby species. However the species is worth growing as a ground cover for its foliage alone. Propagation is from cuttings and the species is frost hardy.

***Grevillea australis* (prostrate form)**

This is a common shrub of the snow country on the mainland and Tasmania. However, its normal form is a shrub to 3 ft. The form described here was collected as cuttings from Mt. Barrow in Tasmania and is completely prostrate. It has been grown in Canberra for several years and shows great potential as a tight ground cover. Flowers are small and white and add little to the appearance of the plant, but its dark green shiny foliage is sufficient to recommend its use. Propagation is from cuttings and it is frost hardy.

***Tetradlea juncea***

The genus *Tetradlea* is not grown extensively in gardens, possibly because plants that have been tried have been poorly sighted and losses have resulted. In general, the genus should be regarded as an undershrub and given considerable shelter. An exception to this rule is *T. juncea* which will accept full sun and enjoy it. The species occurs along the Central Coast of N.S.W. although almost leafless and may be grown readily from cuttings. It forms a tufted plant 12" high and is covered in mauve-pink flowers in spring and has odd flowers for most of the year. It is a rewarding rockery plant and frost hardy. Page 284 for colour plate of similar plant.

***Rhagodia spinescens* var. *deltophylla***

Occurring in the dry country of S.A. this species had adapted well to the "kinder" conditions of the east coast. It is being grown successfully in Sydney and is quite frost hardy in Canberra. As a member of the sometimes scorned Saltbush family it has the grey foliage so typical of the Centre. Propagation is easy from cuttings and the shrub forms a dense ground cover some 18" high and spreading 5 or 6 feet. Flowers, as for most of the family are insignificant but the plant is worthwhile growing as a foliage contrast.

## ORCHIDS FROM SEEDS

### HOW TO FLASK TERRESTRIAL ORCHID SEED IN BOTTLES

By B. C. Kowald, Box 57, Katanning, Western Australia

Knudson's formula is the medium used in flasking the seed of native terrestrial orchids in bottles. If it is not convenient to prepare the formula oneself, have the local chemist prepare it. The chemist may require that all the chemicals be purchased in bulk and held by the hopeful orchid grower. The formula mixture must be ground very finely and have the correct pH. Knudson's formula was published in the September 1963 issue of "Australian Plants". At the same time that the above formula is being prepared or the materials obtained, have the chemist weigh out several lots of 10 grams of solid calcium hypochlorite and store it in a very dry container.

Materials required for this work will include vinegar, cool drink or similar bottles with plastic or cork seal stoppers; small bottles for the seed with stoppers, junket tablet type; a large cardboard carton; two inch lengths of plastic tubing, one for each bottle that will contain the seed (flasked); three to four inch squares of plastic sheet, again one each to a flasking bottle; squares of wadding to the same number and dimensions as the plastic sheet; a long tubed eye dropper or copper wire with a looped end; old Vacola rubber rings; one or two tea towels; a small bottle with a screw cap to hold the distilled water; a plastic spoon; a pair of rubber gloves; an odd cup and large amounts of "Captan" fungicide.

For flasking, the vinegar, small cool drink or other similar types of bottles are used, those that have plastic or cork stoppers. Holes are made in the stoppers with a hot toasting fork or similar device or by using a small hand drill etc. Wash and rinse the bottles and stoppers extremely thoroughly and dry them. Into each hole in the stoppers, one of the two inch lengths of plastic tubing is pushed. Tightly twisted wadding is now pushed into the plastic tubing and labels made from the plastic tops of cream containers etc. are now fixed to the bottles and numbered. These labels should be marked with an ink that will not be removed by boiling.

Mix the formula as supplied by the chemist with 11 grams of plain agar and 1000 c.c. of distilled water, plus a quarter of a cup to allow for evaporation. This is then boiled for 10 minutes in a double boiler. Allow the resultant liquid to cool, if it is too thin then add a little more agar and reboil, stirring all the time with a plastic spoon till the agar has dissolved. About one inch or more of this gell mixture is poured into each bottle, using a plastic funnel and stirring all the time. After the liquid has been poured into each bottle fit the stopper loosely.

A Vacola outfit or similar container is used to sterilise the bottles containing the Knudson's medium. The hole in the outfit where the thermometer normally goes is blocked with a wad of cloth. Put enough water in the outfit to bring the level to about one inch higher than the level of the medium in the bottles no higher or they will fall over. Bring the water to the boil and allow to boil for one hour. At the end of this time pour all the water out of the outfit and immediately tighten the tops on the bottles. Replace them quickly back into the outfit laying them on their sides and standing them

*Editor's Note:* Many readers will immediately decide that all the work involved above is too much trouble. Those people who have tried to raise orchids from seed, however, will readily acknowledge that if this method works then it is well worth the trouble. Mrs. Kowald has had remarkable success with this method and others are urged to try it. We carried a fully illustrated description of a similar method in our No. 18 issue.

upon a towel, and replace the lid of the Vacola outfit tightly. Allow to stand for one day before flasking the seed. Placing the bottles on their sides will give a larger planting area.

The small seed bottles, eye dropper, the bottle for the distilled water and other small items that will go into the sterile box are all wrapped in a tea towel and boiled in a saucepan for one hour. Remove from heat but leave lid on until required for use.

Flasking is done in an home made steriliser box made from a cardboard carton, in March or April. The opening in the carton is covered with a large piece of glass or plastic sheet, the author used an old top window from a tractor cab, fixed tightly down. This gives a window so that the work may be viewed. Two holes are made in the front of the carton and two plastic sleeves, made from plastic sheet with elastic cuffs, are sewn onto the carton so that they may pass through the holes when the arms are inserted into the box. Before placing the various components into the steriliser it should be carefully washed out with "Captan" solution.

First place 10 grams of the calcium hypochlorite in a bottle with 140 c.c. of distilled water and shake well for one hour, allow to stand so that any solid material will settle. The clear liquid is then poured into another bottle. On to each of the small seed bottles, previously boiled, fix a small piece of sticking plaster. Pour into each of these bottles some of the settled liquid calcium hypochlorite. The seed is now placed into its own bottle and the plant name and a number, which will coincide with a numbered flasking bottle, is written upon the sticking plaster. These small bottles containing the seed are now shaken vigorously for 20 minutes.

Spread a boiled tea towel or two, after they have been dipped in Captan solution and squeezed dry, over the bottom of the carton. Now the following articles are placed into the box, after being dipped in the Captan solution; the flasking bottles to the left side rear; the seed bottles, the small bottle of distilled water, to the right rear; the old Vacola rubber rings, pieces of wadding squeezed dry, the squares of plastic sheet are placed near the front. Into the far right corner place a cup containing some Captan solution. Spray the inside of the carton with a fungicide (Cuppox) and close the lid and seal tightly.

The rubber gloves are now fitted onto the hands and these are then rinsed in Captan solution and the arms pushed through the plastic sleeve into the carton. The fingers are dipped into the cup of Captan's solution and stirred around a little. Open a small seed bottle and with out disturbing the seed, pour off the Hypochlorite water. If the seed is floating get the solution out with a dropper. Now charge the eye dropper with distilled water and drop a few drops of this water into the bottle (just enough to float out the seed) and shake well with a finger covering the opening. Open the appropriately numbered bottle containing the Knudson's medium and quickly tip the contents of the small bottle into it. Shake and pour quickly so that seed does not run down and stick on the side. If some seed remains, repeat the above. Carefully pour off the surplus water from the Knudson's medium without disturbing the seed. In the author's experience it has been found not important to completely remove all the water; the best and largest growing seedlings were in a bottle containing a very sloppy medium. In preference to the above method of placing the seed on the medium, a wire loop may be used to pick the seed out of the small bottles and to place it on the medium.

After the seed has been placed, replace the stopper firmly on the flasking bottle and cover it with a piece of the wadding, covered with a piece of the plastic sheet. Use a twisted Vacola rubber ring to hold this cover down firmly. The stoppers should have been kept in a cup of "Captan" while bottles were being filled and the wadding should be dampened with it. When finished be sure to wash the hands thoroughly to remove any residual fungicide.

The bottles are kept in a cool room with little light. When the leaves appear, filtered early morning sunlight can be allowed to fall upon them. The plants may be left in the bottles for as long as two years before planting out. February to March would be the best time to plant out, just as they are starting to show growth after the summer dormancy. The author washes the small tubers out with luke warm distilled water. The small tubers are planted in a fine rotted leaves and tan bark mixture. Water first with cool distilled water with a little yeast solution mixed with it. More yeast solution may be given in about a month from planting out. Plants are placed in a cool sheltered position where they may receive early morning sunlight.

## Orchids in Australia

Review by Jean Galbraith

The complete edition of *Orchids of Australia* by W. H. Nicholls and edited by T. B. Muir and D. L. Jones is outstanding as a book on Australia's natural history. It is not inexpensive. The retail price is \$30.00, but I doubt whether any book at that price is better value. It is a book one can hardly over praise. Wishing to provide a little "salt" to balance the "sweet" of praise I have looked for something to criticise lest unalloyed praise be thought uncritical. I found nothing of importance. The one minor disadvantage is the absence of any reference to the few common species which are not illustrated. The 400 species illustrated are more than half the total number of Australian species, but it would be impracticable to list all those, mainly rare, species not illustrated. Still it is pity when a common and striking species such as *Cryptostylis longifolia* is not even mentioned though all other Australian species are illustrated. A brief reference under the generic name would save beginners some trouble.

As a help in identifying orchids it will be invaluable. Many who find even a lucid botanical description difficult will be able to recognise species at once by referring to these fine life-size paintings by W. H. Nicholls.

Mr. Nicholl's descriptions of, and notes on, all species illustrated (about 470) are invaluable. They are together at the beginning of the book, each name followed by the plate number (and each plate with a cross reference to the description). The book has been edited with discrimination and care by Messrs. Jones and Muir. They have made no changes in the original text except in bringing all names up to date, but additional information has where necessary, been added in square brackets. Also, for the specialist the name under which the species was first described, with the date and name of the publication in which it appeared, and page references to state floras have been added.

So much for the text and excellent editing. The book could never take its place amongst definitive botanical literature without them, but it is the plates that make the book outstanding in the history of Australian book publishing.

I have been familiar with the work of W. H. Nicholls since the early nineteen twenties when I first met him and saw for the first time the work of a then unknown artist and orchidologist. During a friendship that lasted until his death, I saw the originals of most of the plates in the book, so I know how accurately the colour and delicate workmanship are reproduced.

Every one of those 476 plates is a delight whether to botanist or artist, but to this reviewer it is the pictures of very small species like the miniature *prasophyllums* that give the keenest pleasure. One can only marvel at the eyesight and ability they demand from the artist; marvel too, as one does in nature itself, at the exquisite detail of colour and form in minute flowers.

(Continued on page 282)

## TASMANIAN ISOPHYSIS

A series on Tasmanian Wildflowers by A. M. Gray

*Isophysis tasmanica* Hook. f. syn. *Hewardia tasmanica* Hook. f.

*Isophysis tasmanica* is a strikingly beautiful plant occurring in poor arid country in the west and S.W. of Tasmania. *Hewardia* has been classified in both the Liliaceae and Iridaceae families, the reason for this is that the ovary does not exactly conform to either family.



On the quartzite ridges and craggs of the S.W., "*Hewardia*" is found in abundance, growing in rocky clefts or small pockets of peaty soil. When not in flower it is easily overlooked as it resembles a tuft of coarse grass. In the flowering season, however, there is no mistaking it, the flowers are striking and most attractive, star-shaped and deep purple, burgundy or

rarely yellow and from 1" to 3" across. It has popularly been called the "Eidelweiss" of the Tasmanian West and South-west country, although of course it has no resemblance to this plant and is not even distantly related.

The detailed description is as follows:-

A small perennial, densely tufted, from 2" to 12" high. The leaves with the bases imbricate and sheathing, radical, rigid and lanceolate in shape; opposite and equal in length. The single plant fan-shaped. Flowers solitary on a simple, erect stem, 6" to 1' high, with a few leafy bracts along its length. The flowers subtended by two leafy bracts. Perianth regular, spreading or reflexed, united at the base and with six narrow-lanceolate segments, 1" to 2" long, purple or yellow in colour. Stamens 3, united to the base of the three inner segments. Anthers opening outwards, filaments short. Ovary connected at the base with the perianth, the remainder free and more or less superior, three-celled with numerous ovules in each compartment. Style shortly divided into three branches at the apex, short. *Isophysis* has a fairly short flowering season, usually from November to January. It is widely distributed all over the quartzite country of the West and South-west of Tasmania, from sea level to the highest peaks.

The most successful way to propagate *Isophysis* is by seed. Root divisions may be taken but this requires some skill and a lot of care to ensure success as the plant dislikes disturbances. Seed is easily obtained from the ripe capsules, usually in February or March and should be sown soon after. A shallow pan or seed box is the best receptacle, and a mixture of fine sand and peaty soil, 1/1 is the best sowing medium. The seed should be scattered thinly and only just covered with the sowing medium; watering should be regular. When the seed has germinated the small plants should be transplanted into small pots or directly into the rockery garden. *Isophysis* requires a cool position with reasonable drainage, the soil should be acid in nature. A rocky soil with the above characteristics is ideal.

### ISOPHYSIS TO REPLACE HEWARDIA

The name *Hewardia* is illegitimate as it duplicates an older published *Hewardia* for a genus of ferns. So our attractive Tasmanian lily must now become *Isophysis tasmanica* (Hook.) T. Moore 1853.—J. H. Willis, Herbarium, Melbourne.

### THE PLANT FAMILY IRIDACEAE IN AUSTRALIA

There are not a great many members of the "iris" family native to Australia and reports on these are invited. They are:

The genus *Diplazena*—*D. moraea* and *D. —* species *nova* possibly.

The genus *Patersonia*—Some of the 38 species described and illustrated in colour in our No. 38 issue.

The genus *Libertia*—*L. pulchella* and *L. —* of the south-east.

The genus *Isophysis*—The only species *I. tasmanica* as above.

The genus *Orthrosanthus*—Five species of the "Morning Iris" of West Australia.

The genus *Campynoma*—*C. lineare* of Tasmania is the only species.

### THE GENUS DRACOPHYLLUM—

The species of this genus were described in our last issue. The following paragraph was omitted in error.

#### 3. *Dracophyllum milliganii* Hook. f.

A tall moderately branched shrub up to 4 m. high, with large leaves (15-90 cm. long) crowded at the top. Panicles up to 40 cm. long bearing numerous white or pinkish flowers in which the staminal filaments are free. Endemic to Tasmania, where it favours wet places in mountain gullies and exposed slopes up to altitudes of about 4,000 feet.

## DENDROBIUM KINGIANUM

by A. W. Dockrill

*Dendrobium kingianum* is a favourite amongst orchid horticulturalists in New South Wales and Southern Queensland. It is readily cultivated (in most of its forms) under a wide variety of conditions, occurring in bewildering variations.

This species occurs from almost the Hunter River in Central-eastern New South Wales almost to the Tropic of Capricorn and from within a few miles of the coast to, in one area at least, about 250 miles inland. Also it is found from a few feet above sea level to about 4,000 feet. It usually grows on rocks or cliffs in rather exposed situations but is occasionally found in gullies where it gets a fair amount of shade; on rare occasions, plants have also been growing on trees.

A plant will, under favourable conditions, become a "mat" covering an area of several square yards. Its stems are closely tufted, are from under 2 to over 12 inches long, are thickest near the base and usually, but not invariably, taper to a slender neck near the top. Most plants will, under some conditions, freely produce aerial growths from near the top of the stems but some plants, especially those of var. *pulcherrimum* Rupp, seldom produce these. From 2 to 6 leaves are borne near the top of the stem and vary from about 1 to 5 inches long. The racemes also arise from near the top of the stem, vary from 1½ to at least 6 inches long and bear from 2 to at least 15 flowers. The flowers are from ½ an inch to over an inch in diameter and the accompanying illustration shows 50 variations in colour and shape which occur. It would not be surprising to find that there were a further 50 variations.

A number of "varieties" have been described, all but one of which were based on colour of the flowers but since about 100 variations in colour of flowers occur, it can be seen that these "varieties" are of little significance. The exception to the above remarks, var. *pulcherrimum* Rupp, is a variety with very short stems under 4 inches long which usually bear only 2 leaves (but occasionally 3 or 4) and short racemes which are few-flowered; the flowers average about an inch in diameter, are widely opening and are usually a dark reddish mauve but vary to pale rose.

---

### AUSTRALIAN INDIGENOUS ORCHIDS

This large 870 page book by A. W. Dockrill describes all Australian epiphytic orchids and those terrestrial orchids found in the northern areas of Australia. For people interested in the epiphytic orchids of Australia, this is the only book that meets their needs.

It is proposed to maintain this book up to date through the pages of "Australian Plants" presenting additional information, new species, new discoveries, etc., thorough examination has revealed six corrections, most of which are minor. These are available in the form of a 4 page pamphlet, which also contains the author's introduction to the book, to those who have already purchased copies, by writing to The Editor, "Australian Plants", 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213. Copies of this wonderful book may also be obtained by mail from this address by sending \$18.00 plus \$1.00 postage.

There are many fine colour plates in the book also and it is proposed to produce a colour plate of all species in "Australian Plants" if suitable colour slides come to hand. If you have a really good colour slide of an epiphytic orchid that is not featured in colour in the book, then forward it to the editor for inspection. I urgently need a colour slide of *Dendrobium sturtii*.



Photography by R. F. Leaney.

### ***Dendrobium kingianum***

A fine rosy pink form of the Queensland type from the area of Mt. Lindsay on the Macpherson Ranges.

## **Insect Pest Control—By the Use of Insects**

"For years I have been an A.O.S. member and an avid hobbyist. I caught the bug when I lived in Florida. When we moved to New York I had a greenhouse built . . . The use of greenhouse cultural methods after the ease of South Florida outdoor growing conditions was a painful transition.

The worst chore was insect control. I am quite allergic and do not like using commercial insecticides, so I started to apply some of my outdoor gardening habits to my orchid culture. I brought my friends the Praying Mantis and the Ladybird Beetles into my greenhouse. These beneficial insects devour thrips, and all small insects and when the mantids get big they eat spiders. I placed an egg-case in the greenhouse this season. The young mantids are doing a great job already."

The following information from the Department of Agriculture's Entomologist is that all ladybird beetles, with one exception, are useful to mankind, as they feed mainly on aphids, thrips, red spiders and such pests as we usually destroy with chemicals.

The one exception is the "28 spot" or pumpkin beetle, which has a high, round body, practically a half sphere, yellow with 28 black or brown spots. There is one, very like it, but a "goody" which has 16 spots and is often killed for the sins of his relative. The "28 spot" is often found on cucurbits, potatoes and tomatoes, where the larvae do a lot of damage to the leaves.

The "goodys" are often found where there are large aphid colonies, such as on the chrysanthemums or the roses. Pick the whole spray, bugs and all, take it into your greenhouse and let them get to work. Of course, if you use insect sprays they will destroy your new friends also.



Reprinted from "Australian Orchid Review"

**Colour forms of *Dendrobium kingianum***

**DEANE'S ORCHID NURSERY**

*Specialising in Australian Native Orchids*

Please send for descriptive list. Plants sent anywhere.

*Nursery open weekends only*

157 BEECROFT ROAD, CHELTENHAM, N.S.W.

## "THE POTATO ORCHID", *GASTRODIA*

by Leo Cady

In all the plant world there are few plants found that are as interesting and unusual as one group of Orchids called Saprophytes. A Saprophyte is a plant that derives its means of support from decaying leaf mould and should not be confused with a parasite which attaches its self to living organism for its nourishment.

The section of saprophytes is relatively small to the number of green leaved plants in the orchid family. It is often found that only one species in a genus had adapted to this method of livelihood. Saprophytes have evolved a method of living which is heavily dependent on a symbiosis association with various ground fungi. In Australia little has been done to identify the associated fungi, although a recent paper<sup>1</sup> gives some of the fungi that have been isolated with a few of the green leaf species.

For a number of years the author has felt that there was often a fungal connection between orchid and trees, shrubs or any other plants they associate with. Recently in New Zealand it was proven that *Gastrodia sesamoides* growing in conjunction with *Acacia melanoxylon* had a bridge of the Fungus *Fomes* spp. impregnating both plants and connecting both plants in a living bridge<sup>2</sup>.

The genus *Gastrodia* belongs to this saprophytic section, most if not all of the 16 species are saprophytes. The genus is chiefly Indomalayan, two endemic species being found in Australia, one *G. sesamoides* extends to New Zealand and is found in all Australian states while *G. queenslandica* occurs only in North Queensland.

The name *Gastrodia* means "Little Stomache".

### *Gastrodia sesamoides* R.Br. "The Potato Orchid"

A slender plant up to 60 cm. tall. No leaves are present, these being reduced to stembracts. Plant with a potato like tuberous rhizome. Flowers usually few but occasionally in a fairly numerous crowded raceme, whitish to cinnamon brown in colour, the segments united into a five lobed tube, very gibbous at the base and the flared section at the apex of the tube, somewhat undulate. Labellum is on a dilated claw, oblong yellow or orange, very obtuse, the margins very undulate, the lamina with a single longitudinal ridge bordered with calli and ending in a multiple gland.

Column very narrowly winged. Anther operculate; stigma oblong. Flowers in August to January.

### *Gastrodia queenslandica* Dockrill

A slender plant up to 8 cm., elongating up to 30 cm. after fertilisation. The flowers up to 2 are dingy yellow outside and orange inside, tubular, between 8 to 12 mm. long. The sepals and petals are joined for almost their entire length with only a small opening at the apex of the flower. The labellum is three lobed with two large basal calli and two ridges on the lamina towards the apex. The lamina is very narrow at the base, expanding into an almost heart shaped blade. Column has two black or brown wings extending just higher than the anther.

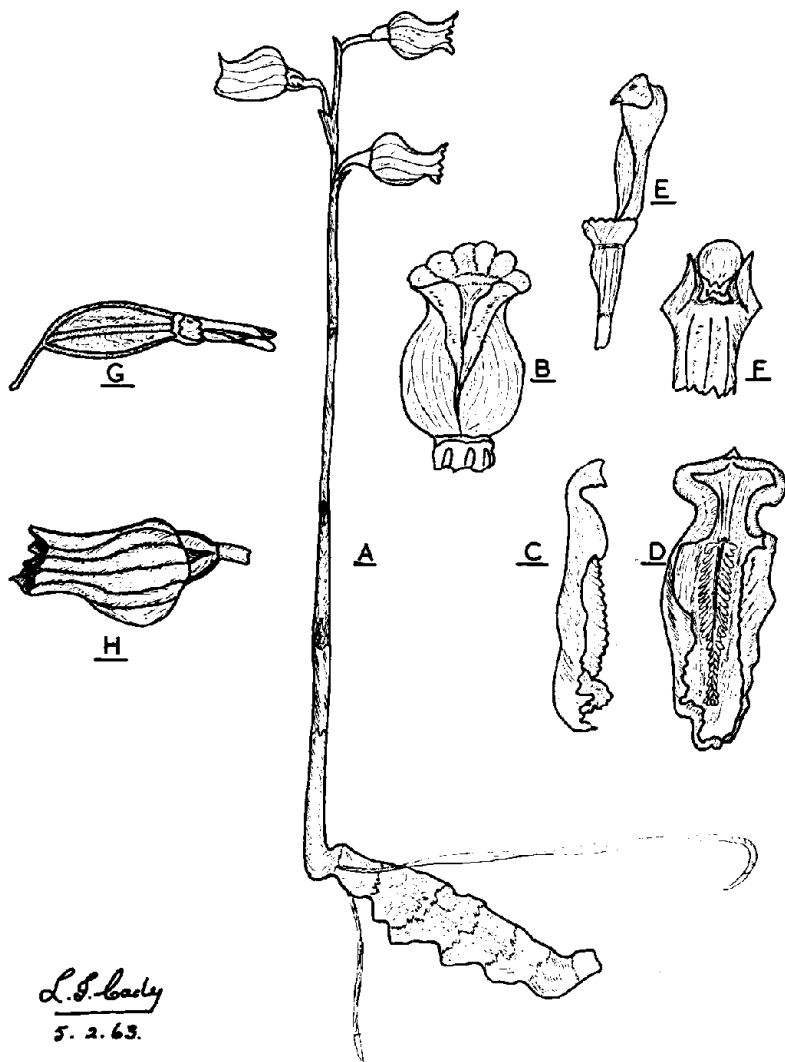
Flowers from December to January.

<sup>1</sup> Warcup and Talbot. *The New Phytologist*, 66, 831-841, Oct. 1967.

<sup>2</sup> E. D. Hatch, *New Zealand Gardener*, 21 June, 1969.

Remarks: This species was only recently described, the author Mr. A. W. Dockrill states the plant to be "not rare but it is seldom seen as its life cycle of the portion of the plant above ground is extremely short, the first emergence from the ground to dispersal of the seed occupying only about a week". It is found in lowland rain forest up to 1500 ft. altitude.

GASTRODIA SESAMOIDES. R.Br.



KEY TO PLATE

- A. Plant  $\frac{1}{4}$  natural size. D. Labellum above. F. Upper section of the column front.  
 B. Flower above. E. Column side. G. Ovary and faded flower side.  
 C. Labellum side. H. Flower side.

All figures excepting A. greatly enlarged.

## TASMANIAN WATTLES

(An article in a series on "Tasmanian Wildflowers" by A. M. Gray)

### ACACIA RICEANA Henslow.

One of the most attractive wattles, suitable for all gardens except the very driest is *Acacia riceana*, one of the two endemic species found in Tasmania. Occurring in moist situations, this wattle is quite common in the south of the state, tolerating soils which are almost pure clay and minimal drainage.

A shrub or small tree up to 20' high, it has a most graceful weeping habit with deep green leaves (phyllodes) which resemble those of *Grevillea rosmarinifolia* in size and shape. They are arranged at irregular intervals, sometimes appearing almost whorled,  $\frac{1}{4}$ "-1" long and  $\pm 1/8$ " broad with one prominent mid vein and faint lateral veins. The apex is sharply pointed. The young branches are reddish in colour and the long flower spikes creamish or pale yellow.

*Acacia riceana* is easily propagated from seed; cuttings are also quite successful. A puggy clay soil is the best for this species although it will grow quite well in humus or sandy soils as long as the ground is kept moist. Protection from hot, drying winds is most important.

*Acacia axillaris* is the other endemic Tasmanian species and is similar to *A. riceana*. It is limited to a few localities on the East Coast.

### OTHER WATTLES FOUND IN TASMANIA

*Acacia armata*. Introduced from the Mainland.

*Acacia botrycephala*. Frequent near coasts, flowers in spherical heads, leaves bipinnate. 3-15' high. Vic., N.S.W. also.

*Acacia dealbata*. Damp places and fern gullies; flowers in spherical heads, leaves bipinnate. 6-100' high. Vic., N.S.W. also.

*Acacia decurrens*. Similar to *A. dealbata*, leaves bipinnate but not silvery, spherical heads of flowers. Vic., N.S.W.

*Acacia diffusa*. Dry places and on roadsides, leaves (phyllodes) rigid sharply pointed, flowers spherical. 6' or up to 6' high. Vic., N.S.W.

*Acacia juniperina*. Similar to the above; found on sandy coasts 1'-2' in height. Vic., N.S.W., Qld.

*Acacia mearnsii*. Very similar to *Acacia decurrens*, the bipinnate leaves darker green. Un to 30' high. S.A., Vic., N.S.W.

*Acacia melanoxylon*. Widespread but preferring wet swampy situations, large leathery phyllodes, flowers in spherical heads. 10'-100' high.

*Acacia mucronata*. Widespread in damp situations, narrow leathery phyllodes flowers in loose axillary spikes 2'-30' high. Vic.

*Acacia myrtifolia*. Widespread in dry situations phyllodes leathery oblong or obovate. Apex sometimes pungent, flowers in spherical heads, forming axillary racemes 1'-3' high. S.A., Vic., N.S.W.

*Acacia retinodes*. Flinders Island, Vic., S.A. Phyllodes linear, soft flowers in axillary racemes 3'-15' high.

*Acacia siculiformis*. 3000-4000 in the N.E. and Central Plateau of Tasmania, also in Vic. and N.S.W. Phyllodes hard, rigid and pungent, flowers in spherical heads 1'-3'.

*Acacia sophorae*. Sand dunes, coastal soft phyllodes flowers in axillary spikes 5'-20'. S.A., Vic., N.S.W.

*Acacia stricta*. Common in dry situations phyllodes linear, leathery apex blunt. Flowers in numerous spherical heads. 3'-10'. Vic., N.S.W.



Photography by Frank Hurley

Blocks by courtesy of John Sands Pty. Ltd.

### ***Acacia armata*—"Kangaroo Thorn" Wattle**

*Acacia armata* is a most distinctive wattle. It is called "Hedge Wattle" also as it does make an effective hedge. It grows to 8 ft. and has a good yellow coloured flowerhead. Be sure to plant it where you will not rub the spikes or where you do not want people to walk.

*Acacia suaveolens*. Common in sandy heaths, long leathery phyllodes. Flowers axillary racemes. 3'-6'. Vic., N.S.W., Qld.

*Acacia verniciflua*. Common in damp shady situations, phyllodes narrow lanceolate or elliptical blunt, flowers several together, each with 50-60 flowers, spherical. 6'-20'. S.A., Vic., N.S.W.

*Acacia verticillata*. Common in gullies and damp hillsides. Phyllodes in

whorls of  $\pm 6$ , rigid and pungent. Flowers in a dense cylindrical spike 1' 6"-15' high. S.A., Vic.

*Acacia roemeriformis*. Frequent in dry heaths, phyllodes small  $\pm$  triangular pungent. Flowers in small spherical heads, procumbent to 1' high. S.A., Vic., N.S.W.

## WESTERN AUSTRALIAN CRISIS

The survival of our natural heritage, nature's wonders of flora, fauna and off-shore reefs, has reached crisis point throughout Australia. Why is it that our elected representatives to government appear so helpless. In booming Western Australia where the government members appear to be the most progressive, one of the surviving wonders of nature's world, the W.A. wildflowers are being impatiently thrust into extinction. They recently opened a new herbarium. If a more progressive approach is not taken in relation to the areas set aside for conservation, it will not be long before their tourists will have to go to the herbarium to look at the dried specimens and wonder at the folly of man that allowed such treasures to become extinct.

All Australian Australians beseech the W.A. Government to heed the people that took part in the recent conservation marches on Parliament House with the W.A. Native Conservation Council's Bill of Rights. You were elected and trusted to guard our Australian heritage and way of life.

### Tragedy

Two fine men have died adding climax to this crisis. One was an old man who had devoted his life to the study of wildflowers and took with him a wealth of knowledge now lost for ever. The other was a man in the prime of his life, trained and competent in the field of horticulture and public park display, who would have added enormously to the work he has already done at King's Park. There will be others to follow but what have we lost in our race for the non-extinction of the W.A. flora?

**CHARLES AUSTIN GARDINER** has died but his memory will live forever in the names of many wildflowers of Western Australia. Appointed to the staff of the Forestry Dept. in 1920 as a botanical collector, he has traversed the length and breadth of Western Australia in many expeditions. As Government Botanist for many years his profound knowledge of the W.A. flora has probably never been equalled. The loss of this man, a giant in his field, will be sorely felt by those now trying to balance the survival of man with the survival of his earthly domain.

**ARTHUR FAIRALL** collapsed and died while fighting a fire in King's Park that was probably deliberately lit. Together with John Beard, he conceived the present display at King's Park. Prior to coming to Perth he was Parks Superintendent at Pietermaritzburg, South Africa and his professional competence was outstanding. Years of careful observation and experience have been compiled in his book "West Australian Native Plants in Cultivation" which will be available shortly. In the prime of life Arthur Fairall had much to contribute to our culture.

### ORCHIDS OF AUSTRALIA—cont. from page 272

About  $\frac{2}{3}$  of the species illustrated are terrestrial, and as "Australian Indigenous Orchids" by A. W. Dockrill describes and illustrates all the epiphytic orchids of Australia as well as the terrestrials from Northern Australia orchidologists in Australia are being catered for as never before. The degree of overlapping between the two new orchids is small and they supplement each other to practically cover the whole family in Australia.

Each plate of *Orchids of Australia* occupies a full page (9 $\frac{1}{2}$ " x 12 $\frac{1}{2}$ ") except in the case of a few of the larger epiphytes which occupy two pages.

One cannot congratulate the author who did not live to see the complete edition of his great work published, but congratulations must certainly go to both editors and publisher, on so enriching the literature dealing with Australian plants that, in its field, one does not feel that the work can be surpassed.

*Orchids of Australia* by W. H. Nicholls, edited by D. L. Jones and T. B. Muir, published by Nelson, 128 pages of text, 478 full page colour plates, \$30.00 Aust. Available by mail from the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213, Australia plus \$1.00 postage (\$2.40 overseas).

## STREET TREES

by H. O. Oakman and R. Boden

### BATSWING CORAL

Many of our native trees have responded well to cultivation and quite a number are grown as ornamentals but only a select few have been used to any extent for street planting. The reasons for this are fairly obvious—availability is the first one; not many nurserymen are keen to propagate native trees in sufficient quantities for street planting unless they are given a firm order. Parksmen are even less inclined to risk their reputations on street trees about which there is insufficient information as predictable results and public appreciation are basic requirements.

Some years ago, one section of a Brisbane suburb was selected for tree trials in which many of the Queensland natives were grown as street trees for the first time. The Batwing Coral (*Erythrina vespertilio*) was one of these and has proved itself to be a very useful tree for hard conditions and places where maintenance attention is minimal. In good soil, growth is very fast and a stem is formed early without recourse to pruning. Branching is strong and dense, forming a shapely crown.

The Batwing Coral is deciduous for a few weeks. It prefers full sun and can stand heat, qualities that make it ideal for inland towns. It is unsuitable for exposed sites and its covering of spines may be regarded as a disadvantage, but not more so than the other species of coral that have been used extensively throughout Australia. Stakes should be used when planting out as the young growth is inclined to be brittle.

The leaflets are from 3-4" long, smooth, pale green with 3 lobes looking somewhat like a bat in flight. The flowers are pea shape, densely held on erect racemes, bright orange and make a display for three weeks. The seed pods are twisted and contain a few large red seeds.

The Batwing Coral is known to timber men as the Grey Corkwood because of its straw coloured, very light but tough timber. The Aborigines used it to make shields as the fibre is stringy and would not split if hit by spears. A few years ago the wood was used for surf boards. This tree was known to the Aborigines as Goomurrie, Nanango or Arangi and they used its flowers as a sign of mourning, fixing them in the hair with bees wax. The roots were eaten raw. Its habitat is North New South Wales and most of Queensland where it is found in the drier scrub. Approximate height is 40 ft.

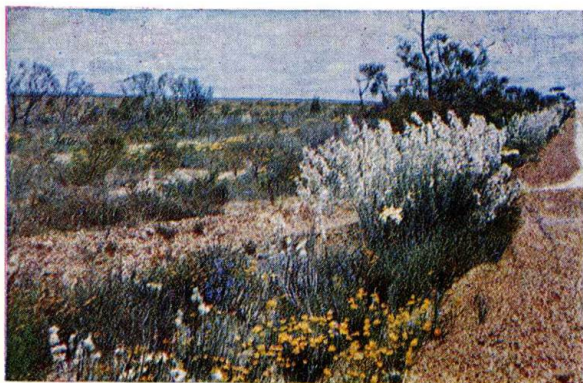
When raised from seed the Batwing Coral is extremely variable in its foliage, growth and flowering. There is no doubt, however, that once a choice cultivar has been produced, the popularity of this tree will increase tremendously.

### OTHER AUSTRALIAN ERYTHRINA

*Erythrina phlebocarpa* is extremely hardy and vigorous, flowering freely in less than 12 months from mature cuttings and blooming from May to the end of August. It usually loses its leaves shortly after the bright scarlet flowers open and the new leaves appear in August. The terminal section of these three part leaves is roughly triangular, a little longer than broad. The tree occurs naturally in North Queensland, around Proserpine and down the Queensland coast into N.S.W.

*E. phlebocarpa* is being used as a street tree in Perth and grown at King's Park.

*Erythrina insularis*. The existence of this species has yet to be confirmed.



### **The Wild Foxglove, *Pityrodia axillaris***

See page 267—A plant for rockeries

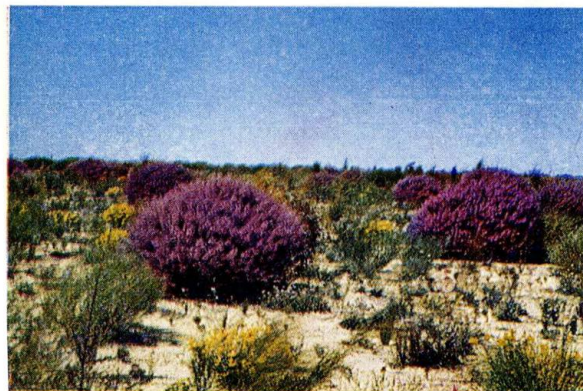
The colour form shown here is not particularly good but the form of this plant is shown. Very little is known of the successful cultivation of this plant. Will those who have grown then please report.



### ***Tetratheca affinis* Endl.**

"A Black-eyed Susan". See page 269.

An eastern species *T. juncea* is described. The species opposite is from W.A. and these western species also can take some exposure as in a rockery. An issue on *Tetratheca* is planned, will readers please advise of their experiences.



### ***Cyanostegia angustifolia***

(See page 262 for description)

This plate does not show the pretty violet open papery flowers with their deep yellow anthers but they completely cover the bushes that are 3-5 feet high.

Blocks donated by  
N. B. Thomson

**ROCK PLANT SUPPLIES**

174 CANTERBURY ROAD, BLACKBURN, STH. VIC. 3130

PHONE: 878-4165

**Australian Native Ground Covers and Dwarf Shrubs****Also all plants for the Rock Garden**

Open Mon. to Sat. 9-5

Stamp for Native List

**BARKLY NURSERIES***Native Plant Specialists*

Choose from our growing specimens

269 NEPEN HIGHWAY, PARKDALE, 3194

Phone: 90-2694

PRESERVATION BY CULTIVATION

**FLORALANDS**

KARIONG, via GOSFORD, N.S.W.

*A large variety of the most popular native plants at nursery.*

PHONE: Gosford 21142

P. J. PARRY

**AUSTRALIAN NATIVE PLANTS**

GOOD SELECTION ADVANCED &amp; SEMI-ADVANCED PLANTS AT

**DENOVAN'S NURSERY — 77-8891**

188 Marco Avenue, Panania, N.S.W.

**SORRY NO MAIL ORDERS****NATIVE PLANTS**

Shrubs, Trees, Ground Covers

*Mail Orders wholesale only*20 varieties of *Boronia*—30 *Grevillea*  
Flat to let.**J. L. & P. J. FREEMAN**

"Garamina", Merimbula, N.S.W.

**TELOPEA VALLEY NURSERY**

69 CUMBERLAND AVE., COLLAROY

also at Mangrove Mountain

*Wide range Natives, small to advanced plants — Regret no mail orders*

PHONE: 98-6256

**AUSTRALFLORA NURSERY**

W. R. Elliot — Telephone: 728-1353

BELFAST ROAD, MONTROSE, VIC. 3765

**LARGE SELECTION OF GROUND COVERS, SHRUBS AND TREES**

Open Wednesday to Saturdays or by arrangement

Wholesale and Retail

Send Stamp for Catalogue

**ALEXANDER PLANT FARM**

(Doug Twaits, Prop.)

2 Winifred Street, ESSENDON, VIC.

Phone: 379-5163

**EVERYTHING FOR THE GARDEN***Specialising in Australian Native Plants***Greenbriar Drive-in Nursery****AUSTRALIAN NATIVE PLANTS**

Large and Varied Selection

195-7 MOUNTAIN VIEW RD.,

BRIAR HILL, VIC. 3088

Phone: 43-1468 — Open Weekends

**GAWSWORTH NURSERY**

(Reg.)

SMEDLEY RD., NTH. RINGWOOD, 3134

**NATIVE PLANTS**

Open Sunday

Mon. to Fri. 1 p.m. to 5 p.m.

**NATIVE PLANTS**Over 350 varieties of shrubs, trees,  
rockery plants, ground covers, climbers.  
*Specialising in hardy ornamentals in  
small, semi advanced and advanced***AMAROO NURSERY**

654-1488

Annangrove Rd., Kenthurst, N.S.W.

Closed Wednesday

**BELBRA NURSERY**

In the Heart of the Grampians

**Large Range of Australian  
Natives***Inquiries: BOX 12, HALL'S GAP  
Catalogue posted 25c for mail orders  
to Box 12, Hall's Gap, Vic. 3381***NARRABEEN NURSERY**

74 AUSTRALIAN NATIVES

1444 Pittwater Rd., Narrabeen

Nth., N.S.W. — 913-8289

**OPEN EVERY DAY**

Specialist in plants for sea coast

## THE SOCIETY FOR GROWING AUSTRALIAN PLANTS

"AUSTRALIAN PLANTS" IS AUSTRALIA'S NATIONAL PRESERVATION JOURNAL  
(A non-profit making venture, produced quarterly, dedicated to preservation by cultivation).

This journal is published by The Publishing Section on behalf of The Society for Growing Australian Plants and its member Societies as follows:

### SOCIETY FOR GROWING AUSTRALIAN PLANTS—N.S.W. REGION:

President: Mr. C. M. Taylor, 39 Addison Avenue, Roseville, N.S.W. 2069.  
Secretary: Mr. F. Hatfield, 56 Taunton Road, Hurstville, N.S.W. 2220.

### SOCIETY FOR GROWING AUSTRALIAN PLANTS—QLD. REGION:

President: Mr. M. W. Hodge, 25 Barford St., Moorooka, Qld. 4105.  
Secretary: Mrs. D. Howlett, Whitty Road, Moggill, Qld. 4068.

### SOUTH AUSTRALIAN SOCIETY FOR GROWING AUSTRALIAN PLANTS:

President: Mr. G. R. Needham, 2 Stuckey Ave., Underdale, S.A. 5032.  
Secretary: L. S. Howland, 2 William St., Hawthorn, S.A. 5062.

### SOCIETY FOR GROWING AUSTRALIAN PLANTS—VICTORIA & TAS.:

President: Mr. F. L. Jeffs, 23 Salisbury Ave., Blackburn, Vic. 3130.  
Secretary: (Sister) E. R. Bowman, 4 Homebush Crescent, Hawthorn East, Vic. 3123.

### SOCIETY FOR GROWING AUSTRALIAN PLANTS—CANBERRA REGION:

President: Mr. R. J. Ratcliffe, 96 Hodgson Cres., Pearce, A.C.T. 2607.  
Secretary: Mrs. D. Robinson, 29 Hawker Street, Torrens, A.C.T. 2607.

### WEST AUSTRALIAN WILDFLOWER SOC. (Inc.):

President: Mr. Barry Moss, Flat 202 "Linden", 106 Terrace Drive, Perth, 6000.  
Secretary: Mrs. G. A. Oxnam, P.O. Box 64, Nedlands, W.A. 6009.

Membership is open to any person who wishes to grow Australian native plants.  
Contact the Secretary of the Society for your State for information without obligation.

### PUBLISHING SECTION FOR SOCIETIES

Managing Editor: W. H. Payne assisted by P. D. Leak; Treas.: N. Denovan;  
Dispatch by R. Birtles, N. Gane, C. Hubner, N. Dent, J. Hayward, with families.  
Stencils: H. Bartholomew. Illustrations: A. Spurway, B. Maloney and E. Ham.  
Advertising and Sales Representatives in each State: N.S.W., P. D. Leak; Qld., W. W. Kilgour;  
S.A., E. S. Thompson; Tas., G. van Munster; W.A., F. Lullfetz; Vic., F. L. Jeffs.  
MAIL—Address mail to the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

SUBSCRIPTION—Members: Apply to State Secretary above.

NON-MEMBERS: You may receive the next 4 issues direct to your home by forwarding an annual subscription of \$1.20. Overseas subscriptions are 16/- sterling or \$1.80 U.S.

# PRINTING . . .

Printing is our business. Our aim is to supply it at the most reasonable price and to give a courteous and efficient service. If we can in anyway be of service to you or your organisation, please contact us and we will be happy to supply quotations . . . .

## SURREY BEATTY & SONS

RICKARD ROAD, CHIPPING NORTON, 2170

TELEPHONE: 602-7404

602-6522



## BOOKS ON WILDFLOWERS

The number of books that have been produced on wildflowers must frustrate many enthusiasts who would probably prefer to spend their money on plants. In the editor's opinion there is little doubt that the periodical "Australian Plants" adequately meets the needs of most wildflower growers, students and admirers. Printed since 1959, and now in 42 issues, all but six may be obtained from the editor.

VOLUME No. 1, issues 1-12, no longer available bound but all issues available separately at 45c each except nos. 2, 3, 4 & 11, i.e. \$3.80 incl. postage.

VOLUME No. 2, issues 13-20, all available only fully bound at \$6.00 plus 20c postage. Bound in this volume is also "A Descriptive Catalogue of Western Australian Plants".

VOLUME No. 3, issues 21-28, all available only fully bound at \$6.00 plus 20c postage, including also "Catalogue of Cultivated Australian Native Plants" valued at \$3.00.

VOLUME No. 4, issues 29-36, all available only fully bound at \$6.00 plus 20c postage, including "Western Australian Plants for Horticulture—Part 1" valued at \$3.00—see below.

VOLUME No. 5, issues commencing No. 37. Past issues are 45c each plus 5c postage.

Climbing on the bandwagon most publishers have produced books on wildflowers. Many cover the same range of subjects, which have already been introduced in "Australian Plants" but most have either of the following disadvantages. They either have a large number of beautiful colour plates with inadequate descriptions and practically nothing on cultivation, or they attempt to deal with cultivation and skimp on colour plates leaving it to the readers experience or imagination as to what the plant and flower really looks like. If you bought most of the books available you would have less than half of the range of material available in past issues of "Australian Plants". There are exceptions.

WEST AUSTRALIAN PLANTS FOR HORTICULTURE is the latest book by this Society available from the editor for \$3.00 plus 20c postage. The format of the book generally is to have simple but adequate descriptions (using simple features that anyone can distinguish) of three species in one genus with a full colour plate of one of them on the opposite page. Directions as to cultivation are given for each species. Hundreds of West Australian wildflowers are also described. This is the style of book we recommend and is excellent value at this low price. It is proposed to produce more in this series on wildflowers from other states if readers will support us by buying the first one, providing the money to produce the next one.

### ST. ANNE'S NURSERY

56 WARRIEN RD., CROYDON, VIC.  
(off Maroondah Highway, opposite  
Croydon Road)

NATIVE PLANTS, LARGE & SMALL  
USUAL & UNUSUAL

Specialising in Gums

Hours: 1-5 p.m. afternoons—all day  
weekends — Closed Mondays

Sorry No Interstate Mail Orders

### Nindethana Native Plant Seeds

By Packet, Ounce or Pound  
Large selection. Send for free list.

### NINDETHANA

(G. W. Althofer)

Box 5, Dripstone, N.S.W.

Clearview Nursery—W. Cane, Box 19 Maffra, Victoria. Specialist in developed plants.

### KING'S PARK AND BOTANIC GARDEN, PERTH, W.A.

Current Seed List, 30c. Seed, 30c per  
packet. Wholesale rates on application.

"Descriptive Catalogue of W.A. Plants"  
by J. S. Beard, \$1.35.

"The Cultivation of Native Plants" by  
M. W. Livesy, 25c (48 pp., 13  
illustrations).

"Wildflowers of the North-west" by  
J. S. Beard, 85c (30 pp. full colour,  
70 pictures and map).

King's Park Booklet, 70c. Fundamentals  
of Pruning, 50c. All prices post free.

### YOUR AUSTRALIAN GARDEN

in Country or City

CONSTRUCTED & MAINTAINED  
WITH NATIVE TREES & SHRUBS

Grown in the sun and wind of the  
Kellor Plains by . . .

### TULLAMARINE PLANT FARM

8 Sharp's Road, Tullamarine, 3043

Phone: 338-2893

OPEN WEEKENDS — CLOSED  
MONDAYS

Constructions Phone: 306-6268

## YOUR GUIDE TO NATIVE PLANT SEEDSMEN

Australian Seed Co., Robertson, N.S.W.—Bulk lots supplied to trade & Govt. agencies.  
King's Park Seed Supply, King's Park Perth, Western Australia—see advertisement.  
Nindethana, Box 5, Dripstone, N.S.W. For all Native Seed, Packet, ounce or pound lots.  
Western Wildlife Supply, Gilgandra, N.S.W.—Bulk supplies of native and exotic tree and shrub seed to the trade—Special collections to order.

WIN. HERRY'S "POTTERS' COTTAGE NURSERY" IS NOW LOCATED AT . . .

### MANUKA NURSERY

BONNIE VIEW ROAD, CROYDON, VIC.

(Turn left off Maroondah Highway in between "Kimberley Receptions" and "Bird and Bottle"  
Restaurant)

OVER 500 VARIETIES OF AUSTRALIAN AND N.Z. PLANTS

Open Afternoons (Tues., Thurs., Sat., Sun., Holidays) or 'phone Croydon 33011

## TERRESTRIAL ORCHIDS



*Blocks by courtesy of John Sands Pty. Ltd.*

### **SOME WEST AUSTRALIAN TERRESTRIAL ORCHIDS**

These species have yet to be identified. Will readers please advise their names and experiences in their cultivation. Future issues will describe these plants and other related species. This issue describes how they may be grown from seeds on page no. 260.