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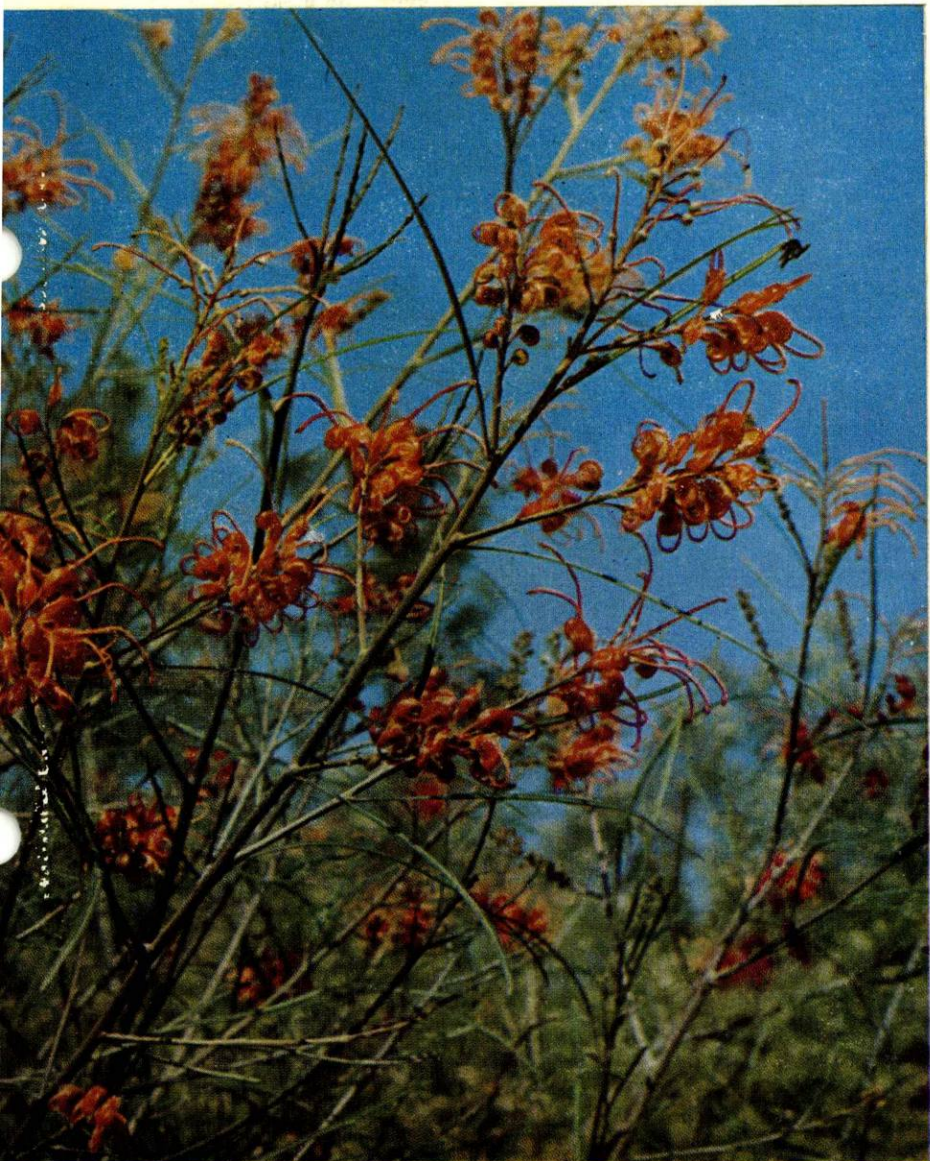
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Photography by M. W. Hodge

GREVILLEA LONGISTYLA

The Grevillea of Queensland and their cultivation in gardens.

GROWING GREVILLEA

GREVILLEA IN BRISBANE by M. W. Hodge

Grevilleas are among the most appealing of our native plants and the Genus could be used exclusively in a home garden without producing monotony. They vary in size, foliage, habit, and flower character and colour. The length of the flowering season varies with the species, from a few weeks to the year round. They have the added advantage of attracting many nectar-feeding birds to the garden.

There are a number of species which are suitable to Brisbane's climate. Though the more difficult plants generally are those which are indigenous to districts of a low summer rainfall. Brisbane has an annual rainfall of approximately 40 inches, most of which falls during summer. Some of the species which are difficult in Brisbane grow well 100 miles away in less humid areas west of the Great Dividing Range.

Greatest losses occur here during the humid summer months particularly after prolonged periods of rain. With this in mind I have avoided conditions which allow the soil to hold excess moisture and encourage damaging soilborn organisms.

My garden is on a moderate slope facing west and has less than 18 inches of top soil (pH 6-6.5) over heavy red clay. I have provided good drainage and do not use heavy layers of organic mulch around Grevilleas. Other growers have used heavy layers of organic mulch with good results particularly during dry periods.

There should be no doubt that many Grevilleas respond to rain and artificial watering but the latter can be overdone. I prefer to allow established plants to rely on the rain during summer months.

I must emphasize that these methods are used for Grevilleas on heavy soil where there is a normally high summer rainfall.

Many of my early attempts at growing Grevilleas failed because I applied general garden fertilisers. I have since been informed that the phosphorus content was the cause and that it will also kill other members of the Proteaceae family. It is preferable not to try to force growth into Grevilleas but to allow them to grow at their own pace. Some are very slow to start and others grow only at certain periods during the year. One plant (*Grevillea thrysoides*) has only recently shown progress, two years after planting. I have used iron chelates and sulphate of ammonia to correct chlorosis on a few plants. They are mixed in solution at the rate of one level teaspoon of each to two gallons of water.

Damaging roots of Grevilleas can cause their death sometimes weeks later so it is preferable not to dig near them but pull weeds out while they are small. I have seen large but not very old Grevilleas die with root rot which seems to be centred near a spiralled root so it may be preferable to select plants which do not have spiralled roots in the bottom of the pot.

(Continued on page 27)

CONTENTS OF THIS ISSUE

This issue has been devoted to the wildflowers of Queensland with particular reference to the Grevillea. Other beautiful plants from the sunny north include *Melastoma*, pp. 12; *Passiflora*, pp. 13; *Alocasia*, pp. 19; *Crinum*, pp. 20 and *Banksia*, *Buckinghamia*, *Dorlingia*, *Hakea*, *Oreocallis* and *Stenocarpus* on page 18. They will grow in southern gardens.

AUSTRALIAN ORCHIDS—*Corybas*, 15; *Thelasis*, 30; *Cadetia*, 32; *Dipodium*, 34; *Apostasia*, 36 and *Phaius*, 37.

QUEENSLAND GREVILLEA

by David Hocking

Approximately 30 species of *Grevillea* are recorded in Queensland, including the largest and well known species *Grevillea robusta* (Silky Oak) and some species that are but little known.

The following information has been gleaned from *The Queensland Flora* and later publications on Queensland plants, from the Queensland Herbarium and from personal observation and cultural experience. It is submitted in the hope that it will stimulate greater interest in these beautiful plants, particularly among those persons living in more remote areas where some of these species occur.

***Grevillea albiflora*.** A shrubby tree of 6-15 feet.

Leaves: 5-8 inches long, deeply divided pinnately into 5-10 long, very narrow, rigid, sharp-pointed lobes. The lower lobes are often again divided.

Racemes: cylindrical, about 3-5 inches long, terminal, about 5 together.

Flowers: small, white.

Distribution: Grows on cypress-spinifex sand ridges in districts such as Warrego, Gilruth Plains, east of Cunnamulla and west of St. George, sometimes in company with *G. juncifolia*.

***Grevillea arenaria* var. *canescens*.** A shrub of 2-5 feet.

Leaves: entire, about $\frac{3}{4}$ inch long and $\frac{1}{4}$ inch wide.

Flowers: green, tinged with red. Borne 3-5 together at the ends of the twigs, or 1-3 together appearing to be in the leaf axils, but actually where the twigs fork.

Distribution: Common in the Murphy's Creek area below Toowoomba.

***Grevillea banksii*.** An erect open shrub or slender tree of 12-20 feet.

Leaves: 6-10 inches long, deeply divided pinnately into about 7-13 lobes that may be $\frac{1}{2}$ inch or more wide.

Racemes: cylindrical, densely flowered, erect, terminal or in upper axils, 2-5 inches long, and either solitary or two or more in succession.

Flowers: red or creamy white, with some plants showing intermediate coloration.

Distribution: The white form occurs alone between Esk and Gatton, but both colours usually occur together although they do not always flower at the same time. It occurs around Maryborough, Bundaberg and northwards to Round Hill Head, Bustard Bay, Yeppoon, and on the coast near Ingham and Townsville. Plants on the exposed headlands frequently have a prostrate habit. See page 11 for hybrids and colour forms.

A compact form available in the trade for many years as variety 'Forsteri' is apparently a selected garden form, but its origin appears to be unknown. For some months every year many of its flowers bear 2 styles, while at other times they are normal. The leaf lobes are narrower and generally more numerous, and the plant is more floriferous over a longer period than the natural species. Both the species and the cultivated variety are easy to propagate and reliable, tolerating moderate frost.

***Grevillea dryandri*.** A low spreading shrub 1-2 feet high and up to 6 ft. across. The plant is described on page 6, where this article is continued, but a full colour plate is shown on the next page.





Photography by M. W. Hodge

GREVILLEA REFRACTA (above)

Flowers of a shrubby tree 8-12 feet, from Northern Queensland. A description is given on page 29.

Photography by M. W. Hodge

GREVILLEA DRYANDRI (left—page 4, plate shown on side)

A low spreading shrub 1-2 feet high and up to 6 ft. across from the dry areas of the far north. Described on page 6 and also on page 19.

***Grevillea decora*.** An erect shrub of 6-12 feet.

Leaves: undivided, 4-6 inches long, 1-1½ inches wide, older leaves somewhat bluish, young leaves bear rusty coloured hairs.

Racemes: erect, cylindrical, broad, terminal or in upper axils, 4-5 inches long, often in pairs or threes.

Flowers: dull red.

Distribution: Over a wide range from Duaringa, Expedition Range, Aramac, Barcaldine, Clermont in the south, to Pentland, Torrens Creek and Georgetown in the north. It is easily cut by frost in cultivation.

***Grevillea* sp. aff. *decora* (with affinity to *decora*).**

An erect shrub of 4-6 feet.

Leaves: similar to but narrower than *G. decora*.

Racemes: terminal, rachis ¼ inch long, mostly 3-5 flowered, but sometimes bearing about 12 flowers, solitary or 2-3 in succession.

Flowers: orange and yellow.

Distribution: Herberton, Irvinebank, Watsonville districts.

***Grevillea dryandri*.** A low, sprawling shrub 1-2 feet high and to about 6 feet across. Sometimes more upright.

Leaves: 4-9 inches long, deeply divided pinnately into numerous, very narrow, pointed lobes, fairly rigid and grey-green.

Racemes: one-sided, terminal, up to 12 inches long, usually about 5 together.

Flowers: corolla usually pink, shading to cream; style red; scattered along a dark purplish rachis (flower stem). Cream flowered forms have been seen.

Fruits: very sticky.

Distribution: Recorded from many northern districts such as Herberton, Normanton, Cloncurry, Camooweal, and right across northern Australia.

***Grevillea floribunda*.** A variable, erect or spreading shrub of 2-6 feet.

Leaves: entire, about ¾-2 inches long and ⅛-¾ inch wide.

Racemes: pendulous, mainly at the ends of the twigs, ½-2" long, often 2 together. The rachis and flowers on the common inland form are densely covered with rusty coloured hairs. Some forms are very floriferous.

Flowers: green, but often appearing rusty brown.

Distribution: Widespread on sandy or gravelly soils in such districts as Kogan, Moonie, Carnarvon, Rolleston, Yuelba and Chinchilla. The Crows Nest form is taller with a more open growth habit and flowers that vary from green to brown and orange.

***Grevillea* sp. aff. *floribunda*.** (Mt. Maroon). Usually a much-branched shrub of 2-4 feet.

Leaves: entire, 1-3 inches long, ¼-¾ inch wide. Young shoots bear reddish coloured hairs.

Racemes: downturned, about 1" long, mainly at the ends of the twigs, usually 3-5 flowered.

Flowers: insignificant, spidery, reddish.

Distribution: On several of the peaks and hills below Cunningham's Gap.

***Grevillea glauca*.** A tall shrub or tree to 20 feet, easily mistaken for a hakea because of the large woody fruits which are sometimes called bushman's clothes pegs because of their usefulness in this regard.

Leaves: entire, 5-7 inches long and about 1½ inches wide, bluish.

Racemes: cylindrical, pendulous, 3-7 inches long, densely flowered, usually several together on short axillary branches off the older wood.

Flowers: small, creamy white.

Fruit: 1-1½ inches in diameter, partly flattened.

Distribution: A common roadside species around Cairns, Mareeba, Herberton and Cooktown, and also occurring in New Guinea.

Grevillea goodii. A prostrate or straggling shrub.

Leaves: broad, 3-8 inches long, more or less oval, somewhat bluish.

Racemes: apparently one-sided, 2-3 inches long, solitary, terminal or in upper axils or on short side branches.

Flowers: red.

Distribution: Recorded from the sandstone country at the head of the Cape and Flinders Rivers and near Alice in central western Queensland. I have not seen specimens from Queensland, and possibly there has been confusion in some instances between this and *G. decora*. The species is apparently common in parts of Northern Territory such as Pine Creek, Melville Bay and Oenpelli.

Grevillea heliosperma. A tall shrub or small tree to 12 feet.

Leaves: very variable, 6-12 inches or more long, and once or twice deeply divided pinnately. The leaves vary from smaller leaves with few lobes about $\frac{1}{4}$ inch or more in width to large complex leaves with many lobes that may be 1-2 inches in width.

Racemes: one-sided, loose, 2-5 inches long, terminal or in upper axils, often 2 or 3 together.

Flowers: red. Fruit: hard, 1 inch in diameter.

Distribution: In Queensland in the north-west corner near the Gulf of Carpentaria, but it extends right across northern Australia.

Grevillea helmsiae. A shrub or small tree.

Leaves: entire or rarely slightly indented, 3-7 inches long by $\frac{3}{4}$ inch wide.

Racemes: cylindrical or umbel-like, many flowered, terminal, 1-2 inches long.

Flowers: corolla white; style green; with a spicy fragrance.

Distribution: Widely distributed in such districts as Childers, Eidsvold, Port Curtis, Callide and Yaamba, in light rainforest.

Grevillea hilliana. A rainforest tree of 20-40 feet or more.

Leaves: very variable, up to 12 inches or more long. If 6-8 inches long, usually entire; if larger, either divided into 2 or 3 fairly broad diverging lobes or pinnately 5-7 lobed.

Racemes: densely flowered, cylindrical, slender, 4-8 inches long, sometimes branched, terminal or several together from the upper axils.

Flowers: small, white.

Distribution: From Burleigh Heads to Eungella, Bowen and Atherton. Cultivated in the open, this forms a lower, more spreading tree.

Grevillea ilicifolia var. **scortechinii.** A prostrate or sometimes low-spreading shrub of 1-2 feet in height.

Leaves: $1\frac{1}{2}$ -3 inches long and 1-2 inches wide with holly-like edges and often somewhat irregularly lobed.

Racemes: one-sided, terminal, 2-3 inches long, 2 or 3 in succession.

Flowers: dark purple or black. Fruit: quaintly marked with dark stripes.

Distribution: In parts of the Granite Belt. An attractive ground cover, but does not adapt easily to cultivation.

Grevillea juncifolia. An erect shrub of 6-10 feet.

Leaves: variable, entire, 6-10 inches long, very narrow and rigid or deeply divided into 2 or 3, or sometimes up to 7 similar lobes, with lower lobes sometimes again divided.

Racemes: cylindrical, erect, 3-6 inches long, terminal, usually several together.

Flowers: usually rich orange.

Distribution: across the drier northern half of Australia, and in Queensland occurring near St. George, Wvandra, Cunnamullo, Mitchell, Barcaldine and Jericho. A beautiful species, but blooms often attacked by psyllids.



Photography by L. K. Bates

GREVILLEA PARALLELA (above)

A tree 15 to 30 feet widely distributed from Cape York, The Gulf, Atherton Tableland, south to Barcaldine, Backall and near Jericho. Described on page 28.

Photography by L. K. Bates

GREVILLEA MIMOSOIDES (right—page 9, plate on side)

A tree 6-20 feet occurring in northern Australia. Description on page 28.



CULTURE OF GREVILLEA

by F. D. Hockings

Grevilleas are one of the more difficult to cultivate genera of native plants, although if soil and climate suit, they may give little trouble.

While there are actual bog-dwelling species in closely related genera such as *Banksia* and *Hakea*, the *Grevillea*, with few exceptions, are more demanding of well drained, well aerated soil. In general, they prefer a soil with a definite acid reaction. Two quite well-known exceptions are *G. robusta* and *G. striata*, both of which can thrive in alkaline soil.

The majority of *Grevillea* species grow naturally on sand, sandstone or ironstone loam or gravel, some in very exposed dry situations. In cultivation, most trouble is experienced under the following conditions: on clay soils or shallow poorly drained soils, in higher rainfall areas and with regular artificial watering.

Grevilleas are very susceptible to *Phytophthora* root or collar rot which is, of course, associated with over-wet soil conditions. Some tropical species such as *G. pteridifolia* may have some tolerance to this disease. In any case, some of the southern species appear to be climatically unsuited to coastal and tropical Queensland conditions.

Mulches may also increase collar rot problems if placed right up to the stem of *Grevilleas* because they cut down on aeration and drying out of the soil.

The main disease problem besides *Phytophthora* root and collar rot is another fungus disease, *Verucispora* leaf spot which fortunately attacks only a few species.

The main pests are a small grey scale, allied to San Jose scale, which attacks some *Grevilleas*, and one or two species of *Psyllid* which cause some bud drop or flower and leaf disfigurement. The scale has a particularly toxic effect, and even a moderately heavy infestation on the stems is usually fatal to the plant.

In general, *Grevilleas* are sun-loving plants, although some species are found in light shade in open eucalypt forest. In the garden a sunny position is preferred, with sandy, gravelly or light loamy soils.

PROPAGATION OF GREVILLEA

By Seed—Sowing in a wog free medium such as washed coarse sand in a four inch pot with the seed $\frac{1}{4}$ " deep and a piece of glass over it in full sun, will give good results. As soon as seedlings appear raise the glass and provide some shelter but with air movement. Pot on while quite small.

By Cuttings—Prepare cuttings and insert in clean coarse sand in a four inch pot. Keep moist and warm but provide some air circulation. I have on old concrete washing tub raised off the ground with a piece of glass to cover most of the top, sitting under a tree.

Editor's Note: As mentioned on page 22 many simple methods have been given in past issues. It is my policy to give a method in each issue so I have briefly given my method that has been quite successful. It is more fun to grow your own plants and it is less expensive and not difficult.

Grevillea banksii

Inheritance of flower colour in the intraspecific cross *Grevillea banksii* R.Br. forma *albiflora* (Degener) Deg. & Deg. x *Grevillea banksii* R.Br.

Results of hybridising by P. R. Beal

The red flowered *Grevillea banksii* and cream-white flowered *G. banksii* f. *albiflora* are indigenous to coastal and sub-coastal regions of southern and central Queensland (Bailey 1900). *G. banksii* f. *albiflora* differs from *G. banksii* only in flower colour (Degener 1959). Both forms are ornamentals commonly cultivated in south-east Queensland. The mode of inheritance of flower colour was not found documented. However, the generic relationship of the factors controlling flower colour would be better understood by examining plant populations and segregating for flower colour, which had been obtained by controlled pollination.

The hybrid *Grevillea banksii* R.Br. forma *albiflora* (Degener) Deg. & Deg. x *G. banksii* R.Br. was produced artificially without difficulty. The normal PMC meiosis and high fertility of the F1 hybrid confirmed the close relationship of the parental forms. The F1 hybrid was red flowered as is *G. banksii* and the segregation of red flowered to white flowered seedlings in the F2 generation suggested a 3:1 ratio. Red flower colour was probably determined by a single dominant gene.

The two forms of *Grevillea* were hybridised in 1963 using *G. banksii* f. *albiflora* as the female parent. The parental forms and the F1 and F2 hybrid generations were grown to flowering and flower colour recorded in discreet classes. Details of materials and results are found in Tables 1 and 2. The PMC preparations for examining meiosis in the F1 hybrid were made according to Darlington and La Cour (1962). Observation of ten normal bivalents at PMC meiosis in the F1 hybrid and its normal fertility indicated the close relationship of the parental forms.

TABLE 1—Flower colour in seedlings of *G. banksii*, *G. banksii* f. *albiflora* and their hybrid

Entry	Herbarium Number	Number of flowering seedlings	
		No. Red Flowered	No. White Flowered
<i>G. banksii</i>	BRI 081201 (1968)	10	0
<i>G. banksii</i> f. <i>albiflora</i>	BRI 081200 (1968)	0	8
<i>G. banksii</i> f. <i>albiflora</i> x <i>G. banksii</i> F1	BRI 081055 (1965)	2	0
<i>G. banksii</i> f. <i>albiflora</i> x <i>G. banksii</i> F2	(1968)	29	12

TABLE 2—Segregation for flower colour in the F2 generation

Expected Segregation	χ^2	Probability
3:1	.398	.30-.70
13:3	2.977	.05-.10

The F1 hybrid had red flowers not distinguishable from those of the *G. banksii* parent. The F2 segregation data suggested a normal monohybrid (3:1) ratio rather than a dihybrid ratio (13:3) with an inhibitory factor operating. The F1 hybrid was probably heterozygous for a pair of alleles that in the homozygous condition produce red flowered *G. banksii* and white flowered *G. banksii* f. *albiflora* respectively. The allele for red flower colour was dominant in the heterogous state.

Melastoma polyanthum

by J. Hill, Edmonton, Qld.

Melastoma polyanthum is an attractive shrub which can grow to 6 or 7 feet high. The plant consists of a few long branching stems, arising from a central stump at ground level. The roots are somewhat swollen (as with most native flowers in this area), I suppose as a reserve for dry weather.



Photography by M. W. Hodge

This plant described on page 14.

THE NATIVE AUSTRALIAN SPECIES OF *PASSIFLORA*

by P. Beal, Bowen, Qld.

Species of *Passiflora* are commonly herbaceous or woody vines which climb with the aid of tendrils. Leaves are alternate, petioled and generally three lobed as in the Australian native species. Petioles, sepals and leaves are commonly glandulate. Flowers are bisexual and normally have 5 petals and 5 sepals. The 5 stamens are united in a tube around the stalk of the ovary (the gynophore). The corona or crown, usually composed of several rows of elements, is an outgrowth of the receptacle and may be very complex and highly pigmented as in a number of exotic species. The crown is morphologically similar in the Australian native species with two series, the inner a crenate or shortly lobed ring or tube and the outer filamentous.



Photography by O. Hocking

PASSIFLORA AURANTIA

Of the 400 *Passiflora* species known in the genus most are found in tropical and subtropical north and south America, and about 40 occur in South-east Asia, islands of the Pacific and Australia. The Australian indigenous species provide only a small sample of the variation in the genus. There are about 20 species of *Passiflora* occurring in Australia but only three species *P. aurantia*, *P. herbertiana* and *P. cinnabarina* are indigenous.

Chromosome numbers of $2n = 12$, $2n = 18$, $2n = 20$ and $2n = 22$ have been recorded in exotic species of *Passiflora* with $2n = 18$ being the most common number recorded. However, the Australian native species are all $2n = 12$, the low number suggesting a primitive origin for this group.

Passiflora aurantia and *P. herbertiana* occur in coastal and sub-coastal New South Wales and Queensland. *P. cinnabarina* is restricted to the coast and tablelands of New South Wales and Victoria and is better adapted to cool conditions than the other native species. The native species while widely distributed, occur sparsely. The native species have thin stems and a trailing habit of growth. However, they can be readily trained over a 6' high trellis by pinching out side shoots.

The solitary axillary flowers (about 3" across) are smaller and generally less colourful than the more common ornamental *Passiflora* species. The fruits of the native species are green at maturity and the greyish pulp with its numerous seeds is rather unpalatable.

Flowering is seasonal and is similar in the three native species. In south-east Queensland, an early winter flowering period (February-May) is followed by a smaller flowering (September-December) of similar duration.

Propagation can be by seed or vegetatively by cuttings or grafting. Seed germination is generally about 5-20 per cent but the species fruit well and seeds are very numerous. Better germination may be obtained from seed newly planted after fermentation extraction. Cuttings root readily in moist sand or a sand-peat (1:1) mixture. Budwood with one or two nodes can be cleft grafted on to a rootstock of golden passionfruit (*P. edulis* f. *flavicarpa*) which is resistant to nematodes and Fusarium wilt.

P. aurantia Forst. White flower (red corona) turns red at anthesis.

P. herbertiana Lindl. Pale yellow flower (yellow corona) turns pink yellow at anthesis.

P. cinnabarina Lindl. Brick red flower (yellow corona).

MELASTOMA POLYANTHUM—continued from pp. 12

It flowers mainly between January and May but is likely to have some flowers at any time of the year, particularly after rain. *Melastoma polyanthum* prefers poor soil, well drained, as found on gully banks etc. The flowers are 1½ to 2 inches across, pale pinkish purple as shown.

After the flowers, which form in clusters of about 10 to 12, only one to three opening at a time, the small black fruit forms. It is a soft fruit in five segments with a couple of small light coloured seeds embedded in the outside. It is very sweet to eat and should make good jam if enough could be collected.

Propagation is best carried out by cuttings, though seeds occasionally strike in damp conditions. The cutting from a piece of stem that has recently flowered is placed in a pot of very sandy mixture and kept moist in a sealed plastic bag. It will strike in a couple of weeks but is sometimes slow in making growth. It does not like rich soil and should be potted out in a poor bush soil, and is better left without fertilizer.

NOTE: There is probably only one species of *Melastoma* in Australia for which the correct name is *Melastoma polyanthum*, although other names have been used. True *Melastoma malabathricum* is not definitely known from Australia—S. T. Blake.

THE FAMILY MELASTOMATACEAE

Other genera in this family that are native to Australia are *Medinilla*, one species only, *Memecylon*, one species only; *Osbeckia*, three species only and *Othantthera*, possibly two species. Can any reader report on these.

THE ORCHIDS CORYBAS

The Cultivation of the Genus Corybas by David L. Jones

Corybas is an extensive Asian genus of about fifty species of which only nine are found in Australia. They are diminutive but fascinating orchids that usually grow in protected areas. The various species form colonies that are often densely packed with plants. It seems to be the rule with all species that non-flowering plants predominate over those that do flower. The flowers are fairly short lived and if exposed to drying conditions quickly wilt and collapse.

Details, such as flowering period, distribution of the various species, etc., have been dealt with in previous issues of *Australian Plants*, especially No. 26 where all species are described. Some further notes on their growth habit may help at this stage. All species have a solitary rounded leaf which lies flat on the ground. Their underground system consists of a small tuber, about $\frac{1}{8}$ - $\frac{1}{4}$ " across, and long white roots which form new tubers at their tips.

I have tried eight species in cultivation with a mixed bag of success. Some species are very easy and increase prolifically while others are much less robust and build up in numbers slowly. All species are very shy of flowering in cultivation and, of the buds that do form, few ever open. This seems to be mainly due to the large fluctuations of humidity and temperature the plants in pots are subjected to. Steve Clemesha of N.S.W. has a novel and simple way of overcoming this problem. Plants in bud are covered with a small plastic phial or glass bottle and the increased humidity seems sufficient to allow the buds to develop and open.

Before potting ensure that the drainage hole is covered and running free. Use an open compost that will also drain free and ensure that some good partially broken down leaf-mould is present. I use a mixture of $\frac{1}{3}$ bush loam, $\frac{1}{3}$ coarse sand and $\frac{1}{3}$ of the mould from under the Coastal Tea-tree (*Leptospermum laevigatum*). The loam I have used in the past has been an acid sandy soil from coastal areas. This is generally poor and results have not been very good with *Corybas*, mainly I feel due to the moisture fluctuations in the compost. Recently I have substituted this loam for mountain soil and the results have been most encouraging. This soil is a heavy but well structured loam from highland areas to the east of Melbourne. It has excellent drainage while at the same time retaining adequate moisture in small pores. The overall result is a reduction in soil-mixture fluctuations and an enhancement in the growth of *Corybas*.

These orchids do seem to be very sensitive to any soil-mixture fluctuations and some species quickly die if they dry out too much over the growing season. A few years ago I tried plunging the pots to the rim in a bed of coarse sand and peat-moss. The results at the time were very good and I would recommend the method to anyone having trouble with this genus.

With some species which build up in numbers quickly, I repot annually. Those that are less robust I leave go for a couple of seasons. I have noticed that all species respond well to liquid fertilizer although it does not appear to promote flowering. I have had little trouble with any pests on my plants but slugs and snails do relish them. Keep these away with baits.



Photography by Patricia Palmer

CORYBAS ACONTIFLORUS—Colour plate side-on

Found on most of the higher ranges to at least as far north as the Evelyn and Atherton Tablelands, *Corybas acontiflorus* extends throughout Eastern Australia to Tasmania and New Zealand. This photograph was taken in Tasmania. All species of *Corybas* are described with detailed sketches in our No. 26 issue of Vol. 3 with colour plates of two other species.

Corybas abellianus A. W. Dockrill. I have only had this species for one season but the results so far are encouraging. The plants have increased well and appear very robust. Two in fact formed flower buds but these aborted before I could cover them. In Melbourne and cold areas the species seems to need the protection of a glasshouse. Mine are in the mountain soil mixture and they seem to like it. A grower from North Queensland with experience of this species tells me it is quite a vigorous grower and does well in a pot.

Corybas aconitiflorus Salisb. This is one of the harder species to grow and seems almost impossible to flower successfully in a pot. It will not tolerate soil moisture fluctuations and quickly dies if allowed to dry out while above ground. Since switching to mountain soil the plants in the pots appear much healthier and the tubers larger at repotting time. It increases very slowly and should be kept out of direct sun at all times.

Corybas diemenicus (Lindl.) H. M. R. Rupp & W. H. Nicholls ex H. M. R. Rupp. This is one of the commonest and earliest species to grow. It increases rapidly by about four times and responds well to liquid fertilizer. It is also the easiest species to flower although only a very small proportion of plants produce flower buds. Once again the results in mountain soil are superior to that in sand. There is a small flowered form which seems to be as easy to grow, requiring the same conditions as the others.

Corybas dilatatus (H. M. R. Rupp & W. H. Nicholls) H. M. R. Rupp & W. H. Nicholls ex H. M. R. Rupp. This is probably the handsomest of all the Helmet-orchids. It has a large beautifully fringed flower that is held erect from the leaf. The plants grow in sheltered high rainfall areas of coastal and mountain regions. In cultivation it grows slowly and will not tolerate drying out while above ground. It is extremely difficult to flower and very few buds are ever produced. Best results are obtained in a mountain soil mixture with the pots plunged to the rim.

Corybas fimbriatus (R.Br.) Reichenb. f. The results with this species have surprised me. It is a shy species generally growing in sheltered coastal areas. However in cultivation it grows quite vigorously, reproducing freely. It is not as shy of flowering as some of the other species and the flowers can be opened under bottles if caught early enough. I find that this is the only species to prefer a sandy soil to the mountain soil mix.

Corybas pruinosus (R. Cunn.) Reichenb. f. This species from N.S.W. seems to be quite easy to grow and flower. I have flowered it on a few occasions without the added protection of a bottle. It increases slowly and does best if the pot is plunged to the rim. Recently I have tried it in mountain soil and the results have been most encouraging. The leaves are larger greener and with a sparkling healthy texture.

Corybas undulatus (R. Cunn.) H. M. R. Rupp. I have only had a brief unsatisfactory experience with this species. The solitary plant I was sent only lasted one season and did not reproduce. However I feel it will prove amenable to cultivation.

Corybas unguiculatus (R.Br.) Reichenb. f. In the past using sandy composts I have found this species very difficult to grow. The general result was small unthrifty leaves, very slow to reproduce and never producing buds. For the past couple of seasons I have switched to mountain soil and the results have been most striking in their contrast. The leaves are now about 1" across, a healthy reddish green and buds are produced freely. This year I had five buds in a pot containing fifteen plants. As well the reproduction rate has increased and at last I feel the species is growing well.

SOME NORTH QUEENSLAND PROTEACEAE

A series on wildflowers of the Far North by L. K. Bates, Mareeba

1. Rainforest Trees from the Ranges

The family Proteaceae provides a number of spectacular flowering trees, where one expects this kind of flowering to be the exception rather than the rule. I consider that each of the following is a fine example of our Australian flora and well worth a place in our gardens.

Grevillea pinnatifida is an adaptable, hardy and upright tree which provides a fine display of massed creamy flower spikes in mid-summer. Individual flowers are quite small. Juvenile leaves are deeply lobed, adult leaves simple; the underside is covered with gold hairs, making the foliage striking in itself. Like *G. banksii* (the natural species, not the garden form), and *G. pteridifolia*, it will grow readily in the subsoil of roadsides or road cuttings. Growth rate is medium and it will grow in full North Qld. sun.

Oreocallis wickhamii is a glorious tree in full bloom and is found on the better soils of the Tableland areas. Described in the Dec. 1968 issue.

Stenocarpus sinuatus grows in areas similar to those for the previous species. While the *Oreocallis* shows all of its red flowers to advantage, *Stenocarpus sinuatus* is inclined to "hide" its firewheel blooms. To my taste, however, this tree's shiny green foliage makes up for any unusual flowering habits. Described with a full colour plate in No. 36 issue.

Buckinghamia celsissima must have some of the longest of our Proteaceae blooms. Its massive display of white summer blossoms is no doubt one of the reasons for this tree's popularity in cultivation. Growth rate is again not fast, but the often globular shape of this plant, plus its excellent annual flowering and unfussy habits, make it well worth growing. Colour plate on rear cover.

Darlingia darlingiana is found on a variety of sites. Its flower is an unusual mixture of *Stenocarpus*, *Grevillea* and *Banksia*! Flower colour is creamish and it blooms in early summer. Leaves of this species are very large (partially lobed changing to simple), usually well over a foot long. Little is known of its performance in cultivation.

2. Forest Plants from the Far North

The Dec. 1969 issue described a very tall growing *Banksia*, incorrectly referred to as *B. compar*, but more correctly as *Banksia* sp. aff. *B. integrifolia*, until properly classified. It may be of interest that I am having more success with *B. integrifolia* in the garden than with the local plant mentioned above!

Banksia collina was also described with a full colour plate and is of interest in that a one-thousand-mile strip of East Coast is "missed out" before this beautiful *Banksia* reappears in a confined area at the base of Cape York Peninsula.

Banksia dentata performs a similar feat, and misses out a whole continent, virtually. Found in the N.W. of Western Australia, it turns up again in sandy, almost wallum country north of Cooktown. A typical *Banksia* in form, it grows to perhaps 20 ft., and produces pale yellow flower spikes. Leaves and flowers are reminiscent of *B. integrifolia*.

Hakea plurinervia is a nice little plant 3 to 5 feet in height, though I've seen specimens over 10 ft. It flowers in winter with neat little pure white pincushions, although there's a hint of pink at the base of each flower. It seems to prefer moister areas.

3. Dry Area Plants from the Far North

Grevillea pteridifolia. Reference must again be made to this fine species. It is tolerant of a wide range of soil and moisture conditions, grows quite fast, flowers here within two years and produces such a copious supply of nectar that bees often collect it from the underside of the upward-facing "toothbrush" flower spikes. The beautiful orange blooms are produced for at least 6 weeks, often with a second or third flowering (mostly in winter, the North Qld. "winter", that is). It attracts very many birds.

Grevillea dryandrii. See colour plate on page 4.

Grevillea decora grows from 3 to 5 feet in height and flowers in the form of a perfect rosette, with individual flowers, yellow and orange in colour. Quite different flower forms have been reported in other northern areas. A hardy little plant in nature, it flowers all year in the garden if watered regularly. Normal flowering period is during the wet (late summer).

THE BLACK ALOCASIA

(from a talk by K. Kennedy before the Townsville and District Natural History and Wildlife Preservation Society, held at the Muricological Museum, Townsville)

Alocasia macrorhiza, the Black Alocasia, sometimes called the Black Cungevoi, is a tropical Queensland plant that can give distinction to any bush house. Black is usually associated with sombreness, but the colour of this plant is a purple shiny black that has a happy look. Alocasias belong to the family Araceae, called Aroids by gardeners, in which the inflorescence consists of numerous small unisexual flowers arranged on a succulent spike called a spadix, and enveloped when immature in a sheathing bract called a spathe. When the flowers become mature the spathe splits open and exposes the spadix. In some aroids the spathe is coloured to attract insects for pollinisation purposes, but the spathe colour of *A. macrorhiza* is brown, and the spathe hangs down. As it is necessary to attract insects, this is done by glands secreting a perfume which can also attract night flying insects.

A. macrorhiza is a large herb and, as with other aroids, its fleshy rhizome and leaves have to be protected from herbivorous animals. This is done by its cells secreting crystals of calcium oxalate which is burning to the taste. In spite of that the Aborigines once used the rhizomes as a food by heating them, a process which neutralises the crystals.

The habitat of *A. macrorhiza* is on the outskirts of rain forests and, to use a contradiction, in dry rain forests. Dry rain forests are merely forests with a low rainfall but still enough to support an almost similar vegetation to that of normal rain forests. Some years ago I found *A. macrorhiza* growing on the banks of the Black River not far from Townsville, which is definitely not rain forest country.

In cultivation the plant needs warmth and dappled sunlight. If it is to be grown in a container the latter should be rather large, about 8 or 9 inches across. An empty oil drum is suitable but not aesthetic. If used, however, a few small holes should be knocked in its sides to allow air in to sweeten the compost. A potting mixture which gives good results is 1 part garden loam, 1 part leaf mould to give acidity, and 1 part fine gravel to give friability and good drainage which is essential. The plant likes plenty of water, yet because of its succulent rhizome, can stand occasional droughts. It also likes a humid atmosphere. Propagation is by seeds from its 2 or 3 seeded berry or from offsets.

Crinum brachyandrum Herbert

by L. S. Hannibal, Fair Oaks, Calif., U.S.A.

In 1821 as an addenda to t-2231 in Curtis's Botanical Magazine, William Herbert wrote "*Crinum brachyandrum* (previously described in [Bot. Mag.*] t-2121, P. 8) is a very distinct New Holland species: Column 5 inches high, whitish; leaves about 20, rather erect, from 3 to 5 feet long and scarcely $2\frac{1}{4}$ inches wide, dark green with smooth margins, obtusely acuminate like those of *C. defixum*; scape green, about 2 feet long, flowers about 11 of which 7 expand at the same moment, the buds having nodded in a circle about the scape and the rest [expand*] before the first wither; germen subsessile; tube green $2\frac{3}{4}$ inches long; laciniae [Meaning narrow flap-like tepals where sepals become part of the petals*] $3\frac{1}{2}$ inches long and $\frac{3}{8}$ wide, white; filaments just tipped with pale purple, scarcely an inch longer than the tube, all bent upward; style an inch longer than the filaments, declined, above an inch thereof pale purple; stigma small, triangular, white; germen sessile; cells two seeded."

In Herbert's Amaryllidaceae, page 249 he stated: "This remarkable *Crinum* with 2-seeded cells was raised by Dr. Carey of Calcutta from seed which he received from Australia, certainly within the tropics, and sent to me [in England*] by him. It flowered at Spofforth in 1821 and for two or three seasons successively, never producing more than 11 flowers. It died without yielding an increase and I fear that it has been lost in Calcutta also. It has no near affinity to *C. australe*."

The writer had probably read these descriptions on several occasions before it dawned upon him that this was a description of the *Crinum* with sabre-like foliage which grows along the Fitzroy River near Rackhampton in Queensland. A few minor details differ due to William Herbert's plant being grown in a greenhouse; namely the plant usually bears about 20 blossoms on a scape, and the length of the styles are quite variable, at times some may be recessed within the tepal tube. Neither do the filaments or style show the purple pigmentation which in numerous *Crinum* is only apparent in cool weather. Herbert's *C. australe* included *C. pedunculatum* as a variant, an arrangement which J. G. Baker eliminated in 1880 as the name *C. pedunculatum* had priority due to earlier publication by Robert Brown in 1810. Thus *C. australe* is now a synonym of *C. pedunculatum*. In addition, Herbert's separation of the Australian species as well as the Asian on the basis of the number of seed per locule is quite invalid in the tropics. *C. brachyandrum* is closely allied to *C. pedunculatum*. *Crinum brachyandrum* throws off a toxic material into the soil which makes it difficult to maintain after several years in the same potting soil, thus Herbert's loss. The plant desires flooding.

But these factors are incidental; the main point is a long lost *Crinum* has been found. It is a good garden plant if watered adequately. The name means "with short anthers".

* Text shown in brackets [] added by author to clarify text or terminology used by Wm. Herbert.

AUSTRALIAN WILDFLOWERS

A review by the Editor*

There are many thousands of flowering plants native to Australia. Through the five volumes of "Australian Plants", many hundreds of horticultural value have been described and illustrated. Those mentioned in this volume are indexed over the page with a reference to volume and issue number (in brackets) where the species is more fully described in a previous volume. Every effort is made to keep the descriptions as simple as possible and in many cases to describe plants found in various areas so that, with the help of colour illustrations, bush lovers may identify many of the plants they see in their rambles.

Growing Wildflowers

As conditions under which our wildflowers have survived vary from deserts to swamps, from tropics to near arctic climate, from exposed bitter coasts to sheltered valleys and gullies; the variety is immense. It may readily be supposed that plants from each of these localities could not be grown in one garden but this is not altogether true. Some plants seem to grow despite their environment and in fact relish less rigorous conditions when grown in the garden. Others do not seem to appreciate the pampered conditions of a garden even though their native habitat is not really severe. A single factor such as a different temperature range is often not of critical importance. Exotics of other lands are introduced here and grow as prized horticultural specimens and yet their native climates are very much different from ours.

It is to study and record the horticultural value of the diverse and unique flora of Australia, that this publication is produced. Experiences and observations of competent horticulturalists and home gardeners are given and the plants described and illustrated in full colour. Qualified botanists have identified and classified the species presented, reviewed the entire family or genus of plants and produced simple keys for ready reference.

How to Grow Wildflowers?

The pattern of presentation is to present the flora in groups of related plants from the one plant family called genera, or with a large genus, a sub-group with similar characteristics. With each such article, sections or even separate articles are provided on the propagation and cultivation of these plants. Almost whole issues are devoted to aspects of identification, horticultural features and cultivation of plants such as No. 41 issue for *Banksia*, No. 42 issue for the beautiful *Leschenaultia* and other Goodeniaceae, No. 35 issue for *Richea* and other Tasmanian plants and No. 44 issue for *Hakea*. Other issues are devoted to flora in climatic regions of Australia such as No. 37 on Queensland plants, No. 38 on the plants for growing in the drier inland areas, No. 39 for plants of Tasmania, No. 40 for the Sydney sandstone flora and No. 43 for plants of South Australia.

However the growing conditions in various parts of Australia are not as unique as would be first thought and these may often be compensated for in the garden. Conditions in Adelaide for instance can be more rigorous because of wind exposure. Hence plants recommended in No. 43 issue for South Australia can be grown in all other capital cities often much easier as they are the wildflowers that have proved hardy. Wildflowers recommended for the Keilor Plains of Melbourne (issue No. 41) are quite suitable for

*Editor's Note: It is so easy to be put off by technical sounding names and phrases and stunned by the sheer wealth of our flora. Our principal objective will continue to be to encourage the beginner, the layman, the home gardener, the bush lover, in fact all Australians to a fuller appreciation of their national heritage, the Australian flora. To reassure those who know little about our wildflowers but would like to know more, the subjects we have covered in Volume 5 and the style of presentation is reviewed. It is really not as difficult as it looks.

growing in clay in all other temperate areas and the soil treatment should be particularly noted. "Wildflowers for Rackeries", the main subject of No. 42 issue can be grown in a very wide range of climates provided care is taken with local conditions, such as wind in Adelaide, summer shelter in Brisbane, frost in the inland, salt winds on the coast and sensible watering. Each of these latter problems are also considered in some detail in various issues.

Where do I start with a Wildflower Garden?

First read the article "Growing Wildflowers" by H. M. Hewett on page 158. Max Hewett would be one of the most experienced growers of wildflowers, a competent observer of conditions affecting the growth of a wide range of plants. Answer the questions posed. These are not meant to confuse the issue but to crystallise the problem.

Now read the following articles:

- Growing Wildflowers in Queensland—page 3.
- Growing Wildflowers in Adelaide—page 291.
- Growing Wildflowers In Tasmania—page 110.
- Growing Wildflowers in Sydney—page 150, 158.
- A Wildflower Garden—page 308.
- A Sand Bed—210 and Clay in Built-up Beds—211.
- Wildflowers in Clay Areas—195.
- Hawkesbury Sandstone Area of Sydney—156.
- Gardening in Low Rainfall Regions—54.
- Rockerries—91; Landscaping—58.
- Growing Trees in Dry Areas—322.

Propagation—Simple methods for Home Gardener

As with cultivation methods above, the propagation of the plants is given as a separate section following their descriptions. The following are articles of general interest:

- "Wildflower from Seed", 7; "Propagation of Native Plants", 21; "Small Capillary Bed for Seed Germination", 260; "Cuttings—A Simple Method with a Plastic Bag", 11; "Period of Seed Germination", 22; "Propagation of Eucalyptus", 114; Orchids from Seed, 270; Banksia from Seed, 202.

Australian Native Orchids

Orchids receive special presentation in each issue as these unique plants have quite a following. Alternate issues deal with epiphytic and terrestrial orchids, illustrated in full colour.

- ORCHIDS: For Bush-house Culture, 107; In Cooler Latitudes, 144; Sydney Area, 161; From Seed, 270; Terrestrial Orchids from Flasks to Pots, 371.

PAST ISSUES OF "AUSTRALIAN PLANTS" AVAILABLE

Because of the vast wealth of our flora there is very little repetition of previous information. VOLUME No. 1, issues 1-12, no longer available bound but all issues available separately at 45c each except nos. 2, 3, 4, 10, 11 & 12. \$2.85 incl. postage.

VOLUME No. 2, issues 13-20, all available only fully bound at \$6.00 plus 20c postage. And 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 I" valued at \$3.00—see below.

VOLUME No. 5, issues 37-44 all available only fully bound at \$6.00 plus 20c postage, including "The Language of Botany", a valuable reference to words and terms.

Other Books by the Society

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.

"West Australian Plants"—A Descriptive Catalogue (2nd Edition)

This fine book was one of the first produced by the Society and has been so widely acclaimed and received that a reprint has been necessary. The number of colour plates has been doubled but the real value of the book even for those who have a copy of the first edition is that fully revised. It is the only reference ever produced to the entire flora of Western Australia. New additions include the grass and fern families but the many hundreds of species added and names revised make this book a must for anybody interested in growing the western wildflowers.

Available from the Editor, 860 Henry Lawson Drive, Picnic Point, 2213 for \$3.00 plus 20c postage.

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The Effect of Planting Depth and Fertilizer on Survival and Growth of *Grevillea* and *Leptospermum* Rooted Cuttings

by A. Lynton Higgs, Technical Officer, Research Section, Parks and Gardens Branch, Department of the Interior, Canberra

Summary

Depth of planting has been established as a critical factor when transplanting rooted cuttings of *Grevillea rosmarinifolia* and *Leptospermum scoparium* "Lambethii".

It is also shown that a high level of fertiliser adversely affects the growth and when associated with excessive depth of planting, poor survival results.

Introduction

Officers of the Research Section of Parks and Gardens Branch, Canberra have been studying many factors associated with planting media, watering techniques, and responses to fertilisers since 1962. In these trials the effects on growth and survival of rooted cuttings after "potting on" under various conditions were studied.

The use of peat and sand with added fertilisers developed by the University of California, U.S.A. and now well known as "U.C. mixture" was modified for use in these experiments and to suit the local availability of materials. Fertiliser levels were adjusted to measure growth responses and survival. The use of polyethylene plastic bags as containers, and a sub irrigation system of watering were followed through these trials, as well tested techniques in nursery practice.

Initial trials using clear polyethylene bags suggested that the growth of algae on the inner sides of the bags in the media might be attributing to unthriftiness in robbing the plants of valuable nitrogen. This latter point however did not prove to be of vital importance as the algae only developed in any appreciable degree on the outer bags exposed to full light and any initial losses in growth through the presence of algae was no longer noticeable once the plants became established outdoors and were receiving regular liquid fertiliser application.

The cuttings for use in these trials were prepared as an even line of semi-hardwood cuttings of the two species taken in July 1966 as non-flowering tips 4" long. The lower 2½ inches of each cutting was stripped of leaves by cutting close to the stem with scissors. All cuttings were treated with I.B.A. cutting powder (Seridex B No. 3) and placed in trays of cutting medium of 50/50 washed river sand and peat. This medium was previously treated with aerated steam to 140°F for 30 minutes. The trays of cuttings were placed on an automatic mist propagating bench with bottom heat.

Six weeks later the cuttings were selected for the trials as an evenly rooted line to be potted on. The quality of the root systems was generally strong and evenly developed. Of the 450 cuttings of *Grevillea rosmarinifolia* set, 90% were graded as relatively even in quality for use in the experiment while 6% were only fair to poor and were discarded with the balance of 4% which failed to make any roots. With *Leptospermum* 70% of cuttings produced strong even quality roots for use in the experiments. 12% were of fair to poor quality and were discarded, 18% failed to root.

The medium used was a U.C. type mixture modified to suit local availability of materials and prepared using: 5 parts of washed river sand, 3 parts of peat and 1 part of red sand.

The fertilisers were incorporated in the medium at three levels.

- (a) "Full Strength": Being a previously determined general purpose rate of balanced ingredients used to one cubic yard of the sand/peat media as follows: Blood and Bone 40 ozs., Potassium nitrate 4 ozs., Potassium sulphate 4 ozs., Superphosphate 40 ozs., Magnesite 8 ozs., "Essminel" (A trade name) 6 ozs., Calcium carbonate 40 ozs., giving a total 142 ozs. or 8 lbs. 14 ozs.
- (b) "Half Strength": Half the above rate of fertiliser, 4 lbs. 7 ozs. to one cubic yard of media.
- (c) "No Fertiliser": The standard media without fertiliser.

The soil media after thorough mixing was treated with aerated steam at 140°F for 30 minutes.

The experiment for the 300 *Grevilleas* was laid out in a replicated random pattern in 10 wire baskets each holding 30 four inch squat plastic bags (15 each, clear and black). The three treatments were placed in rows of 5 bags each of clear and black. Each row (5 bags) as a unit. Treatments were located in the baskets at random.

The rooted cutting were planted at normal depth in five of these baskets and two inches deeper than normal in the other 5. The same random technique was used for the *Leptospermums*, again using 300 plants.

The experiments were placed in a heated glasshouse and to reduce any expected bias through growth of algae in any one part of the trial favoured by position for light the baskets were systematically rotated on the benches each day. The experiment was transferred from the glasshouse to sub irrigation tanks in late September. Water was supplied by flooding the tanks for 1 hour daily.

The plants were observed through the summer with final observations and measurements being made in July 1967. All treatments received weekly applications of liquid fertiliser (0.1%) as a supplement until the final measurements at the conclusions of the trial.

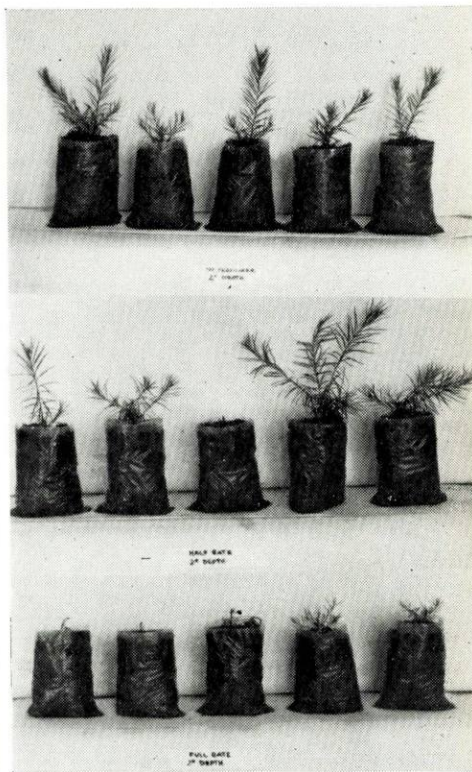
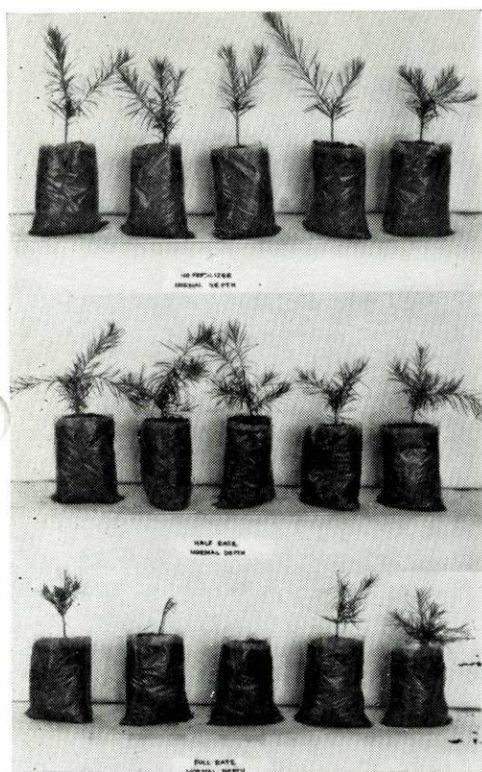
Summary of Results

Severe chlorosis developed within a few weeks in the *Grevilleas* in full strength fertiliser treatment at normal depth. As time passed growth was inhibited and the lack of vigour became noticeable compared with the healthy growth of the plants in the "half strength" and "no fertilizer" treatments.

The plants at 2 inch depth in full strength fertilizer also showed severe chlorosis in the early stages and suffered a heavy death rate before the trials were moved outdoors to the sub irrigation tanks. There were 33 survivors out of 50 at 2" depth compared with 48 out of 50 in normal depth plantings, with 37 out of 50 and 42 out of 50 survivors at 2" depth in "half strength" and "no fertilizer" respectively.

% Survival of cuttings of *G. rosmarinifolia* and *L. scoparium* "Lambethii" at two potting depths. 50 cuttings per treatment.

<i>Grevillea rosmarinifolia</i>			
	No Fertiliser	Half Rate	Full Rate
Normal depth 1"	96	96	98
2" Depth	84	74	66
<i>Leptospermum scoparium</i> 'Lambethii'			
	No Fertiliser	Half Rate	Full Rate
Normal depth 1"	96	86	82
2" Depth	84	84	78



Top: No fertilizer, normal growth
Centre: Half rate, normal depth
Bottom: Full rate, normal depth

Top: No fertilizer, 2" depth
Centre: Half rate, 2" depth
Bottom: Full rate, 2" depth

Plants on left were from seedlings planted at normal depth, fertilizer being as described and those on the right were planted two inches lower.

There was little differences in plant quality in black bags compared with clear bags. The quality of the polyethylene in the clear bags however was poor and a considerable number split at the side seams.

Growth measurements were taken at three intervals during the trials. While height differences were evident between normal depth and 2" depth of planting and also between fertilisers treatments, the value of the measurements was complicated by differences in branching and bushy growth not accountable by measurement. As it was not possible to obtain oven-dry weights at completion of the trials, the differences were only evaluated by general observations of quality and overall growth. It is interesting to note however that at the end of the trials the *Grevilleas* in all treatments reached an average height of 52 cms. at normal depth of planting and 42 cms. at 2" depth.

The *Leptospermums* which showed less branching reached an average height of 79 cms. at normal depth and 69 cms. at 2" depth.

Conclusions

The depth of planting is a highly critical factor in potting on of rooted cuttings of these two species into fertiliser charged media. Deep planting adversely affects survival and growth rate.

BOOK REVIEWS

All books reviewed, in fact any book on wildflowers or the Australian scene are available by mail only from the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

Dryandra—The Story of an Australian Forest by Vincent Serventy — Price \$6.50 plus 50c postage

This large 200 page book is not about the plants *Dryandra* but the story of the wildlife in a forest called *Dryandra*, 100 miles S.E. of Perth. Vincent Serventy is well known as an observer and intelligent recorder of wildlife in all its aspects. In this book with chapters for each month of the year, he tells of what he saw in the *Dryandra* forest, of the birds, marsupials, snakes, spiders, moths, etc., how they live and prey together, secure in their environment. Despite the presence of many "the forest lives on today." The web of life remains secure so long as the forest remains. I have written this book in the hope that others may see the wonder and feel the enjoyment I have found in this forest" (author). Illustrated with eighty colour plates of the lovely little creatures of this forest and told with sensitivity this is an interesting book.

The Red Centre by Robin Smith & Keith Willey — Price \$4.50 plus 50c postage

Central Australia—The Red Centre—is the most remarkable area of this continent. Not many of us will be fortunate enough to see it but Robin Smith and his camera has brought it to us all in the many large colour plates of this book. And what large and magnificent colour plates they are in this 106 page book. Many attempts have been made to photograph our "rock", the many splendid gorges, mountains and flowering deserts, and the primitive people who know it as their home, but this is superior to all.

Beautiful Australia—photography by Robin Smith and Michael Morcombe—Price \$4.50 plus 40c postage

The 130 pages of this large book include 96 pages of large colour plates of really excellent quality. The primary objective appears to be the presentation of our island continent by beautiful colour scenes of various points of interest that characterise this land of ours. The selection has been well done but the real skill is how these superb photographers have captured the mood of each scene in such living colour.

Swan River Landscapes by G. Sedden — Price \$7.50 plus 50c postage

The book has been called "a study of environmental resource"; it is an attempt to define the character of the Swan River estuary, between Fremantle and Perth, Western Australia. This is a stretch of water and surroundings not known for any features of note. The many colour plates indicate a very ordinary, even featureless scene, special care being taken not to enhance the spectacle with flattering photography. What then is the author's message? Is he another impractical conservation nut?

The book is in three parts. In the first the author establishes his competence as a sensitive observer of scenery and his experience with landscape architecture both artificial and natural throughout the world. Very subtly he attempts to lift the readers' perception of nature so that an adequate appreciation can be given to what the Swan River estuary offers. The second part is the real subject of the book. An appreciation of the landscape or scenery from what little remains naturally, what has been scared by development as parks and recreation but is still peaceful and valuable, and the areas that have been developed.

The point is well taken, that whereas Canberra has spent millions developing their lake and creating a garden city, other Australian cities have natural features, in this case the Swan River Estuary, but the "responsible" government has not the vision to allocate the resources to ensure proper environmental development and "scene-scaping" to protect this feature. The final part deals with the technical features of various points along the river.

Australian Native Orchids In Colour by L. Cady & E. R. Rotherham — Price \$3.95 plus 40c postage

A beautiful illustrated (100 full colour plates) 112 page book principally on the terrestrial orchids of Australia. The author has not attempted to describe or key all species but with the help of the fine colour plates describes in general terms the more common species. This small book will be of special interest to beginners.

Hallett Cove—A Field Guide by H. M. Cooper, M. Kenny & J. Scrymgeour

Available from South Australian Museum, Adelaide, S.A. only for 60c plus 12c postage. Hallett Cove is a small area of Sandison Reserve on the coast of South Australia. It is an ancient valley whose history through hundreds of millions of years, a fossilized landscape, has been unveiled by erosion to give us an almost unbelievable glimpse of the past. Since 1877, scientists have been examining and recording information and this is contained in this 52 page booklet very simply written and illustrated very well with photographs. Sections of the book include—The Geological Record, a scientist reconstructs how the area appeared 600 million years ago (The Late Precambrian), 500 million years ago when the Mount Lofty Ranges were formed, 270 million years ago (The Permian Period of ice), 100 million years ago (The Pliocene) 50 to 5 million years (The Cretaceous Era) and then to one million years ago (The Quaternary Period).

The area was the site of an ancient aboriginal tribe campsite the first about 40,000 years ago. Their habits, food and implements found on the site are described up to recent times. The vegetation of the area has received special study both as economic importance to the aborigine and as wildflowers of horticultural interest.

The Systematic Identification of Flavonoids by Malbry, Markham & Thomas, University of Texas, U.S.A.—Price \$33.00 incl. postage.

A scientific report by a research group concerned with the isolation and purification of flavonoids, their spectral analysis and interpretation of results. A large 340 page book.

Aboriginal Place Names of South-east Aust. and Their Meanings by Aldo Massola—Price 95c plus 15c postage.

A complete collection of all recorded Aboriginal names of towns, shires, homesteads, rivers, swamps, mountains and other natural features, birds and animals principally of Victoria. The author is a recognised authority on the Australian Aborigines and has done a thorough job. A small 62 page book.

Australian Native Gardens and Birds by Barbara Salter — Price \$1.95 plus 15c postage

This small book that describes how to encourage the native birds to your garden was in such demand that a reprint was necessary. I wish to apologise to those people who had to wait for their copy. Orders still invited—Editor.

GROWING GREVILLEA—Grevillea in Brisbane—cont. from page 2

There are a number of insects which do attack Grevilleas here, but most of them do not appreciably damage established plants. Psyllids (small aphid-like insects) cause noticeable damage mainly to the flowers but they are controlled by Ladybird beetles and their larvae. A variety of caterpillars attack foliage and flowers but these generally are controlled by birds and the only species which appear to show signs of damage are *G. shiressii* and to a lesser extent *G. bipinnatifida*. Scale insects are the most troublesome and one very small grey species which concentrates much of its attack on the stems is capable of killing small plants, if not checked in time.

There are approximately 40 survivors of 60 species attempted in my garden. Most have been planted for more than 12 months although some are still quite small plants.

The following is a summary of the plants attempted.

Queensland Species Surviving

***Grevillea banksii*.** There are a number of variations of this species. The plants usually seen in gardens are compact, have grey-green foliage and flower continuously. The red or cream flower spikes are large (up to 7 ins. long) but are noticeably smaller in dry conditions. I have a plant of each colour form and the red one has grown to 10 ft. high and 16 ft. across. It was planted 10 years ago and has flowered continuously since it was about 12 months old.

Specimens growing in the wild are usually open upright plants to 20-25 ft. resembling more the habit of *G. robusta* (Silky Oak). The leaves are broader and greener than the compact form but the flowers are smaller. The flowering season is restricted to about 3 months (late winter and spring) and white is more common than red. A red flowered specimen was planted less than 4 years ago and is now about 15 ft. high and has retained its habit. Its flowers are darker than those of the compact form.

There is a prostrate form growing in an isolated coastal district north of here. There are no known trials of this plant in gardens to test the persistence of its habit away from its natural environment but such an experiment is intended.

Specimens of *G. banksii* planted in inland districts are generally inferior to coastal plantings and in fact there appears to be some degree of difficulty in establishing plants there.

***Grevillea pteridifolia*.** This is a magnificent species with a flowering period which extends from May until October although at its best during June, July and August. The nectar literally drips from the flowers and it is popular with quite a variety of birds. The gold coloured flowers resemble those of the 'Silky Oak', *G. robusta* but the plant is much smaller and would be more suited to small gardens. It will flower when only 12-18 months old and less than 3 ft. in height. It will grow to 15-20 ft. high and is usually reliable although some losses are reported. Six of seven specimens planted are still surviving.

G. pteridifolia—prostrate form. The foliage is slightly broader and greener than the upright form and the flowers are very similar although my specimen has not yet flowered as well as the upright forms.

***Grevillea refracta*.** One specimen less than 2 years old is about 3 ft. high and has flowered. Individual flowers are large but the flower spike is small. The attractive flowers are yellow changing to orange-red with age. An older specimen has made very little progress since planting and has not flowered.

Grevillea dryandri. This is a slow growing species here but it is worth trying because it is one of the smallest Grevilleas with one of the largest flower spikes. I have not seen plants above 18 inches in height but I have been informed that it can grow to about 4 ft. There are also variations in flower colour from cream to pink with red style.

Grevillea longistyla. This is regarded as a difficult species by many but it is worth trying in a well drained sunny position. My plant is now over 8 ft. high and could grow another 2 ft. It normally does not grow as large as the spreading N.S.W. species of the same name. The Queensland plant has larger and better flowers but the N.S.W. form is a more attractive bush. The flower colour varies on the Queensland plant from red to red and ivory depending on the locality of collection. It is difficult to grow from seed unless it is soaked in water to soften the testa which is peeled off before sowing. Colour plate on front cover.

Grevillea leiophylla. A coastal plant which resembles a miniature *G. sericea*. The leaf size varies but all forms are desirable plants. It is sometimes seen growing naturally in drains on the sides of roads. Usually it grows only to less than 2 ft. high where there is no competition. It has a tendency to sucker but not to the point of becoming a nuisance. The pink flowers may be seen through most of the year but it is best during late spring.

Grevillea ilicifolia var. scortechinii. Sometimes called the 'Black Grevillea' but in actual fact the flowers are a very dark maroon. It is prostrate where there is no competition and appears to appreciate partial shade. It is not easy to establish in gardens and the leaves usually show signs of damage by fungus.

Grevillea trinervis. This actually occurs in N.S.W. near the Queensland border. It is an attractive prostrate ground cover Grevillea with orange/red flowers. It is rather slow growing and could be difficult to establish. I lost two of three specimens planted.

Grevillea wickhamii. This plant was only recently planted and is less than 1 ft. high. Good specimens have been planted at Brookvale Park near Oakey, Queensland, little more than 100 miles inland from here. It is a desirable northern species which has pendulous orange/red flower heads and dull green holly-like leaves.

(Concluded on page 43)

QUEENSLAND GREVILLEA—continued from page 7

Grevillea leiophylla. A much-branched shrub of about 1 foot, or sometimes a sparse, sprawling plant of a few inches in height.

Leaves: entire, about 1 inch long and $\frac{1}{4}$ inch wide, or sometimes about 4 inches long and narrower, often appearing to be in groups of three.

Racemes: one-sided, down-turned, short and densely flowered, terminal or at the ends of the twigs.

Flowers: pink.

Distribution: A coastal species occurring from Redcliffe to Tin Can Bay.

This plant has some resemblance to *G. sericea*, and is an attractive dwarf that appears to adapt to cultivation.

Grevillea linearifolia. A much-branched shrub of 1-5 feet.

Leaves: entire, narrow, usually about 1-2 inches long and $\frac{1}{16}$ to $\frac{1}{4}$ inch wide, often appearing to be in groups of three.

Racemes: short, terminal or at the ends of the twigs, one-sided, down-turned, densely flowered.

Flowers: greenish white.

Distribution: A common species in the Granite Belt.

***Grevillea longistyla*.** An erect shrub of 7-9 feet with an open growth habit. Leaves: variable, on the flowering branches often entire, 6-10 inches long and very narrow or divided into 2 or 3 similar lobes, or else deeply divided pinnately into many very narrow lobes.

Racemes: cylindrical, erect, terminal, rather loose, 2-5 inches long, several in succession.

Flowers: glossy red. A pale orange colour form is common at Isla Gorge.

Distribution: From Kogan and Gurulmundi to near Mitchell, the Carnarvon Range, and east to near Monto. There is also a recording from Kambal near Mareeba. Attractive, but grow in well drained exposed sites.

***Grevillea mimosoides*.** A tree of 6-20 feet.

Leaves: entire, stiff, sickle-shaped, 6-10 inches long, $\frac{1}{2}$ -1 inch wide, bluish.

Racemes: cylindrical, slender, 3-4", terminal, branched or several together.

Flowers: small, creamy white.

Fruit: 1 inch in diameter, covered with a sticky brown substance.

Distribution: A north Australian species occurring in Queensland near Mareeba, Chillago, Cloncurry and other districts.

***Grevillea parallela*.** A tree of 15-30 feet.

Leaves: variable, entire, 6-14 inches long and very narrow, or sometimes divided into about 2 or 3 narrow lobes.

Racemes: 3-5 inches long, cylindrical, slender, densely flowered, terminal, several together.

Flowers: small, white or cream. There seem to be 2 or 3 forms of this species.

Distribution: a widely distributed species from various parts of Cape York Peninsula, the Gulf, Atherton Tableland, to Barcaldine, Blackall and Jericho.

***Grevillea pinnatifida*.** A handsome rainforest tree of 30-40 feet.

Leaves: 6-18 inches long, entire or pinnately divided nearly to the midrib into 2-4 opposite pairs of tapering lobes that may be $\frac{1}{2}$ -1 inch wide.

Entire leaves about 6 inches long near the flowers. The reverse of the leaves is covered with copper-coloured hairs.

Racemes: cylindrical, slender, densely flowered, 3-5 inches long, terminal, in dense clusters.

Flowers: small, white, scented.

Distribution: Mourilyan, Kuranda, Daintree, and also New Guinea.

***Grevillea pteridifolia*.** An erect, open, shrubby tree of 15-25 feet, but sometimes smaller in dry areas.

Leaves: 6-12 inches long, deeply divided pinnately and consisting of numerous very narrow pointed lobes. The lower lobes are sometimes again divided.

Racemes: one-sided at blooming, 3-6 inches long, erect, densely flowered, terminal or in the upper axils, several in succession.

Flowers: corolla greenish brown; style bright yellow.

Distribution: A common coastal species from Bowen northwards, and districts further from the coast such as Jericho, Barcaldine, Aramac, Torrens Creek, and across northern Australia. A showy species tolerating moderate frost.

Grevillea pteridifolia (procumbent form). This differs from normal by its more prostrate growth habit and longer leaf lobes. The branches spread horizontally close to the ground. It occurs on exposed headlands both north and south of Cooktown. The character reproduces by seed.

***Grevillea refracta*.** A shrubby tree, 8-12 feet.

Leaves: 6-9 inches long, entire or deeply divided into 3-7 or more lobes that may be about $\frac{1}{4}$ - $\frac{1}{2}$ inch wide. The leaves on young plants are finer and more divided than those on flowering branches.

AUSTRALIAN INDIGENOUS ORCHIDS

Additional Notes by A. W. Dockrill

Three additional species of Orchidaceae for Australia, *Apostasia stylidioides* (F. Muell.) Reichb. F. reduced to a synonym of *Apostasia wallichii* R.Br. and the spelling of *Phaius tankervilleae* (Banks) Bl. revised to *Phaius tancarvilleae* (Banks) Bl.

The three additional species, *Thelasis carinata* Bl., *Cadetia wariana* Schltr. and *Dipodium pandanum* F. M. Bail., have a distribution outside of Australia. M. Brown made the Australian discoveries of the first two on the McIlwraith Range in Cape York Peninsula, while L. Brass, M. Brown and V. Winkel and party confirmed the occurrence of the latter in the Iron Range-McIlwraith Range area. Descriptions and illustrations of the first two, prepared by the author from Australian material, will be given in this paper, but as fresh New Guinea material of *D. pandanum* F. M. Bail. was available at the appropriate time, the illustration of this species was prepared from that material.

Thelasis carinata Bl.

Bijdr. Fl. Ned. Indie (1825)385 & Fl. Javae Orchidees (1858)21, t.7, f.3; J. J. Sm., Flore Buitenz. 6(1905)497, f.375; Ridl., Fl. Malay Pen. 4(1924)200; Holtt., Fl. Malaya 1(1957)550.

Syn.: *T. elata* Hk. f., Fl. Brit. India 6(1890)87 & Ic. Pl. t.2156.

Stems tufted, usually few in number, very short, flattened. Leaves 3-6 (usually 5), the upper leaves usually much longer than the lower; bases of the leaves (below the joint of the lamina) 3-5 cm. long, laterally flattened, overlapping; lamina of the larger leaves 15-30 x 1.5-2.7 cm. (commonly 20 x 2 cm.), very narrowly oblong, channelled in the proximal half where $\pm$ erect, then flattening out and becoming outspread; apex bilobed and unequally rounded. Inflorescences 15-40 cm. long; peduncle slender, usually about twice as long as the rhachis, usually $\pm$ erect; rhachis sometimes bent at an obtuse angle from the peduncle, elongating for a few weeks as the flowers develop, from a few- to many-flowered; bracts 3-4 mm. long; pedicels plus ovaries averaging about 5 mm. long of which the ovary forms the greater part. Flowers about 3 mm. long, $\pm$ tubular in the proximal half, opening to about 3 x 3 mm., white or white with sepals and petals with greenish bases. Dorsal sepal 4-5 x 1.0-1.5 mm., somewhat broadened at the base, the remainder oblong, acuminate, the tip turned up or curled back. Lateral sepals not forming a mentum at their bases, slightly shorter and narrower than the dorsal sepal, $\pm$ narrowly triangular but somewhat bent near the base, tapering to a very acute angle at the apex. Petals slightly shorter and narrower than the lateral sepals, almost narrowly triangular or somewhat ovate, tapered to an acute angle at the apex. Labellum 3.5-4.0 x 1.0-1.5 mm., widened and concave at the base with a small nectary on either side, then contracting to a lamina which is usually down-curved, oblong or obovate, $\pm$ acuminate. Column slightly longer than 1 mm., without a foot. Anther long and pointed. Pollinia 8; stipe long and slender; retinaculum moderately long and slender.

Distributed from the Philippines through southern Asia, Malaysia, Indonesia and New Guinea to Cape York Peninsula in Australia. In Cape York Peninsula it has been recorded only from the McIlwraith Range. Some years ago a plant was sent to the Melbourne Botanic Gardens by the late J. L. Wassell but it was not identified. In 1967 plants were sent by M. Brown to the author and again this year (1970). The flowering period in Australia appears to be April-June.

This plant, when not in flower, somewhat resembles a small flag Iris but the leaves, which are from 6-12 inches long, are not fleshy. The flower stalks are usually almost as long as the leaves, are slender and bear from a few to many minute white or whitish flowers. The flowers are about an 1/8 of an inch long, somewhat tubular in the basal half (where there is no chin) then the segments open out. The sepals and petals are rather narrow and taper to a long point. The lip is rather broad and concave near the base, and is then narrowed to a more or less oblong but pointed blade. The species grows on rain forest trees at moderate or rather low altitudes.

**THELASIS CARINATA Bl.**

- A. Branch of the sympodium . . . to indicated scale.
 B. Flower from the front . . . to scale x 15.
 C. Flower from the side . . . to scale x 15.
 D. Petal—flattened out . . . to scale x 10.
 E. Lateral sepal—flattened out . . . to scale x 10.
 F. Dorsal sepal—flattened out . . . to scale x 10.
 G. Labellum—flattened out . . . to scale x 10.
 H. Longitudinal section of column & labellum . . . to scale x 15.
 I. Pollinarium . . . to scale x 30.



TRIBE EPIDENDREAE

SUBTRIBE *Dendrobiinae*GENUS *Cadetia*SECTION P *Sarco-Cadetia*SPSCIES 3: *Cadetia wariana* Schltr.

Reprim nov. Spec. Regni veg. Beih. 1(1912)426 & illus. ibid. 21(1923-8) 146, no. 551.

Sympodia elongated with the branches close together so that the plant forms a mat. Stems (pseudobulbs) 5-10 x 2.0-3.5 mm., $\pm$ cylindrical with one readily discernible groove and two less readily discernible grooves. Leaf 7-15 x 1.5-5.0 mm., ligulate or ovate on a short petiole, thick (up to 2 mm), slightly channelled above, ridged below. Pedicel (including ovary) averaging about 5 mm. long, slender and rather delicate. Flower about 5 x 5 x 5 mm., white, usually with the front of the labellum and the anther yellow or orange; mentum about 2-3 x 2 mm., subcylindric, obtuse. Dorsal sepal 2.2-3.0 x 1.8-2.0 mm., broadly ovate or elliptic, obtuse but usually bluntly apiculate. Free portion beyond the mentum of the lateral sepals $\pm$ the same size as the dorsal sepal, $\pm$ oblong, obtuse. Petals about 2.5-3.0 x 0.7 mm., $\pm$ narrowly oblong, acute but often apiculate. Labellum about 4.5-5.0 mm. long; proximal portion, which is adnate to the column foot, about 2.0-2.2 x 0.5 mm., narrowly oblong; lamina about 2.0-2.75 x 1.25 mm., $\pm$ oblong but slightly dilated near the apex, obtuse, somewhat concave, distal margins thickened. Column about 1.75 x 1.25 mm. with a foot about 1.5 x 0.5 mm. which is narrowly oblong; lateral apical teeth short and $\pm$ auriculate. Anther about 0.6 x 0.7 x 0.8 mm.; the front margin truncate. Pollinia falcate-clavate. Ovary 3-winged, the upper wings more slender than the lower wing.

This species belongs to the Section *Sarco-Cadetia* of the genus *Cadetia*.

Originally described from New Guinea, this species extends to Cape York Peninsula, where, so far, it has only been recorded from the McIlwraith Range, growing on rain forest trees at moderate or rather low altitudes. The collector, M. Brown, sent plants to the author in 1967 and again in 1970. The flowering period in Australia appears to be April to June.

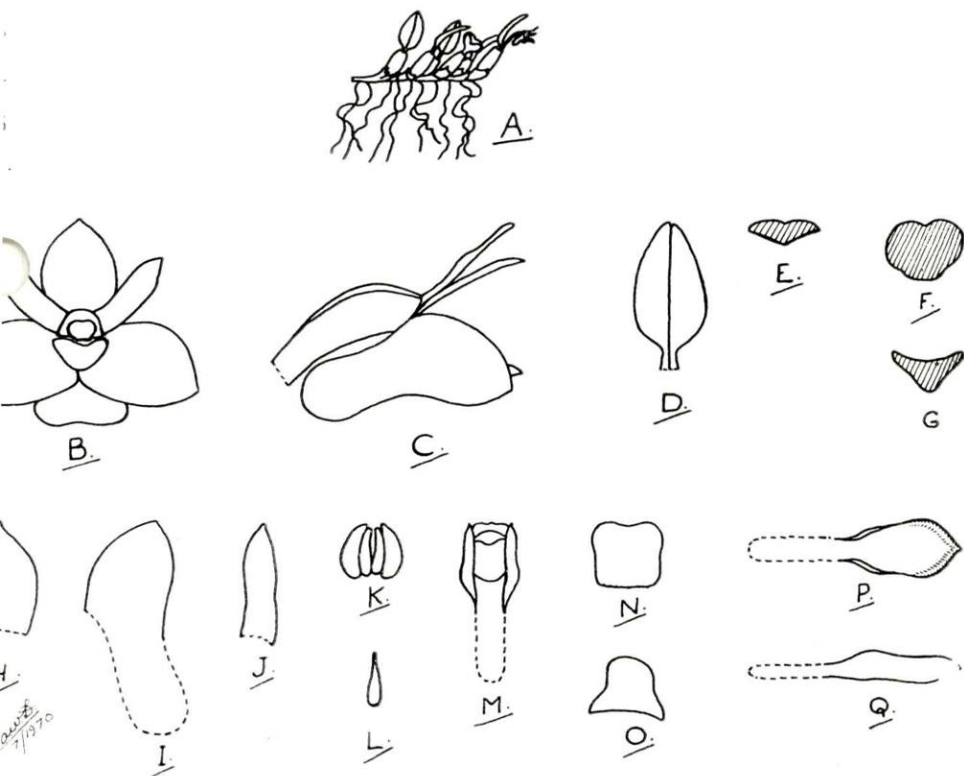
This plant grows in long and branching strands with its stems close together so that eventually a mat is formed. It can readily be mistaken for *Bulbophyllum* when not in flower as the stems are short and thick (pseudobulbous), about 1/5-2/5 x 1/10 of an inch and bear a single leaf which is from 1/3 to 2/5 of an inch long and is somewhat tongue-shaped. The flower, however arises from the top of the stem, not from the base as in *Bulbophyllum*. The flowers are borne singly or a few at a time and are on short stalks about 1/5 of an inch long. The flowers are about 1/5 of an inch long, of which the cylindric spur is about half, and are white with, usually, the front of the lip yellow or orange. The sepals are rather broad and blunt but the petals, which are about as long as the top sepal, are narrow and pointed. The lip, in the basal half, is attached to the foot of the column; the blade is more or less oblong but broadest near the front, somewhat concave and the front edges are thickened.

AUSTRALIAN INDIGENOUS ORCHIDS by A. W. Dockrill

This is a large 870 page book that describes all Australian epiphytic orchids and those terrestrial orchids found in the northern areas of Australia. Each species is described in a similar manner to that above and illustrated by line drawings as shown. From the technical descriptions of each species, it is easy to see why the book has been accepted throughout the world as the reference to Australian orchids.

Those who find the technical descriptions heavy going are referred to the last two paragraphs on each page where the descriptions are again given in a form more readily understood. This has been one secret to the book's success as anyone keen to know more of our orchids may readily use the book. Available from the Editor, 860 Henry Lawson Drive, Picnic Point, 2213 for \$18.00 plus \$1.00 postage.

SUPPLEMENTARY SHEETS No. 2: It is proposed to maintain this book up to date through the pages of "Australian Plants" as we have done here. For those who have brought the book, the new discoveries are available free of charge from the Editor in the form of "Supplementary Sheets No. 2" especially reprinted for easy insertion in your book.

**CADETIA WARIANA Schltr.**

- A. Small portion of a sympodium . . . to indicated scale.
 B. Flower from the front . . . to scale x 10.
 C. Flower from the side . . . to scale x 10.
 D. Leaf . . . to scale x 3.
 E. Cross section of a leaf . . . to scale x 3.
 F. Cross section of a stem (pseudobulb) . . . to scale x 5.
 G. Cross section of an ovary . . . to scale x 10.
 H. Dorsal sepal . . . to scale x 10.
 I. Lateral sepal . . . to scale x 10.
 J. Petal . . . to scale x 10.
 K. Pollinia from the front . . . to scale x 20.
 L. Pollinium from the side . . . to scale x 20.
 M. Column from the front . . . to scale x 10.
 N. Anther from the front . . . to scale x 20.
 O. Anther from the side . . . to scale x 20.
 P. Labellum from above . . . to scale x 10.
 Q. Labellum from the side . . . to scale x 10.

TRIBE VANDEAE

SUBTRIBE *Cymbidiinae*GENUS *Dipodium*

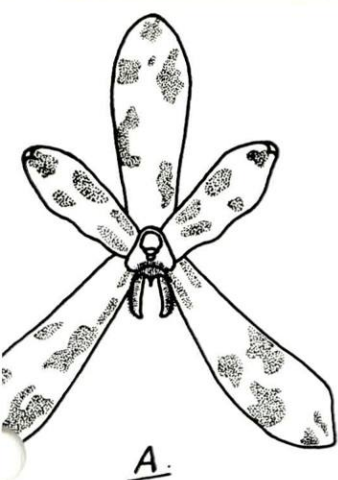
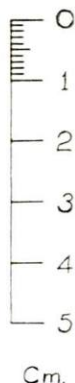
SPECIES 4: *Dipodium pandanum* F. M. Bail., Qd. Agric. J. 6(1900)287; Schltr., Reprium nov. Spec. Regni veg. Beih. 1(1911)952 & illus. ibid. 21(1923-28)t.336, no. 1295 (var. *pilotœnia* Schltr.); J. J. Sm., Nova Guinea 8(1909)104, t.35, no. 115 (var. *album* J. J. Sm.); Howcroft, Orchadian 3(1969)38-40.

A species which is supposed to consist of three varieties (var. *pandanum*, var. *pilotœnia* Schltr. and var. *album* J. J. Sm.) but the high degree of variability of the species is such that this varietal separation is hardly justified.

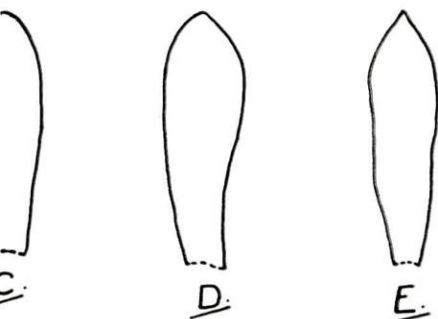
Juvenile plants of this species are terrestrial and occasional maturing plants remain so but usually the elongating stems attach themselves by roots, from almost any node, to a tree or occasionally rock; elongated stems, when attached to a tree, often grow spirally around the tree; severed portions of the stem, if of sufficient length, usually send out shoots and grow as separate plants. Stems up to at least 10 m. x 2-3 cm., brittle. Leaves 20-50 x 4-7 cm., closely distichous with overlapping sheathing bases and the lamina curved outward, jointed near the base, the portion below the joint persistent; lamina $\pm$ linear, channelled near the base then gradually flattening out to varying degrees, apex gradually tapered to a point, midrib prominent on the underside, longitudinal nerves several, usually readily discernible. Inflorescences 1-5 from nodes on the distal 2m. of the stem, usually $\pm$ at right angles to the stem, usually as long as or a little longer than the leaves; peduncle, which is up to 5 mm. diam., usually somewhat shorter than the rhachis; rhachis bearing from a few to at least 25 flowers on pedicel plus ovary 2.5-4.0 cm. long which have subtending sheathing bracts about 4-5 x 3 mm. Flowers 3-4 cm. diam., usually widely opening; sepals and petals pale creamy white with irregular red (usually maroon) blotches on the outer surface which show through to the inner surface as a paler colour; midlobe of the labellum creamy white or pink with 4-6 longitudinal stripes of varying length and varying intensity of red (from pink to purple) and occasionally the apex with a spot of similar colour; distal half of the column often pale yellow. Dorsal sepal 15-25 x 5-7 mm., usually narrowly obovate, oblong or clavate and rounded or obtuse at the apex. Lateral sepals about the same size as the dorsal sepal and somewhat the same shape but either slightly oblique or contracted on the dorsal margin in the proximal half or third. Petals about the same length as the sepals but usually slightly narrower and usually the ventral margin slightly contracted at about the middle and usually the apex more pointed than that of the sepals. Labellum about 17-20 x 6-8 mm. when flat; disc about 3 mm. long, $\pm$ triangular, raised, covered with short, fine white hairs; lateral lobes 1.5-3.0 x 0.5-1.0 mm., $\pm$ oblong-falcate; midlobe completely dominating the labellum, $\pm$ flat when the flower is freshly opened and either elliptic or obovate and $\pm$ acuminate but as the flower ages the sides decurve until the shape of the lobe is $\pm$ reversed cymbiform, upper surface with dense fine hairs which may almost completely cover the surface, be in parallel lines or confined to the distal portion. Column 8-10 x 3.5-4.0 mm., rather stout with a $\pm$ triangular patch of short hairs in the middle; clinandrium shallow. Stigma almost at the apex of the column, $\pm$ depressed scutiform. Anther about 2.0 x 1.5 x 1.5 mm.; rostrum large, bluntly triangular. Pollinarium $\pm$ typical of that of the genus; retinaculum about the same diameter as the depth of the pollinia, $\pm$ orbicular; stipes slightly shorter than the pollinia; pollinia $\pm$ depressed elliptoid.

Distributed widely in New Guinea, extending eastward to New Ireland and southward to Cape York Peninsula in Australia where, so far, it has only been recorded from the Iron Range-McIlwraith Range area, growing in or near rain forests at moderately low altitudes. The flowering period in Australia is at present not accurately known but in New Guinea, where the species occurs from sea level to 5000 feet, the main flowering season is from July to December.

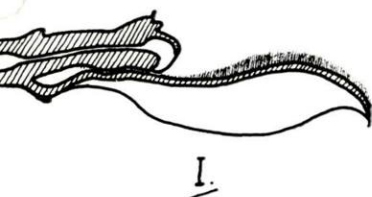
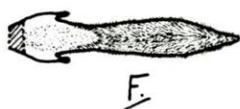
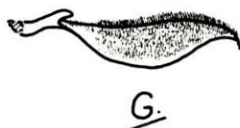
This is a large climbing plant which, when not in flower, is often mistaken for a *Freycinetia*. It has brittle stems up to 30 feet long. The leaves are about 8-20 x 1½-3 inches, closely 2-ranked, have overlapping bases and are jointed near the base; the blade is more or less strap shaped but pointed and is channelled in the part near the stem, is thin in texture, rather brittle but has a stout midrib; the blade is deciduous but the base persists so that the lower portion of the stem (the bulk of the stem when the stem is elongated) is covered with dry

A.B.

Cm.



auth.
8/1970

I.F.G.H.J.K.L.M.

DIPODIUM PANDANUM—Taken from New Guinea material

- A. Flower from the front . . . to scale x 2.
 B. Flower from the side . . . to scale x 2.
 C. Dorsal sepal . . . to scale x 2.
 D. Lateral sepal . . . to scale x 2.
 E. Petal . . . to scale x 2.
 F. Labellum from above . . . to scale x 2.
 G. Labellum from the side . . . to scale x 2.

- H. Pollinarium from the front . . . to scale x 10.
 I. Longitudinal section of column and labellum . . . to scale x 3.
 J. Column from the front . . . to scale x 3.
 K. Anther from the front . . . to scale x 5.
 L. Anther from the side . . . to scale x 5.
 M. Pollinarium from the side . . . to scale x 10.

bract-like leaf bases. The inflorescences are about as long or a little longer than the leaves and bear from a few to about 25 flowers. The flowers average about 1½ inches across and have moderately narrow sepals and petals which are creamy white with irregular red blotches on the outside which show through to the inside as a paler colour. The lip which, in its lower third, is in contact with the column, has very small side lobes about 1/12 of an inch long which embrace the column; the middle lobe, however, is large, about ¾ of an inch long, flat and more or less elliptic when the flower first opens but becoming more or less upside down boat-shaped with age; the middle lobe is hairy to varying degrees and has 4 or 6 reddish stripes of varying intensity of colour. The column is stout and often pale yellow.

It has been pointed out by Howcroft, l.c., that further investigation may, and is likely to, prove this species synonymous with *D. pictum* (Ldl.) Reichb. f., a species which occurs in Malaysia and Indonesia, but a careful comparison of a wide range of material from these areas, New Guinea and Australia would be necessary before an assessment could be made with confidence.

A DIFFERENT SPECIES NAME FOR THE AUSTRALIAN APOSTASIA

It has been pointed out by de Vogel, *Blumea* 17(1969)338, that *Apostasia stylidioides* (F. Muell.) Reichb. f. is synonymous with *Apostasia wallichii* R.Br., a species which is widely distributed in southern Asia, Malaysia, Indonesia and New Guinea as well as north-eastern Australia. The citation and synonymy therefore are:

Apostasia wallichii R.Br.

in Wallich, *Pl. As. Rar.* 1(1830)75, t.84; Bauer & Ldl., *Illus. Orch. Pl.* (1832) t.15, f.16-20; Bl. in d. Hoeven & de Vriese, *Tijd. Nat. Gesch. Phys.* 1(1834)140; *Ann. Se. Nat.* ii, 2(1839)93; Miq., *Fl. Ind. Bat.* 3(1859)748 & Sumatra (1860-61)276, 617; Thwait., *En. Pl. Zeyl.* 4(1861)315; Rolfe, *J. Linn. Soc. Bot.* 25(1889)237; Hk. f., *Fl. Brit. Ind.* 6(1890)175; Ridl., *J. Linn. Soc. Bot.* 32(1894)415; Rolfe, *Orchid Rev.* 4(1896)329; Krzl., *Orch. Gen. & Spec.* 1(1897)7; Trim., *Handb. Fl. Ceyl.* 4(1898)238; King & Pantling, *Ann. Bot. Gard. Calc.* 9(1901)68, t.84; Pfitz., *Pflanzenreich Heft* 12(1903)7; J. J. Sm., *Orch. Java* (1905)18; Ridl., *Mat. Fl. Mal. Pen.* 1(1907)232; Ames, *Philip. J. Sc.* 2(1907)Bot.311; J. J. Sm., *Bull. Dep. Agric. Ind. neerl.* 13(1907)1; Merr., *En. Born.* (1921)134; J. J. Sm., *Bull. Jard. Bot. Btzig.* iii, 5(1922)t.18, f.iii; Ridl., *Fl. Mal. Pen.* 4(1924)297; J. J. Sm., *Mitt. Inst. Allg. Bot. Hamb.* 7(1927)10; Reprum nov. *Spec. Regni veg.* 32(1933)131; Gagn., *Fl. Gen.* 1-c. 6(1934)651; Masamune, *J. Jap. Bot.* 11(1935)46; Back., *Bekn. Fl. Java* (em. ed.)10B (1949)fam.240, P.3; Holtt., *Rev. Fl. Malaya* 1(1953)64; Mitra, *Fl. Pl. East India* 1(1958)261; Back. & Bekn. f., *Fl. Java* 3(1968)211; de Vogel, *Blumea* 17(1969)338, f.10, no. C-6.

Syn.: *Niemeyere stylidioides* F. Muell., *Fragm. Phyt. Aust.* 6(1867)96.

Apostasia stylidioides (F. Muell.) Reichb. f., *Flora* 55(1872)278; Bth., *Fl. Aust.* 6(1873)396; Reichb. f., *Xenia Orch.* 2(1874)215; F. M. Bail., *Syn. Qld. Fl.* (1883)533 & Qd. *Fl.* 5(1902)1591; Rolfe, *J. Linn. Soc. Bot.* 25(1889)237; *Orchid Rev.* 4(1896)329; Krzl., *Orchid. Gen. & Spec.* 1(1897)8; Pfitz., *Pflanzenreich Heft* 12(1903)7; Domin., *Bibl. Bot.* 22(1915)551; Dockr., *Aust. Indig. Orch.* 1(1969)6-7.

Apostasia gracilis Rolfe, *J. Linn. Soc. Bot.* 25(1889)242; Ridl., *J. Linn. Soc. Bot.* 31(1893)305; Rolfe, *Orchid Rev.* 4(1896)329; Pfitz., *Pflanzenreich Heft* 12(1903)8; Merr., *En. Born.* (1921)134.

Apostasia alba Rolfe, *Orchid Rev.* 4(1896)329; Pfitz., *Pflanzenreich Heft* 12(1903)8; Merr., *En. Born.* (1921)134.

Apostasia lucida Bl. ex Siebe, *Anat. Bau Apost.* (1903)16, 24, 34, 41, 49, 56, 59, f.3.

Apostasia papuana Schltr. in K. Schum. & Laut., *Nachtr. Fl. deut. Schutz.* Sudsee (1905)72; J. J. Sm., *Nova Guinea* 12(1915)174, t.55, f.89.

Apostasia wallichii R.Br. var. *seraweiensis* J. J. Sm., *Mitt. Inst. Allg. Hamb.* 7(1927)10.

Apostasia curvata J. J. Sm., *Mitt. Inst. Allg. Hamb.* 7(1927)11, t.1, f.1.

A REVISED SPELLING FOR THE SPECIES EPITHET OF PHAIUS TANKERVILLIAE (BANKS) BL.

Information from the Kew Herbarium has shown that the above spelling is incorrect. The species was named after Tankerville but obviously Banks realised that this name could not be properly Latinised so called the plant *Limodorum tancarvilleae*. As this spelling was deliberate and not an unintentional error.



Photography by R. F. Leaney

those later workers who altered the spelling to *tankervillei*, *tankervilleae* or *tankervilliae* erred. Modern convention has decreed that endings of "cae" should be altered to "iae" so that the name and citations should be as follows:

Phaius tancarvilleae (Banks) Bl., (*P. tankervillei*, *P. tankervilleae* or *P. tankervilliae* in error) Mus. Bot. Lug.-Bat. 2(1852)177 & Fl. Javae Orch. (1858)3; Rupp, Orchids N.S.W. (1943)109 (in part); Nich., Victorian Nat. 67(1950)10 & Orchids Aust. (1969)101, t.368; Holtt., Fl. Malaya 1(1957)172, f.28; Leaney, Aust. Pl. 1, pt. 8(1961)1; Dockr., Aust. Indig. Orchids 1(1969)250, 251 & 253.

Basionym: *Limodorum tancarvilleae* Banks in L'Herit., Sert. Angl. (1789)28; Ait., Hortus Kew. Ed. 1, 3(1789)302, t.12.

Synonyms: *Limodorum incarvillei* Pers., Syn. Pl. Enchir. Bot. 2(1807)520.

Bletia tankervilliae (Banks) R.Br. in Ait., Hortus Kew. Ed. 2, 5(1813)205 & in Curtis's bot. Mag. 44(1817)t.1924; Lodd., Bot. Cabinets 1(1817) no. 20. *Pachyone spectabilis* Salisb., Trans. hort. Soc. 1(1820)261.

Phaius grandifolius Ldl., Gen. Spec. Orchid. Pl. (1831)126; Bl., Fl. Javae Orch. (1858)5; Bth., Fl. Aust. 6(1873)304 (in part); F. M. Bail., Syn. Qd. Fl. (1883)514 (in part) & Qd. Fl. 5(1902)1543 (in part); FitzG., Aust. Orchids 2, pt. 5(1893) (in part); Rog., Trans. R. Soc. S.A. 45(1921)266 (in part); Rupp, Guide Orchids N.S.W. (1930)48 (in part).—Non Lour. 1790 vel Ldl. 1828.

Phaius blumei Ldl., Gen. Spec. Orchid. Pl. (1831)127; Bl., Fl. Javae Orch. (1858)4, t.1.

Phaius grandifolius Ldl. var. *superbus* Van Houtte, Fl. d. s. 7(1851-52) 259, t.38.

Phaius carronii F. Muell., Essay Pl. Exped. Burdekin (1860)19—(in obs.).

Phaius leucophaeus F. Muell., Fragm. Phyt. Aust. 4(1864)163.

Phaius wallichii Hk. f., Fl. Brit. Ind. 5(1890)816; Ridl., Fl. Malay. Pen. 4(1924)123.

QUEENSLAND GREVILLEA—continued from page 29

Racemes: terminal or from the upper axils, consisting of a short erect stem from which several 1 inch one-sided racemes branch at a down-turned angle. Flowers: orange and yellow.

Distribution: In Queensland, this northern species occurs near Camooweal. *G. refracta* var. *ceratophylla*. This is listed in the Flora as from the islands of the Gulf of Carpentaria. Apparently supposed to differ in its coarser leaves, and in having some entire leaves.

***Grevillea robusta*.** A moderate to large tree of 80-100 feet.

Leaves: variable, 6-12 inches long, and once, twice or more lobed or divided.

Racemes: one-sided, 3-5 inches long, solitary or several together, mostly on short axillary shoots on the old branches.

Flowers: yellow, usually with a red blotch at the base of the corolla.

Distribution: common throughout coastal south Queensland, north as far as Maryborough and west to Bunya Mountains.

It cultivates well in a variety of soils and climates, making an attractive specimen or street tree where there are no overhead wires. It appears to be partly deciduous in some climates.

***Grevillea sessilis*.** a 5-9 feet erect shrub of fairly sparse habit.

Leaves: 4-6 inches long, deeply divided pinnately into about 9-17 lobes, sometimes with the lower lobes again divided. The young leaves have a bronzy appearance.

Racemes: 3-4 inches long, cylindrical, terminal or in the upper axils, solitary or several in succession. Characteristically, the tip of the rachis protrudes about $\frac{3}{4}$ inch beyond the crowded flowers.

Flowers: creamy white or tinged with green.

Distribution: in northern districts such as near Torrens Creek and Pentland, but also between Rolleston and Theodore. An attractive plant that shows promise of being reliable in cultivation.

***Grevillea singuliflora*.** A much-branched, low, sprawling shrub 12-18".

Leaves: entire, oval, about $\frac{1}{2}$ inch long with undulate margins, pale green and contrasting with the red stems.

Flowers: singly or in pairs in the upper axils, a translucent greenish colour.

Distribution: in the Helidon Hills. The Dogwood Creek form from near Miles is more erect and the flowers are reddish.

***Grevillea stenobotrya*.** A shrubby tree 8-20 feet high.

Leaves: undivided, 9 inches or more long, very narrow and rigid.

Racemes: cylindrical, slender, about 2-7 inches long in large branching terminal clusters.

Flowers: small, creamy white.

Distribution: on the sandhills between Windoro and Currawillo Station, and extending westwards through Central Australia.

***Grevillea striata*.** A tree of 20-30 feet.

Leaves: undivided, 6-18 inches long and about $\frac{1}{4}$ - $\frac{3}{8}$ inch wide with several parallel veins showing on the underside.

Racemes: cylindrical, slender, densely flowered, 2-6 inches long, in terminal branching clusters.

Flowers: small, white.

Distribution: this species is known as Beefwood and is very widely distributed in the inland districts from the south-west border to Mt. Isa, Hughenden, and in the dry coastal belts such as Rockhampton and Bowen, as well as across northern Australia. Adaptable to a variety of soils and climates, but very slow growing.

Grevillea venusta. A small tree of 10-15 feet.

Leaves: 4-8 inches long, entire or irregularly 3-5 lobed. Lobes $\frac{1}{4}$ inch to nearly 1 inch wide.

Racemes: cylindrical, terminal or in the upper axils, 2-3 inches long.

Flowers: orange.

Distribution: in Eucalyptus forest in the Keppel Bay, Byfield, Maryvale districts.

Grevillea wickhamii. A shrub of 5-12 feet.

Leaves: 1-3 inches long, more or less rounded to oval with prickly holly-like teeth, but wedge-shaped at the base, bluish in colour.

Racemes: pendulous, 1-4 inches long, sometimes with 1 or 2 short branches, terminal or mostly in the leaf axils.

Flowers: bright red, or sometimes yellow, orange or green and white.

Distribution: Right across northern Australia. In Queensland it occurs south-west of Cloncurry, near Winton, Camooweal, Mt. Isa, and Westmoreland.

Grevillea sp. (Coochin Hills). A tall, erect shrub of 6-12 feet, similar to *G. pteridifolia* in general appearance and leaf shape.

Leaves: 8-10 inches long, deeply divided pinnately into many very narrow pointed lobes. Sometimes the lower lobes are again divided. The leaves are greener, slightly coarser, and with a shorter petiole than *G. pteridifolia*.

Racemes: 3-5 inches long, cylindrical, erect, terminal or in the upper axils, several in succession.

Flowers: creamy yellow. The several plants in cultivation which have been propagated by both seed and cuttings, produce flowers that are mostly abnormal with 2 or more styles. Further observation is needed to determine how general is the abnormality, for there seems to be some inconsistency.

Distribution: its isolated occurrence on the most northerly of the Glasshouse Mountains group is interesting. In cultivation, results are variable. Some plants are clean and attractive while others are attacked by psyllids.

G. sp. (Mundubbera, Durong, Gayndah). This appears to be the same as the Coochin Hills species. The tendency to abnormality should be checked.

G. sp. (Moolyember). A much-branched spreading shrub of 1-2 feet.

Leaves: entire, 1-1½ inches long, about $\frac{1}{4}$ inch wide.

Racemes: cylindrical, pendulous, densely flowered, $\frac{1}{2}$ -1 inch long, at the end of the twigs.

Flowers: translucent greenish.

Distribution: on the sandstone ridges near Moolyember Dip, Carnarvon Range.

The following two species are listed in the Queensland Flora:-

Grevillea cirsiifolia. Recorded from the summit of Mt. Lindesay, but there is no specimen in the Queensland Herbarium, and it seems unlikely that this West Australian species would also occur here.

Grevillea kennedyana. Recorded for Queensland without specimen or locality, and has probably been absorbed into some other species.

Other species not recorded in Queensland, but occurring near enough to the border to make their occurrence here a possibility include:-

Grevillea trinervis. A sprawling much-branched shrub of 1-2 feet.

Leaves: entire, $\frac{1}{2}$ -1 inch long, sharp pointed, often in groups of 3.

Racemes: one-sided, pendulous, $\frac{1}{2}$ -1 inch long, at the ends of the twigs.

Flowers: orange.

Distribution: on granite country near Bald Rock and Boonoo Boonoo.

Grevillea dimidiata. A tropical small tree with very stiff leaves. It bears some superficial resemblance to *G. mimosoides*, but bears larger flowers.

Grevillea agrifolia, G. angulata, G. pungens. These are tropical shrubs found in Northern Territory. The first two bear some resemblance to *G. wickhamii*, and the last has serrate leaves that clasp the stem.

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GROWING GREVILLEA—continued from page 28

Unsuccessful Queensland Species

***Grevillea decora*.** I have found difficulty in establishing this species. Two plants have been tried and both were lost within a few months of planting. Mature plants seen near Portland, Queensland were about 6 ft. high and 6 ft. across and were growing alongside *G. sessilis*. The flowers are carried in fairly large heads and are a dull red.

***Grevillea juncifolia*.** The two plants attempted died within the first 12 months. Other growers have found this species difficult to establish but one grower has succeeded in flowering it at Looewoomba, 80 miles from here. It occurs naturally in a number of districts in Central Queensland as well as other states. It grows from 6-10 ft. in height and has erect gold-coloured flower spikes.

***Grevillea sessilis*.** A cream coloured flower which has a slight resemblance to *G. banksii* but smaller. My specimen recently died and had flourished until this time. It reached about 8 ft. in height and was about 5 years old. It flowers for about 3 months during later winter and spring.

Species from other States which are still surviving are: *Grevillea acanthifolia*, *G. bauerii*, *G. bipinnatifida* (3 plants), *G. biternata* (2 plants), *G. capitellata*, *G. capitellata*, Holdsworth form, *G. sp.* Carrington Falls, *G. confertifolia*, *G. dielsiana*, *G. fascicularis*, *G. hookeriana* (Ravensthorpe form), *G. insignis*, *G. juniperina*, *G. juniperina prostrata* (3 plants), *G. jephcottii*, *G. lanigera*, *G. leucopteris*, *G. linearis* var. *pumila*, *G. lavandulacea*, *G. laurifolia*, *G. obtusa*, *G. pinaster*, *G. punicea*, *G. rosmarinifolia* (Little Desert Form), *G. steiglitziana*, *G. sericea*, *G. shirressii*, *G. trinervis*, *G. thelemanniana*, *G. thelemanniana* (grey foliage form), *G. thrysoides*.

Unsuccessful species from other States: *G. aspera*, *G. annulifera*, *G. biternata* (3 plants), *G. chrysophaea*, *G. dallachiana*, *G. dielsiana* (2 plants), *G. ericifolia*, *G. "Gaudichaudi"* (2 plants), *G. lavandulacea* (2 plants), *G. laurifolia* (2 plants), *G. miqueliana*, *G. rosmarinifolia* (survived 6 years), *G. repens* (2 plants), *G. tenuiloba*, *G. trinervis* (2 plants), *G. wilsonii*, *G. bipinnatifida* glaucous foliage form (2 plants), and *G. macrostylis*.

Plants which were removed for various reasons, but which were quite healthy: *G. asplenifolia* (6 years old), *G. bauerii*, *G. brevicuspis*, *G. hookeriana*, *G. oleoides*.

In most cases only one of each species has been attempted. The loss of one plant does not mean that it is unsuitable but on the other hand success with the first attempt is encouraging.

Some of the most reliable plants attempted in Brisbane are *G. banksii* (both colour forms), *G. sericea*, *G. asplenifolia* (now known as *G. longifolia*), *G. robusta*, *G. bauerii*, *G. leiophylla*, *G. linearis* var. *pumila*, *G. punicea*, *G. lanigera*, *G. hookeriana*, *G. buxifolia* and to a lesser extent *G. pteridifolia* and *G. sessilis*.

Other plants which appear reliable but have not been tried in large numbers are *G. capitellata*, *G. bipinnatifida* (green foliage form), *G. pinaster*, *G. thelemanniana*.

Plants which have self sown here include *G. banksii*, *G. sericea*, *G. linearis* var. *pumila* and *G. pteridifolia*.

The peak flowering for most Grevilleas here is July and August.

Full sun suits most species but some do appreciate filtered sunlight.

Grevilleas can be grown here—it is only a matter of selecting suitable species and applying a few simple rules which after all is also necessary for many other genera both native and exotic.

THE IVORY CURL FLOWER OF QUEENSLAND



Photography by R. J. Peach

BUCKINGHAMIA CELSISSIMA—See page 18

