

PUBLISHED BY THE SOCIETY FOR GROWING AUSTRALIAN PLANTS IN 8,000 COPIES

Australian Plants

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

PRICE: THREE SHILLINGS
JUNE, 1963 Vol 2, No. 15
Volume 2 will comprise issues, No. 13-20.



Colour Photography by Frank Hurley

Block by courtesy John Sands Ltd.

THE COOKTOWN ORCHID

Dendrobium bigibbum Lindl.—the Floral Emblem of Queensland

QUEENSLAND WILDFLOWERS

The wildflowers of Queensland are unique, spectacular, beautiful and ideal garden subjects. We have heard these phrases used for wildflowers of other states but rarely for Queensland. Why? Because we know so little about them! Because they do not occur in widespread areas or spectacular vistas! Because they are becoming extinct. Because the people of Queensland are indifferent to them! Because the Government of the State is indifferent to their national heritage being so pre-occupied in making a thin budget stretch over the many urgent projects crying out to be done in such a vast under-developed State! Alas! All these tragedies are to a degree true.

Where are the Queenslanders sensitive to the natural beauty of their State? Every resident of our northern State who answers this cry, regardless of circumstances or experience can assist in a significant way. This issue contains articles from Queenslanders who do care and are doing their best but need assistance. The short article "Eucalypts In Queensland" follows the last issue of "Australian Plants" which dealt with the beauties of the dwarf coloured flowering eucalypts of West and South Australia. Very few people know that Queensland has trees that will rival these but we cannot even get seed to grow them. We need seed of such species as *E. miniata*, *E. phoenicea*, *E. setosa* and the beautiful crimson flowered *E. ptychocarpa*.

AN AWAKENING! BUT WILL THE POLITICIANS RALLY

"An arboretum covering an area of at least 50 acres, shaded by gracious trees and bright with wildflowers; nourished by a generous natural water supply, and attended by a full-time resident ranger who would protect the native fauna that enjoy security there . . ." This is the objective of the Toowoomba Field Naturalist Club. One member with considerable experience and ability has offered the gift of 20 acres of land near Oakey. Firm and practical plans have been placed before the Government of Queensland through the Minister for Lands for such an arboretum. I have personally met the committee members appointed to prepare these plans and negotiate with the Minister and I am convinced not only of their competence and enthusiasm but also of their sound practical ability and tenacity and if the Government of Queensland should pass this opportunity, it is never likely again to get the same opportunity to preserve its native heritage, the Flora of Queensland.

See Editor's Notes throughout the issue.

COLOUR PHOTOGRAPHERS

Where are the colour photographers in Queensland? We need good colour slides of all Queensland wildflowers. Issue No. 12 gives details of our photographic section and of a photographic competition.

WILDFLOWER SHOWS

There are many beautiful wildflower shows throughout Australia. If the organisers of shows that will be predominately for wildflowers will advise the editor before August of the date and details of their shows, they will be publicised free of charge in the September issue.

Organisers please note. This society is devoted to the preservation of wildflowers and their cultivation in home gardens. Any flowers you request from us must come from members' gardens which will also have to supply flowers for the show by their own local society. Requests for flowers other than for the main shows are often an embarrassment.

How To Grow

THE COOKTOWN ORCHID

By Dr. H. E. YOUNG—Queensland Orchid Society

With the adoption of the plant as Queensland's floral emblem, many people unfamiliar with the growing of the plant will be wondering how to handle it and a suggested course of action which could be followed by those in doubt is provided below. The Cooktown Orchid is an epiphyte, i.e., it is adapted to growing on trees or rocks but not in the soil. If put in the latter it will not grow satisfactorily or for very long. Similarly a medium consisting of a close textured compost such as leaf mould is unsatisfactory. The plant needs very good drainage and aeration around the roots so that the root system is not kept in a continuously sodden state.

A satisfactory medium is provided by growing the plants on the bark of a suitable tree as is the case in the wild state. Trees with deciduous bark, such as gum trees are unsatisfactory because when the tree sheds its bark it is also likely to shed the orchid. Trees with persistent bark such as the frangipanni, citrus, umbrella tree, wheel of fire, croton, etc., are suitable if situated in a suitable position.

Having obtained a Cooktown Orchid in one of its various varieties it should be tied on a branch or the trunk with twine, wire (preferably copper) or plastic string or strip so that the root and base of the plant are held firmly on to the bark. The plant should preferably be fixed on the east or north side of the tree if on the trunk and similarly on a branch except that it may be fixed to the top of a lateral branch. It is wise also to study the position of the plant with a view to assuring that it is placed so that rain water running down the tree will flow over the roots of the plant instead of putting it in a place which is habitually dry.

In starting the plant off it is an advantage to cover the roots with a thin sheet of elkhorn fibre or a single thickness of hessian or plastic sheet which may be tied on when attaching the plant. This helps to ensure that the roots, which in moving the plant have been deprived of intimate contact with the bark, are kept reasonably moist until new growth develops and the plant can fend for itself.

POT OR BASKET CULTURE

If the plant is required to grow in a window box, under the front steps or in a bushhouse, so that it may be moved about, it is best to establish it in a pot or wooden basket. Incidentally, better growth is usually obtained by this method as the plants are more easily manured and they can be moved about to find the best growing situations.

The plants should never be overpotted, i.e., a small pot or basket consistent with the size of the plant gives best results. An ordinary flower pot of the four-inch size accommodates the usual size of plant quite well.

The pot should be filled a quarter to a third of its capacity with broken crocks (pieces of broken flower pot, pieces of broken brick, pumice stone from the beach or charcoal). The pieces used should be about half to three-quarters of an inch in diameter.

On top of this a thin layer of coarse elkhorn or other suitable fibre such as tree fern roots, or osmunda fibre should be placed. This fibre should be washed and teased or chopped into small pieces about one to one and a half inches long. The plant is then introduced to the pot and held so that

the base of the plant is about half an inch below the top of the pot and more fibre is then packed firmly but gently around the roots up to but not covering the base of the plant.

The plant should be so placed that the leading shoot is towards the centre of the pot with the back of the plant against the side of the container. This ensures that there is room for continued forward growth of the plant. Sometimes plants received from dealers have few roots. In this case it is necessary to support the plant by tying it to a small wooden stake placed in the pot which will keep the orchid upright until it forms a new root system and is able to support itself. A bamboo butchers' skewer forms a stake of satisfactory size and performance.

It is a good idea to distribute some bone dust or broken bones in the compost when potting. Other readily obtainable composts are often used with equally good results. Such materials as she oak (*Casuarina*) bark, and iron bark bark are used successfully. The dead outer bark is obtained from the trees without injuring the tree. It is preferably chopped into a quarter to half-inch pieces and packed in as in the case of other composts. Some growers use only pumice stone collected from the beach and depend on manures for feeding the plants.

WATERING

The Cooktown Orchid makes its new growth in summer and is dormant during the winter months of June, July and August. It therefore requires watering whilst new growth is being produced in the summer. A watering should therefore be given every day during summer growth if possible and if best results are to be achieved. If the compost remains moist, watering need only be carried out when the compost tends to become dry. Plants growing on trees of course, receive a certain amount of moisture and food from the bark of the tree and does not require such frequent attention but should be given a watering when hosing the garden and more frequently when the atmosphere is very dry. It must be remembered that these plants are natives of humid conditions.

Watering should preferably be carried out with a falling temperature, i.e., in the afternoon, except in winter. For winter watering only enough moisture should be given to prevent the plants from shrivelling. They are not making growth at this stage and do not need the water. If kept too wet while dormant the roots in the compost are liable to decay and leaf drop to occur.

MANURING

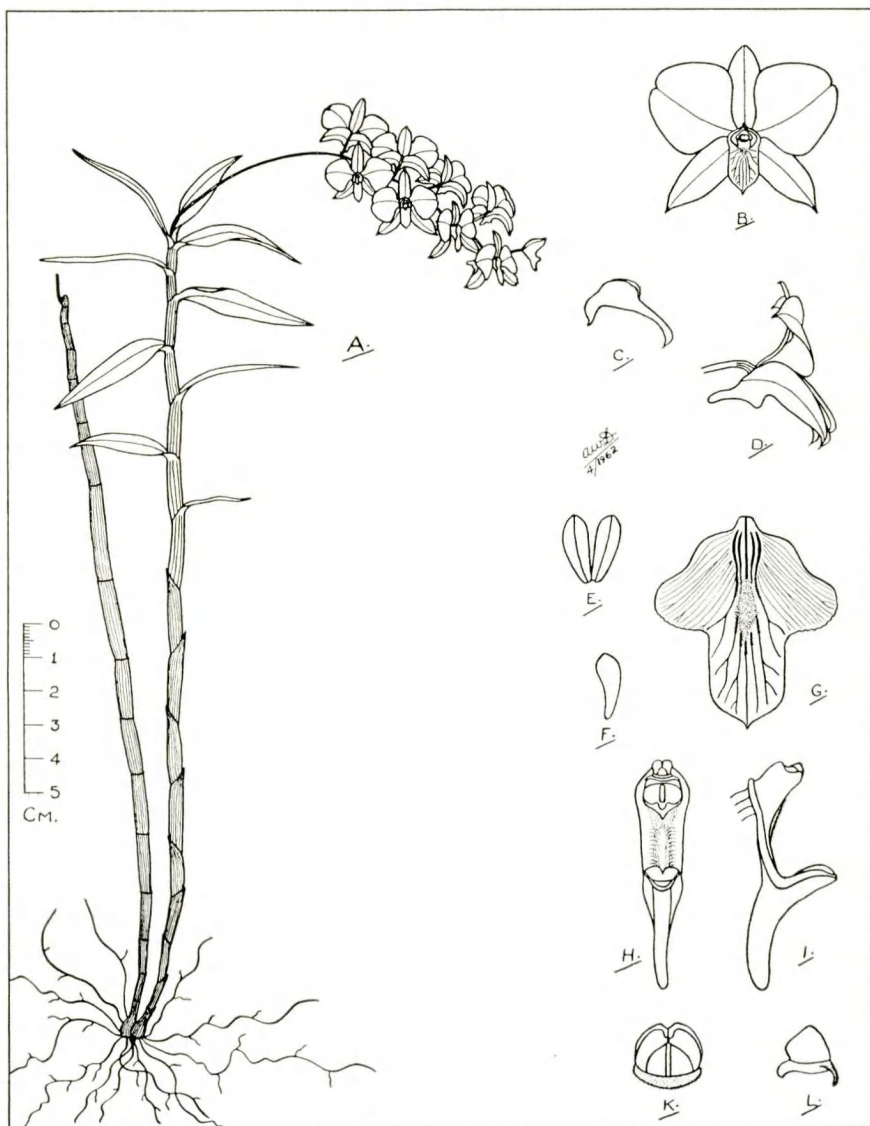
The plants respond very well in the growing season to the application of organic and artificial manures. An occasional light dressing of dried blood, blood and bone or bone dust or a very light dressing with fowl manure usually gives good results. Application of weak liquid manure also gives satisfactory results. Artificial manures such as the soluble products now sold under various trade names are also very good and have the advantage that they are not so liable to clog up and decompose the compost so much as the bulkier long lasting organic products. No manuring should be carried out during the period the plants are dormant and when green root tips are absent.

It should be understood that weak dosages are important and desirable. Applications of concentrated manures are liable to harm the root system

THE COOKTOWN ORCHID

By A. W. DOCKRILL (Cairns) and S. T. BLAKE (Queensland Herbarium, Brisbane)

The Cooktown orchid, a native of northern Queensland, from a little north of Cairns to some of the islands of Torres Strait, has been widely cultivated for a long time and has been freely used as a parent in artificial hybrids. Recently it was declared the Floral Emblem of Queensland.



Dendrobium bigibbum Lindl.

This form is that usually known as the Cooktown Orchid

At least three botanical names have been used for the Cooktown orchid,

namely *Dendrobium bigibbum*, *Dendrobium bigibbum* var. *phalaenopsis* and *Dendrobium phalaenopsis*; more recently *Dendrobium bigibbum* forma *phalaenopsis* has been proposed for it.

Many botanists and others have studied the Cooktown orchid but we have felt that a re-examination would be worthwhile. One of us (S.T.B.) has also investigated the nomenclature which has previously been taken very much for granted. Quite a large number of names are concerned and it would be out of place to treat this subject here, but a full discussion will be published elsewhere. All that is necessary here is to state that there has been a mistake in identification—that true *Dendrobium phalaenopsis* is not an Australian plant, and that the name *Dendrobium bigibbum* var. *phalaenopsis* cannot under any circumstances be used for the Cooktown orchid. There has been some misconception about true *D. bigibbum*, but this name is certainly the correct botanical name for the Cooktown orchid. It must be realised that individuals of any species, plant or animal, vary between themselves. We readily accept the fact that there are large men and small men, also some unusually large and some unusually small, any of which may have black hair, red hair or hair of some other colour. We should be equally ready to accept comparable variation in *Dendrobium bigibbum*. From a horticultural point of view some individuals may be preferred because of size of flower, shade of colour or lack of it or some other reason, and these tend to be increased by division. Except for the occasional white-flowered plants most of the preferred plants are very much alike in habit and size and colour of flower. It is for these plants that the name Cooktown orchid is commonly used. They perhaps constitute a variety in the horticultural but not the botanical sense. A description of *Dendrobium bigibbum* follows.

A moderately tall epiphyte growing in small clumps. Pseudobulbs 15-120 x 0.6-1.5 cm., usually slightly swollen at the base. Leaves 3-6 in the upper part of the pseudobulbs 5-12 cm. long, more or less lanceolate. Racemes borne opposite the axils of the leaves and almost apical, the same pseudobulbs continuing to flower for several successive years after the leaves have dropped off, 10-40 cm. long, carrying about 2 to 20 flowers on pedicels about 2-3 cm. long. Flowers lasting for several days (up to a fortnight or more if not pollinated), 3.5-7.0 cm. across the petals, widely expanding, usually a rather deep lilac but varying from white through very pale lilac to deep reddish-lilac; the colour range is about that of Imperial Purple of the Wilson Colour Chart of the Royal Horticultural Society, deepening to about Beetroot Purple on the labellum. Dorsal sepal 15-40 x 6-16 mm., elliptic or oblong lanceolate, acute or obtuse. Lateral sepals 15-35 x 7-16 mm., about oblong acute, produced at the base to form with the column foot a straight or curved, conical, obtuse spur which has at its base on the front side a secondary spur forming a double spur; this secondary spur is much more pronounced in some specimens than in others. Petals 15-40 x 15-40 mm., about as wide, or nearly as wide as long, widest at or a little above or below the middle, often asymmetric, broadly rounded or notched sometimes with a short point, constricted at the base into a short, broad claw. Labellum 15-35 x 20-32 mm. (when artificially flattened out) trilobed; lateral lobes erect and incurved, 7-14 x 8-17 mm., suboblong, very broadly rounded; mid-lobe 6-17 x 17 mm., shortly oblong to oblate or also somewhat obovate, very obtuse or truncate, apiculate or emarginate; disc with 5 longitudinal raised lines or ridges fringed or crested to varying degrees in the apical half their colour either white or mauve. Column not winged, longitudinally grooved below the stigma, 4-7 x 4-7 mm. with a foot 9-18 mm. long more or less at right angles to it; foot tubular in its apical half or 2/3 with a platform (housed within the secondary spur) projecting forwards from the base of the tube, to the apex of which the labellum is attached. Stigma subscutiform. Rostellum a mere short extension of the floor of the clinandrium. Anther usually about 2 mm. across, rostrate; rostrum very short and broad, tomentose. Pollinia typical of those of the genus.

EDITOR'S NOTE: Any reader wishing to participate in the activities of the Epiphytic Orchid Study Section should contact the leader, Mr G. A. Patterson, 50 Mildura Street, Coff's Harbour Jetty, New South Wales. The only fee is a stamp, addressed envelope for reply and a desire to learn more of our native orchids by growing them. He cannot supply plants.

WHEN ON A VISIT TO QUEENSLAND SEE

R. FORD . . . 8 Boyden Street, Toowoomba, Queensland
FOR THE UNUSUAL IN WILDFLOWER PLANTS
 (Including some Queensland natives)

SORRY NO MAIL ORDERS

VARIETIES, FORMS AND CULTIVARS OF THE COOKTOWN ORCHID

"I have had to sort out the application of over thirty 'botanical' names that have been applied to *Dendrobium bigibbum* or *D. phalaenopsis*. Many of these were given primarily for horticultural reasons such as size or colour of flower, but I have identified nearly all from one kind of evidence or another. I have recently found more in American literature. I have made an attempt whatsoever to investigate obvious horticultural names of which I have come across a few and there must be others. With all this behind me now I feel that the remark of a certain eminent English botanist that 'orchids are the most immoral of plants' could well be linked with the proverb 'Birds of a feather flock together'. If anybody feels moved to give horticultural names to the forms of *D. bigibbum* he will need to be thoroughly familiar with the text, implications and application of the International Code of Botanical Nomenclature and the International Code of Nomenclature for Cultivated Plants. He will also have to understand the application of thirty-odd names referred to above and he must search out and investigate all the purely horticultural names that have been used at any time in any country." Quotation from a letter from S. T. Blake.

To embark on mentioning of the various varieties, forms and cultivars of this orchid at this stage would be folly. It is proposed, in collaboration with the various orchid societies in all States, to investigate this matter further to be sure of our conclusions. Meanwhile every reader who has grown a form of *D. bigibbum* or has any reference to variety names please advise Mr A. W. Dockrill, c/o of the Editor. I hope that the No. 17 issue will carry a report on the subject.

EUCALYPTS FOR QUEENSLAND

By L. H. Cockburn, Oakey, Queensland

Queensland is a vast state and I will make no recommendation for Northern areas of the state. However, for southern areas, the following might be considered: *E. astringens*,* *E. gardneri*,* *E. griffithsi*, *E. megacornuta*, *E. salmonophloia*,* *E. stricklandii*,* *E. teselaris*, *E. wandoo*,* are trees from 20ft. up in height. Dwarf ornamental species recommended are *E. caesia*, *E. eremophila*, *E. erythrocorys*, *E. erythronema*,* *E. grossa*,* *E. kruseana*,* *E. macrandra*, *E. nutans*, *E. platypus*, *E. pyriformis*, *E. tetraptera*, *E. torquata*, and perhaps *E. macrocarpa*.

While I believe it is an advantage to grow the species mentioned on well-drained country, the ones I have placed an x on I know will do well in open plain country in black soil. It is undoubted that many other species would do well also, but I mention only those which have been tested and proved reliable. Most of the species above are growing in black soil property at Bowenville previously owned by Mr. Foster and some would be 15 years or older. I also find these species do well for me on very well-drained country at Oakey. I feel that some protection from heavy frost for the first two years is essential.

With regards species which the koalas like, I will write them down in the order of preference in teddy tastes:—The Wandoo, *E. erythronema*, *E. macrandra*, *E. kruseana*, *E. platypus*, *E. nutans*, *E. pyriformis*, *E. angulosa* and *E. eleaphora*. I have little doubt that other species will be relished when established. It is undoubted that other species will not be eaten under any circumstances and a few of these would be *E. macrocarpa*, *E. tetraptera*, *E. torquata*, *E. stricklandii*, *E. kesselli* and *E. urnigera*.

A Red Grevillea of Queensland



Colour Photography by Frank Hurley

Block by courtesy John Sands Ltd.

Grevillea banksii var. *fosterii*

This photograph does not do real justice to this beautiful bush. The flower head at the top has begun to fall but the hooked type of flowers that mass together in the six-inch long flower heads may be seen more clearly.

EDITOR'S NOTE: We hope to do a big issue devoted to the beautiful Grevilleas, often called spider flowers, in the future. However, I greatly need a competent botanist to do some taxonomy, colour slides of species and reports from members growing plants.

RED GREVILLEA

By L. P. BUTT

Up here in Queensland most gardeners are acquainted with this beautiful species of the genus *Grevillea* often called the red silky oak. Named for Sir Joseph Banks, as were many of our native flora, *Grevillea banksii* is by far the most beautiful of the native flora grown and cultivated in the Brisbane area. It is adaptable to most soils and very hardy in even adverse conditions. Proof of the adaptability of the plant can quite easily be noted, as it grows in cultivated and natural state north from Brisbane along the coastal fringe reaching 15ft. in height. South again on the Queensland Gold Coast it is used as a street tree heavily pruned and growing as a standard.

The brilliant flower heads of the red variety, known as *Grevillea banksii* var. *forsterii*, are one of the joys of our springtime, and it is floriferous over most of the months of the year. This long flowering period does not affect the life cycle of the tree, but the quality of the bloom is better in early spring and autumn months. I have found that the young tree will flower as early as 18 months old from seed and after each flowering spree my trees are heavily laden with large seed pods carrying the flat paper seeds which are easily propagated in a medium of good wallum soil or a cultivated mixture of 1 peat moss, 1 bush sand, 1 leaf mould. Vermiculite is also a good standby for quick raising of seed of this plant.

I have found it to be susceptible to attack from brown scale insects and a large type of white woolly aphid. One fatality in my garden was from heavy infestation of the latter. However, control is easily affected by early use of oil sprays when conditions are noted.

To sum it up: A worthy addition to any east coast garden.

Queensland Grevillea

L. H. Cockburn (Oakey)

Many Queensland plants possess great beauty, among some of the finest being the Grevilleas. While many of the species are almost unknown to cultivation they undoubtedly would be highly prized if grown in home gardens, parks or used as small street trees.

Grevillea banksii

This tall shrub or often small tree growing sometimes to 15 feet, often much less, particularly the red-flowered variety usually found in gardens. Foliage is deeply pinnate, segments two to four inches long, broadly linear or lanceolate, glabrous above, silky ferruginous underneath, the whole leaf four to eight inches long. The racemes of erect, compact, terminal flowers up to six inches in length are produced in liberal numbers throughout the year. This shrub has proved most adaptable as regards soil and climate.

Grevillea pteridifolia

A tree of 15 to 20 feet. Leaves pinnate with very narrow segments of from four to eight inches, glabrous above and silky underneath. The flower is of a rich golden yellow and carried on a terminal raceme of often over six inches in length. This is an extremely beautiful *Grevillea* and apart from its desirability as a garden subject, it could well be used as a small street tree because of its suitable proportions. Most adaptable to cultivation, and very hardy.

Grevillea longistyla

An erect shrub of seven or eight feet. Leaves linear, six to 10 inches long, very narrow entire, or deeply divided in three to five segments, glabrous above and silvery underneath, with midrib prominent. Racemes of rich shining red bloom usually two to five inches long, and carried well above the foliage in the Queensland form. Found in many inland areas of Queensland, and appears to be completely reliable in gardens. When better known will be one of our finest garden shrubs.

Grevillea juncifolia

A tall erect shrub to eight feet, the branches softly tomentose. Leaves very narrow six to 10 inches long, rigid and rather thick, usually entire occasionally divided. Racemes of bloom three to six inches long of a bright yellow colour, usually several together in a terminal panicle. An excellent shrub inclined to become straggly with age, and may respond to some trimming. Found in inland districts and responds well to cultivation, but is a little difficult in the seedling stage.

Grevillea decora* syn *goodii

A shrub of from four to six feet, with the superficial appearance of a small bloodwood when not in flower, the leaves being oval-elliptical to oblong-lanceolate four to eight inches long, glabrous and of a pale colour. Terminal spikes of bloom often two or three together, and of a rather dull red colour. This species might best be described as something rather different. Quite easy of cultivation but will be cut back by heavy frost.

Grevillea refracta

A tall shrub of rather slender habit, the young branches tomentose. Leaves mostly pinnate of several segments two to five inches long linear lanceolate, the terminal one often broad, nearly glabrous above and densely silky pubescent underneath. Racemes of rich orange bloom are short but usually several together in a small terminal panicle. Very easy to grow, and appears very hardy in cultivation with a long flowering season.

Grevillea sessilis

A tall well branched shrub of six to 10 feet. Branches clothed with ferruginous-tomentose. Leaves deeply pinnate silvery underneath and nearly glabrous above. Compact racemes of flowers one to four inches long of a creamy white colour carried on terminating short branches. Appears easy of cultivation and altogether a most desirable garden species.

Grevillea wickhami

A shrub of several feet or sometimes a small tree, branches and older leaves nearly glabrous. Leaves petiolate, ovate, sinuate, with prickly pointed angles, cuneate at the base, one to one and a half inches long. Racemes one to three inches long of an orange-red colour carried on terminating short branches. An outstanding *Grevillea* almost unknown to cultivation, it appears to be slightly frost tender.

Grevillea dryandri

A quite glabrous shrub with leaves pinnate, numerous, narrow, linear, rather rigid segments. The branched flower spikes are carried well above the foliage and are of a most attractive colour combination, the spike being purple, the perianth white and glabrous, with the style very long and of a reddish colour. A very beautiful *Grevillea* of which little is known in cultivation.

Grevillea From Seed

By J. S. HOWARD

I have been growing Grevilleas from seed (about 15 varieties) over the last two years and I have developed a special method which has proved very effective. As recommended by H. Boyd in issue No. 7, I use a seed bed of vermiculite in 3 inch plastic pots, placed in a moderately open position out of doors to receive plenty of sunshine.

First of all I dampen the seeds by soaking in water for at least three hours, thus softening the seed cases. Using a scalpel blade which I find most convenient to handle I then peel off the testa or seed coat fully exposing the small white "kernel" which in the Grevillea is formed from two halves hinged at one end. I find I can usually crack off (rather than cut) the long edges of the seed with a fair amount of pressure and then the rest of the shell is quite easily removed with the point of the blade. Any nicks produced in the inner seed do not seem to be deleterious. Very small seed such as *Grevillea prostrata* are hard to handle.

Not infrequently the seed when exposed does not have the white appearance of a healthy seed but is tinged with brown indicating that the seed is dead, having rotted within the case. This often happens to healthy unpeeled seed after being planted and these two factors are often the reason for poor germination by conventional method. With this method you are at least sure of how many good seeds you are planting.

Planted slightly below the vermiculite surface, the skinned seeds can be seen to green up and the halves separate and a white shoot appears. Germination is greatly accelerated by removal of the seed cases and the ultimate yield is improved. For instance seeds of *Grevillea buxifolia* and *G. triternata* which were planted exactly one month previously, appear to be almost all up (shooting). There have been no losses from damping off and the *G. triternata* have developed their second pair of leaves.

Other species that have been successfully germinated are *G. nematophylla*, *G. excelsior*, *G. fasciculata*, *G. insignis*, *G. tripartita*, *G. buxifolia*, *G. juniperina*, *G. punicea*, *G. robusta*, *G. leucopteris*, *G. pinaster* and *G. prostrata*.

I believe that the technique is best suited to Grevilleas which have thick hard shells hindering entrance of moisture and air and which are yet fairly readily removable. Some success seems to have been achieved with *Banksia* and *Hakea* though to a much lesser degree and there may be little advantage in these instances.

WILDFLOWERS FROM SEED

The Editor Reports on His Experiences with Methods of Seed Raising
Previously Published

"Four-inch terra cotta pots and the broken pot pieces to be used as crockings are boiled before use. The pots are well crocked and then filled with Vermiculite (an exploded mica available commercially in small packets under this name). It is then wetted with previously boiled water containing a nutrient solution such as Aquasol. A few drops of a root stimulating hormone such as Formula 20 may also be added to each gallon of water. Press down the surface compressing the medium a little. Sow the seed on the surface and cover to twice its diameter with more vermiculite, finally pressing down on the surface to level off.

"The pots are stood on a stand well above ground and in full sunlight. Water the surface with a fine spray once a day if the sun is not too hot or twice a day when first germinating on hot days. Boiled water is used."

This is the aseptic method developed by H. Boyd and described in Issue No. 7, Vol. 1. It was originally developed to combat the "damping-off" problems associated with growing Waratah. For this reason great care is taken to exclude the "wogs" and parasites that attack the seed or the young seedlings by using sterilised pots and crockings, an almost sterile medium and boiled water. Thus this method can be used anywhere by anybody keen to grow native plants. No special facilities such as a glasshouse, seed box, etc., are required and success is assured.

Lazy workers such as myself (Editor) have simplified the method still further where a reasonably algae free town water is available, by simply washing the pots thoroughly (I prefer plastics pots for seed raising, as they are easily cleaned and keep the seed bed moisture) using clean, new crocks, and water straight from the tap. I have not even bothered with adding nutrient solution or additives to the water, although I assure readers the results are much better if you do. As I cannot water at midday in summer I place the pots to receive full sun only a few hours, or cover with glass placed well up to allow air to circulate under it. The glass clouds up, filtering the sun a little, but the glass must be gradually removed when the seedlings start to appear. In mid-summer I also use an almost sterile coarse sand to cover the seeds, as it does not dry out as quickly. The important thing is to place the pots out of reach of the wogs from the ground. I place mine on a large, clean rock.

It is easy to germinate most seeds in this manner, especially if planted in August-September. I had 100 per cent. germination of fresh *Telopea* (Waratah) and *Blandfordia* (Christmas Bell) seed with this method. With the hard testa seed of the *Leguminosae* such as *Acacia*, *Kennedya*, etc., I soften the seed coat first by pouring boiling water over a teaspoon of seed in the bottom of a cup and leaving it soak, usually about one week, until it inflates. It is then sown in the manner above.

When Mr Howard sent me his article on germination of *Grevillea* seed by peeling off the seed coat, I tried it with a number of species of *Grevillea* and *Banksia*, using some unpeeled seed as controls. In the case of the *Grevillea* the peeled seed germinated very quickly and with a much greater percentage germination than the unpeeled seed, some of which finally came up. With the *Banksia* results were not encouraging. This was very pleasing as I have had trouble with germination of some species of the West Australian *Grevillea*.

It appears that there is a lot to commend the "peeling method" on certain seeds. The outer coating of the seed is to protect its valuable contents until favourable conditions occur for its germination in the bush, or to preserve the seed so that germination occurs over a period, sometimes years, to preserve the species over successive unfavourable seasons. We wish to nominate when the seed should germinate and supply aseptic conditions by using the above method to protect the inner, and now vulnerable seed from attack by prey. It is widely known that some seeds even have a substance on the seed coat that prohibits germination for varying periods.

Brassaia Actinophylla

By H. OAKMAN, A.I.L.A., Brisbane

This tree is found in the rain forests of Northern N.S.W. and Queensland where it starts life either on the forest floor or, like some of the Figs, in the forks of other trees, sending down aerial roots to ground level and later on developing a trunk to support itself. Fully-grown trees reach 50 feet in height with a trunk diameter of 18 inches. Like most of the rain forest trees the trunk is buttressed or fluted, although not excessively so.

Most botanists regard *Brassaia* as a distinct genus but some American authorities classify it under *Schefflera*. It was named after Count von Brassai (1797-1897); the specific name is from Greek *aktis* meaning ray, and *phyllum*, leaf, referring to the long stalks on the leaves.

The common name, Umbrella Tree, is derived from the very young leaves which resemble an umbrella. In Hawaii the common name is Octopus Tree because of the resemblance the flower stalks have to the padded tentacles of an octopus.



Reprinted from *Some Trees of Australia*, by courtesy of the Jacaranda Press.

The Umbrella Tree growing in Clayfield St., Brisbane. Approximately 25 years old, is lightly pruned every second year. Life expectancy is at least 50 years.

The Umbrella Tree is frost tender and probably Newcastle, N.S.W., would be its farthest southern limit. It is a fast growing tree and is fairly indifferent to soil conditions and exposure, but it prefers a sunny position with long light hours. When grown in shade the leaves are larger and take on a deeper hue. Propagation from seed which loses viability fairly quickly, or from cuttings which strike very easily. Occasionally branches will form aerial roots close to the parent trunk and these make ideal new plants.

In Queensland the Umbrella Tree is used very extensively in home gardens as it is fast growing, hardy and carries attractive foliage all the year round. It is usually not affected by either disease or insect pests; at

EDITOR'S NOTE: We shall be pleased to hear of towns using this plant as a street tree. Elsewhere in this issue the beautiful *Grevilleas* such as *G. robusta* (Silky Oak) and *G. banksii* are mentioned as street trees. Please report on their use in your town.

times, however, it may become heavily infested with soft pink scale and the young leaves do make a choice article of diet for grasshoppers.

Young plants are sold in their thousands for indoor pot plants and they are excellent for this purpose as they can survive quite harsh conditions for a long time.

STREET TREES

It is only comparatively recently that this tree has been used for street tree plantings and it seems to be ideally suited for this purpose, the same qualities of hardiness, rapid growth, freedom from disease, together with roots that are not over troublesome, combining to make it so. Being evergreen the leaf problem is not great but cold snaps and drought will partially defoliate the tree. Although it is regarded as essentially a shade tree some specimens bloom prolifically and are particularly attractive when in full flower. The flower spikes measure up to four feet across and are bright crimson, later changing to black as the seed pods develop.

Trunk formation and shaping is easy as the Umbrella Tree will stand any amount of pruning, yet growth is never such as to demand excessive labour to keep it under control.

In 1954 some of the Brisbane city streets were planted with *Brassaia actinophylla*. Nearly 600 were planted and in spite of constant replacements due to vandalism and vehicular damage, fairly well-defined avenues are becoming apparent. In situ soil is a deep sandy alluvial, watering is restricted to drought time only, and in spite of the impermeable roads and footpaths the trees are thriving.

Street trees planted in the suburb of Clayfield about 30 years ago have proved quite successful, giving little trouble either from root growth or to overhead wires.

A few years ago when a floral emblem for Queensland was being sought, the Umbrella Tree was a close favourite to the Cooktown Orchid, and little wonder as nearly every Queensland garden has its *Brassaia*.

THE UMBRELLA TREE

By RON HILL, Adelaide

Here is one of Australia's most popular foliage plants. It is a native of Queensland and Northern N.S.W., coming from the sub-tropical rain forests in that area.

This handsome plant can be and is used for many ornamental purposes. As a young plant in a pot it is one of the most popular indoor plants and is seen used this way in many groups of ornamental foliage plants adorning many of the large city building foyers.

As a garden plant for "structural" use it is hard to surpass for providing a tropical effect and is especially useful to incorporate into modern garden design. Also the Umbrella Tree has been used extensively, particularly in Sydney and Brisbane, as a street tree with varied success.

A reasonably good garden soil with plenty of water during its early growth is all that is required for successful growth of this worthwhile plant. It is most easily raised from seed which needs to be fairly fresh, as old seed loses its viability fairly quickly. In flower this tree is quite attractive with long upright spikes of reddish flowers. In Adelaide, however, it does not bloom as freely as in the Eastern States and seed is usually obtained

Australia's Only Rhododendron is from Qld.

RHODODENDRON LOCHAE From W. N. B. QUICK, Melbourne

Rhododendron lochae has been grown by myself in Melbourne for the last six years, flowering in February each year, and often in September-October. I have never had a plant flourish when grown in garden soil, but in a pot using a compost similar to that used for Cymbidium orchids with a little peaty soil added, and due attention to adequate drainage, the story is very different.

The species withstands badly-lit situations well, not becoming drawn as most terrestrial species have a habit of doing under these conditions. Leaves do, in fact, burn easily in almost any sunlight. Good shelter from wind, particularly north and west winds, seems desirable if not perhaps essential, and the plant will thrive under quite dank conditions. I have never had to move a plant to a warmer situation for the winter.

Altogether *R. lochae* seems remarkably tenacious of life but there can be no doubt that it benefits greatly by at least one good watering with half-strength Aquasol in spring and autumn as new growth commences, and adequate waterings through the heat of summer. The root system is small, and with due regard to prevention of drying out in summer, a good-sized specimen can be grown in quite a small container. Propagation, as for most other *Rhododendron* species is by cuttings or seed when available.

From L. A. HARGRAVE—Melbourne

I have had two plants growing for some years. One plant is the original and the other is from a cutting I propagated. Both plants are growing in the garden, a bed which is devoted to *Rhododendron* and Azaleas. Neither plant gets any sun all day. They are growing in a light soil, mulched underneath with tan bark and on top with well rotted grass cuttings. I have had several flowerings from the original but none from the other but I think it will come good soon.

I have a further propagated plant growing in a four-gallon drum placed on the south side of my block where it gets the sun for about three-quarters of the day. It is growing in a mixture of nearly all peat moss with about a quarter bulk of a sandy loam and a sprinkling of well rotted fowl manure through the whole mixture.

From P. F. Flood, Black Rock, Melbourne

My *R. lochae* is only 400yds. from the sea in a partly sheltered position, such that it receives early morning sun to 9.30 o'clock and afternoon sun from 2 o'clock onwards. The soil is sandy with good drainage, land has been built up over the years by mulching. The plant is growing and flowering very well each year.

EDITOR'S NOTE: Issue No. 9 gives details of the finding of this plant on Bellenden Ker, near Cairns, together with a full colour photograph.

THE UMBRELLA TREE—continued

interstate for this reason. Provided seed is sown in well drained soil no trouble should be experienced in raising young plants.

In the garden this lovely tree usually is multi-stemmed, growing to about 15-20 feet high, each stem topped with an umbrella of large divided palmate leaves of deep lustrous green. In higher rainfall and tropical areas it can reach a height of 30-40 feet.

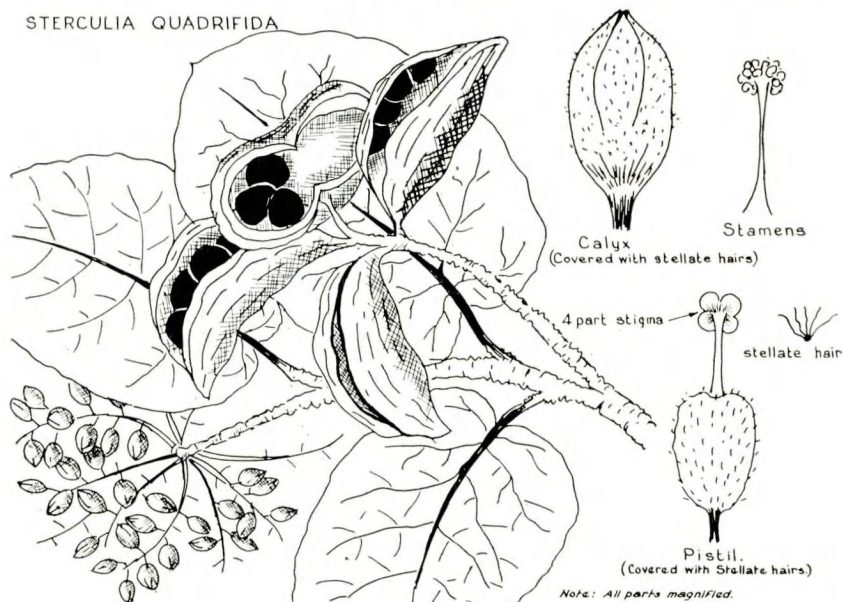
Here then is a native for use indoors when young and a plant to enhance any garden as it gets older and outgrows its container. An Australian plant for all who appreciate handsome foliage to provide that tropical touch to our Australian gardens.

EDITOR'S NOTE: This a wide'y used indoor plant. Please report on experiences. For those who wish to grow it in a container, Issue No. 11 gives all details of pot culture of plants.

STERCULIA QUADRIFIDA R. Br

By K. KENNEDY, Townsville Museum, North Queensland

In some parts of the Townsville district can be seen a medium-sized tree bearing, in season, conspicuous follicles coloured, outside and in, a bright red and containing dead-black seeds about the size of a pea. This tree is known to botanists as *Sterculia quadrifida*. The name *Sterculia* was given to the genus by the Swedish botanist Linnaeus who, like most naturalists of his time, was a Latin scholar. Because the leaves and flowers of some species had a foetid odour he humorously named the genus after Sterculus, the ancient Latin God who presided over manure heaps. Amongst the ancient Romans, however, Sterculus was important, for in those days they had no commercial fertilisers. The specific name *quadrifida* was given by the Scottish botanist Robert Brown, who accompanied Flinders in the memorable



voyage of the "Investigator", because the calyx of the flowers are divided half way down into four segments.

The family *Sterculiaceae* takes its name from the genus and includes the kurrajong and bottle trees. It and the family *Malvaceae* are closely related, the chief difference being in the stamens. In both families the stamens are monadelphous, being bound together in a bundle, the difference between them is that in *Malvaceae* the anthers are one celled, whereas in *Sterculiaceae* they are two celled.

Although the genus *Sterculia* gave its name to the family, it is not so numerous in Queensland as the genus *Brachychiton* which is included in the same family. There is not much difference between the two genera, the main difference being that in *Brachychiton* the seeds and insides of the seed vessels are hairy, while in *Sterculia* they are glabrous, or smooth. There are only two species of *Sterculia* in Queensland, they are *S. quadrifida* and *S. laurifolia*. The former is a dry country species, and the latter grows in some of the North Queensland rain forests.

The stem of *S. quadrifida* contains a large amount of mucilage as do most members of the family. According to W.E. Roth the ethnologist, the fibres from the bark were used by the aborigines for making nets in which to drive kangaroos. The leaves are variable, ranging from ovate-acute to cordate-acute. They are entire and the petioles are ex-stipulate. The margins are entire.

The inflorescence consists of clusters of racemes bearing both staminate and pistillate flowers covered with minute stellate hairs which form a protective matting. Indeed if one of the flowers is placed in water the hairs hold air and prevent it from sinking. These flowers are very small, about 9 m.m. in length, and a microscope is necessary for examination. There is no corolla, only the calyx, which although gamosepalous is cleft half way down into four segments, hence the specific name of *quadrifida*. The tips of the segments, however, remain cohering together, therefore the only way for the pollinating insect to do its work is through the slits. By this we may infer that the number of carpels is four.

The fruit is ornamental, being a follicle measuring about $4\frac{1}{2} \times 6\frac{1}{2}$ c.m., red in colour, and containing six to eight dead black seeds which are shown up by the red interior. The seeds are edible, and were eaten by the aborigines, and later by the European settlers, who called the tree the Peanut Tree.

Soil conditions do not appear to be important in growing these trees. They can be found growing on decomposed granite in some of the gullies on Mt. Kudtheringa (Castle Hill) of Townsville, but one which is now about 15 feet high, was self-sown in beach sand and flowered in July, and retained its leaves. Those growing on Mt. Kudtheringa had finished flowering in July, had shed all their leaves, and bore a large number of follicles.

STERCULIA LAURIFOLIA F. Muell.—a note by C. N. DEBENHAM

While *S. quadrifida* ranges from Townsville westwards to Arnhem Land and as far south as the far north coast of N.S.W. where here it is now a much depleted brush-forest component, *S. laurifolia* is much more localised. It is recorded from only the tropical rain-forest of sub-coastal North Queensland, e.g., the Atherton, near Cardwell and Mt. Spurgeon. In many respects it is distinct from the former species. It is a rather tall-growing and slender-trunked tree, noted to attain 100 feet in height and, in common with many other rain-forest members, has a trunk prominently buttressed.

Unlike the monoecious or dioecious *S. quadrifida*, no record of other than a laminate-flowered *S. laurifolia* being collected, is known (Francis, Rain Forest Trees, 1951). If this is the case, there must remain some doubt as to the identity of the species, since the distinction of *Sterculia* from *Brachychiton* rests largely on the fruit. Perhaps an interested reader from North Queensland who is familiar with the species may settle this point. The inflorescence of the male-flowered plant is that of *S. quadrifida* but the flowers have calyces with five segments. Leaves vary in length from 3.5-7 inches and are ovate, often abruptly acuminate. It has acquired the local name Cabbage Crowsfoot from its resemblance to the commercial timber tree, Crowsfoot Elm, *Heritiera trifoliata* (of the same family) in wood but this is much softer than that of the commercial species and is limited to local use as a case-making timber.

EDITOR'S NOTE: Issue No. 9 gives full details of the closely related *Brachychitons* including the Kurrajongs and Bottle Trees of Queensland. Who in Queensland will report on their growth habit and their use as street trees.

ERRATA TO PAGE 97

Should read as follows:

late spring and summer. Next come the palms who give the rainforest their tropical luxuriance: *Bangalow*, *Archontophoenix cunninghamii*; Cabbage Tree, *Livistonia australis*. Both these palms form compact masses that in some places are almost impenetrable. Treefern growth consists of: *Dixonia antartica*; *Todea barbara*; *Cyathea cooperi*, *C. leichhardtiana* and *C. australis*. This and as printed . . .

SOME TREES OF AUSTRALIA

By H. Oakman

This beautifully presented little book is one of a series in the Jacaranda Pocket Guides and its stiff-covered 141 pages make a neat, easily carried pocket book. Following a brief introduction each left-hand page gives details of one of the 64 Australian trees described, opposite a full-page photograph of the tree with a drawing of its leaves, flowers and seed capsules. One of these photographs (*Brassia actinophylla*) is reprinted in this journal. The trees selected are principally from northern N.S.W. and Queensland, making it of special interest to people in these areas keen to know or grow trees, but most species are readily grown in all parts of temperate or tropical Australia.

Published by The Jacaranda Press.

DICTIONARY OF AUSTRALIAN PLANTS GENERA

By Nancy T. Burbidge

A new and important work on Australian plant genera, it will be hailed by many as the most important publication for many years. It is a very easy book to refer to, the genera being arranged in alphabetical order with the number of species listed with distribution and authors. Wrongly applied names, synonyms and homonyms are also mentioned. At the back of the book all genera are listed and arranged—this time in their families—the families being in alphabetical sequence.

The size of the two largest Australian plant genera, *Acacia* and *Eucalypts*, are both given at approximately 600 species. The following genera are listed as natives and might cause surprise to some. *Cirrhoetaleum* Lindley, 1 sp. N.E. Qld., *Vanda* Jones, 2 sp., one endemic to Arnhem Land and N.E. Qld.

The last attempt at anything like this was in 1889 when Von Mullers' second census on Australian Plants was published. This makes the need for a modern "Australian Flora" felt.

Reviewed by H. Boyd—Published by Angus & Robertson.

Price £5/5/-, postage 1/9.

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

announces publication of the first Seed List of W.A. Plants.

(586 species available.)

Seed List 1/6 post free. Seed 3/- per packet.

Wholesale rates on application.

Books of Australian Plants, Etc.

**WE SEARCH THE WORLD FOR RARE AND OUT-OF-PRINT BOOKS
THE ALPINE FLOWERS OF THE KOSCIUSKO STATE PARK** (edited

K. G. Murray) col. plates. 12/6. Post. 1/6.

TRIGGER PLANTS (Rica Erickson) col. and b/w plates. £2/5/-. Post. 1/6.**ORCHIDS OF THE WEST** (Rica Erickson) col and b/w plates. £1/5/-
Post. 1/6.**FERNS OF VICTORIA AND TASMANIA** (N. A. Wakefield) illus. 7/6.
Post. 9d.**KEY TO THE EUCALYPTS** (W. F. Blakely). Descriptions of 522 species
and 150 varieties. £1/4/-. Post. 1/6.**ILLUSTRATIONS OF THE BUDS AND FRUITS OF EUCALPTUS
SPECIES** (Forestry Commission). Illus., to be used in conjunction
with above. 8/6. Post. 1/.**FOREST TREES OF AUSTRALIA** (Forestry and Timber Bureau), col. and
b/w plates. £2/2/-. Post. 1/6.**AUSTRALIAN NATIVE PLANTS FOR THE GARDEN** (A. E. Brooks),
illus. £2/5/-. Post. 1/6.**10 AUSTRALIAN EUCALYPTS IN COLOUR** (Stan Kelly). Beautiful
colour plates. £4/4/-. Post. 2/3.**HOW TO KNOW WESTERN AUSTRALIAN WILDFLOWERS** (Blackall
and Grieve), col. and b/w plates. Part 1 and 2. £1/10/- ea. Post 1/6 ea.

Also new and second-hand books on Australiana, Pacific Art, Natural History, Gardening, Orchids, Biographies and General Literature. We are Specialists in Microscopes, Prismatic Binoculars and Astronomical Telescopes, Magnifiers, Compasses, 10x British Achromatic Magnifiers.

N. H. Seward Pty. Ltd.

457 BOURKE STREET, MELBOURNE, VIC., MU 6129

DORMANCY IN SEED

By HELEN LEE

In general, seeds stop growing before they are shed from the parent plant and do not start growing again until germination commences. It is not known why the seeds stop growing, although one worker has suggested that it is due to accumulation of carbon dioxide gas inside the testa. Some seeds, however, can germinate before they are separated from the parent plant and such seeds are called viviparous. Vivipary is common in the mangroves and occasionally occurs in fruits such as grapefruit and orange. It may also occur in grasses in wet seasons.

The time at which seeds are able to germinate varies from plant to plant. Some seeds can germinate as soon as they are shed and remain capable of germination for a considerable period, depending on when suitable conditions for germination occur. In a few cases, e.g., *Oxalis*, the seed can germinate as soon as it is shed but it will die if germination does not occur at this time due to unfavourable environmental conditions. However, the majority of plants produce seeds which will not germinate for a period of time after they are shed, even though environmental conditions may be suitable. Such viable seeds are said to be dormant or in a state of dormancy or true dormancy. Dormancy may be primary or secondary. Primary dormancy describes seeds which are dormant from the moment they are shed. Secondary dormancy refers to seeds which may germinate immediately after being shed but if conditions are unsuitable at the time they become dormant.

Usually dormancy is due to the embryo of the seed being immature either morphologically or physiologically, or the seed may be mature but some other factor inhibits germination. Under natural conditions, viable seeds in a state of true dormancy will eventually germinate. In some cases artificial means are known whereby the period of dormancy can be shortened but, on the whole, the underlying causes of dormancy are not well known and many facts are as yet unexplained. Some of the known causes of true dormancy and ways of breaking it will now be discussed.

1. Morphological Immaturity of the Embryo

Sometimes the embryo is not completely formed by the time the seed is shed from the parent plant, e.g., in a species of *Ranunculus* (buttercup), when the seed falls the embryo is small and undifferentiated but it continues to grow during autumn and winter and is not fully formed until the spring when germination may occur.

Obviously this type of dormancy cannot be broken as soon as the seed is shed but in some cases the growth of the embryo can be hastened by a process known as stratification. In this process the seeds are placed between layers of moist sand, sawdust or other suitable material and kept at a low temperature (about 32°—50°F.). The terms stratification is unsatisfactory in that it refers to the layers of moist material whereas the point of the treatment is that the seeds should be kept cold and moist. Stratification will sometimes shorten the dormant period of seeds which are morphologically immature but it is also known to reduce the dormant period or break dormancy due to other causes as well, and therefore is of considerable practical importance. The time of treatment varies from a few weeks to several months depending on the species of seed.

2. Physiological Immaturity of the Embryo

In this group are seeds which have a morphologically mature embryo when they are shed. However, these seeds are not mature physiologically

and various chemical changes, which are not fully understood, take place during what is known as the after-ripening period. Examples of such seeds are found among many of the native grasses, apples, hawthorn, etc. Sometimes stratification will hasten the after-ripening process.

3. Impermeability or Hardness of the Testa

(a) Testa impermeable to water.

Such seeds are very common, particularly in the family *Leguminosae*, e.g., clovers and wattles, as well as other plants such as asparagus and cotoneaster. Under natural conditions such seeds germinate when the testa eventually decays or breaks open so that water may be absorbed by the seed. Artificially, this type of dormancy can be broken by scratching the testa, or by boiling or freezing the seed, or by lighting a fire over the seeds spread on the ground. All these treatments cause injury to the testa and render it permeable to water.

It is probably relevant to mention here that a number of legumes produce a proportion of seeds with impermeable testas and these are called "hard seeds." E.g., sub-clover produces 30 to 70 per cent. hard seed which can remain dormant for up to 18 months, whereas the rest of the seed will germinate immediately. The proportion of hard seed produced seems to be related to the time at which the seed is harvested after it becomes mature but the reasons for this are not fully understood. It has also been found that the proportion of hard seed is reduced if mechanical methods of harvesting or seed cleaning are used. This is because of mechanical damage to the testas thus reducing the number of seeds which are impermeable to water.

(b) Testa impermeable to oxygen.

In some seeds oxygen is unable to diffuse through the testa and as oxygen is usually required for germination, such seeds remain dormant. This type of dormancy is found in the seeds of some of the grasses and in some members of the family *Compositae*. It has been suggested that the lack of oxygen not only reduces respiration but also that an inhibitor to germination may be present in the seed and this is only broken down in the presence of oxygen. This type of dormancy is broken by the same means as those described for seeds with testas impermeable to water.

(c) Testa too hard for emergence of radicle.

In such seeds the testa is so tough that the young radicle cannot force its way out on germination so the seed remains dormant until the testa has partially decayed and lost its strength. Seeds of this type are produced by the water plant *Alisma plantago*. Dormancy can be broken by damaging the testa and under natural conditions the testa decays as the seeds lie under water.

4. Light Conditions Unsuitable

The effect of light has already been mentioned and also the fact that most seeds germinate equally well in darkness or light. In some seeds, known as light-hard or "dark," germination is retarded or prevented by light. e.g., some species of *Phlox* and *Allium* (onion). In other seeds which are known as light-sensitive or "light," germination will only take place if the seeds have been exposed to light. e.g., some species of *Rhododendron*, *Ficus* (fig), and *Veronica*. The time of exposure to light which is necessary to ensure satisfactory germination varies with species, e.g., in the case of tobacco seed the time is one hour.

Quite a number of treatments may partly or completely remove the light requirements of light-sensitive seeds. These include removal of the

testa, placing the seeds in pure oxygen gas, treatment with various chemicals, exposure to alternating high and low temperatures and after-ripening in dry storage.

The mechanism of the light effect in promoting germination is unknown. It has been suggested that it triggers off chains of chemical reactions or destroys substances which are inhibiting germination, or alters the condition of testas so that water or oxygen may then permeate them. There is some evidence to support these theories but on the whole, many things are as yet unexplained.

5. Absence of Special Stimuli

Many seeds will remain dormant, or if germination occurs, growth will not continue, unless some special stimulus is applied. These stimuli are of a special nature and are restricted to a few types of plants. Three of them will be discussed here.

GROWING WILDFLOWERS

(Extract from the book *Australian Gardening of Today Illustrated*—chapter, *Australian Native Shrubs*, by Edwin Ashby, F.L.S., Wittunga, Blackwood, S.A.)

Some thirty years ago I began removing seedlings of native shrubs into my garden in South Australia, treating them in the ordinary way with surface watering. We suffered many losses during the dry heat of summer. The next step was to make a semi-rockery in which the sides were of loose stone separated by five feet of sandy loam. This was a real advantage because the drainage was good and some native shrubs survived for twenty years. But this method was discounted by too much drying out. During summer the moisture was evaporated not only from the top but through the sides. This was followed by making raised beds, like artificial sandhills, in which a lot of sand was incorporated.

Visitors to the garden regarded it as a great success, but it proved very expensive, as the sand had to be scooped and carted some distance. These beds were watered by long overhead pipes. Then came a year in which the season broke early with a heavy fall of rain, after which cool autumn weather prevailed. I had three or four bushes of Waratah (*Telopea speciosissima*) five feet tall. These, in spite of cool weather, began to look sick; there were thirty or more well developed buds on the bushes, and yet in a few days all these healthy looking bushes were dead. We came to the conclusion that the rain, though so heavy, had never reached the subsoil, and the reduced surface watering was insufficient.

Then in the spring of 1927, with a companion and two camels, I came down the rabbit-proof fence from Yalgoo to Ajana in the Murchison country of Western Australia. After we had travelled for three or four days we came into the wonderful flora of the sand plains, where there was a profusion of native shrubs. We came to a low hill of clay and gravel, and here we found the same flora as in the sandy country, but all the plants were much healthier and the flowers more abundant. It was quite evident that there was no merit in the sand itself; for here, where there was no sand but all yellow clay, gravel and stones, the shrubs were better and stronger. It was only a question of drainage. Given this important factor the clay gave better fertility.

We realised then that sand is unnecessary for the growing of all native shrubs, the important factor supplied by a depth of sand being drainage.

Since that time we have made no more artificial sandhills; so long as the necessary drainage is supplied, the quality of the soil is comparatively unimportant. Pure washed sand, while good for striking cuttings, is valueless if humus or other fertile ingredients are not supplied. The plants, whether succulent or native, will become unhealthy and die.

The next important factor is water, and the way in which it is applied is a matter for thought. Why did those splendid bushes of Waratah die? It was not heat, for the weather was comparatively cool; nor was it lack of surface moisture, for that was abundant; but the roots that supply the Waratahs with moisture were down in the subsoil and were dry. Remember that almost all parts of Australia have to endure several months of rainless weather, and even the well watered forests of Queensland are subject at varying intervals to drought years. Therefore, the shrubs of Australia have developed a habit of throwing all their energy, especially in their youth, into sending the main roots down into the subsoil as quickly as possible.

Take a Myall, one of the central Australian Acacias. Before the two seed leaves show above ground, its tap root will be several inches long. I have in mind one case in which a whole year passed and the stem above ground was not over half an inch high, but its root was down two feet. The other day I had occasion to empty a *Calothamnus* out of a pot and although it showed a bare six inches above ground, its practically single root, when untwined, was over four feet long. Had it been growing in the open and not in a pot, that root would have gone straight down and the plant could have stood five months' drought without harm.

It became apparent that the real place in which Australian shrubs require water is in the subsoil; and so we have adopted a method of earthing up rings of five feet or six feet in diameter round our shrubs and filling these with five inches of water at regular intervals. Here in South Australia, when shrubs have got beyond the juvenile stage, once every three weeks is sufficient; but if an extra long hot spell comes, an extra watering is beneficial. Indeed during hot weather, and always in small gardens, it would be better once a fortnight.

EDITOR'S NOTE: We can learn much from this article printed 30 years ago.

WILDFLOWERS FROM SEED—continued from page 84

I used a razor blade to peel my seed and found it quite effective if care is taken. To me a further great advantage is that when the seed coat is removed you can see whether the seed is nice and fresh and viable and not rotting and obviously dead. You will be surprised to find sometimes that out of a nice packet of seed only a small percentage are of any use.

For the fine seed of plants of the *Myriaceae* family such as *Callistemon* (bottlebrush), *Melaleuca* (honey myrtles), *Leptospermum* (ti-trees), *Calothamnus* (net bushes), etc., the bog method as described in Issue No. 3 (available at 4/- each) gives me almost 100 per cent results; the only problem being not to grow too many seedlings. It does not require any special facilities and is an excellent method for the beginner also.

The concept of the removal of at least part of the seed coat is not new, although it seems odd that the total physical removal of it on large seed has not been widely adopted before this in suitable cases. In No. 2 issue H. Boyd gives details of a method for removal of the seed coat by chemical means and this method is ideal for small seed.

THE GENUS ERIOSTEMON

Part 5—N.E. Australian Species Not Described Earlier

By JEAN GALBRAITH

QUEENSLAND AND NORTHERN N.S.W. SPECIES

The northern species are in most cases quite distinctive.

E. banksii A. Cunn., "Bank's Waxflower", has fairly broad, firm, oblanceolate to lanceolate leaves with several parallel veins joined by fine net veins. Apparently recorded only from sandy country in Cape York Peninsula.

E. smithianus Hill, has very small ovate leaves with rounded teeth white flowers and smooth beaked fruitlets with hair tuft at tip. The leaves of this and the next species are noticeably thin in comparison with other small-leaved species. Both are dense, leafy bushes of 2ft to 3ft.

E. parvifolius R. Br., "Small-leaf Waxflower", has small wedge-shaped leaves which appear crenate, but this is merely the irregularity caused by marginal glands. It is apparently a lover of rocks and is found on rocky hills. Tubercles usually few on leaves and stems. Flowers white; fruitlets tuberculate but not beaked.

E. queenslandicus C. T. White, "Wallum Waxflower." A beautiful little shrub rarely as much as 2ft. high, with erect, usually unbranched, stems, from the rootstock, or with a few short branches near their tops. Wallum Waxflower resembles a dwarf small-leaved form of *E. myoporoides*, with small, dull lanceolate leaves, very concave and usually somewhat oppressed (bent upward toward the stem). However, though the flowers are pedunculate, each peduncle bears only one, or occasionally two, flowers on short pedicels. This is a shrublet well worth bringing into cultivation because it is large-flowered, often pink, and very dwarf and erect. It is abundant in the sandy coastal strip of S.-E. Queensland, known as the Wallum, and grows through a dense healthy underbush of *Boronia* and other species. The fruitlets unlike those of *E. myoporoides* are blunt.

E. glasshousiensis Domin. "Glasshouse Waxflower" is rather more luxuriant and leafy than Wallum Waxflower—at least in the Glasshouse Mountains area, where it has often quite large, soft, spatulate leaves and long-stalked flowers. It grows also in a mountains round Stanthorpe where it has much smaller, stiffer leaves and shorter-stalked, abundant flowers. The Stanthorpe form is the most decorative, with short leaves that are almost cuneate (wedge-shaped). All forms have mucronate leaves, while those of Wallum Waxflower narrow gradually to the apex. Fruitlets of *E. glasshousiensis* are bluntly pointed but not beaked.

E. linearis A. Cunn and *E. ericifolius* A. Cunn., two northern and central N.S.W. species, appear from herbarium material to be much alike, but *E. linearis* has axillary flowers and an ovary without hairs, while *E. ericifolius* has terminal flowers and a hairy ovary. I have seen only one small living spray of *E. linearis*, but know *E. ericifolius* as a delightful little shrub with rough, cylindrical leaves of a pleasant, bright, rather yellowish-green and large lilac flowers with stamens so feathery that the flowers look like those of a crowea until it is noted that it is the filament below the anther, not the appendage above it, that is hairy.

EDITOR'S NOTE: Previous issues 4, 5, 6 and 14 have described the south-eastern species with full photographs. I have not been able to get a colour slide of any Queensland species to illustrate this issue. Next issue will describe the West Australian species and give a large illustrated key to all Australian species. These beautiful "wax flowers" make ideal small garden subjects cultivated as described in Issue No. 4. Who has grown the Queensland plants?

NATIVE ORCHIDS

By H. J. BEAR

Where They Grow, Why They Grow and on What They Grow at
Latitude 33 South (Central N.S.W.)

In a previous article dealing with the ecology of native epiphytic orchids, wet and dry bulb thermometer readings showed the necessary percentage of humidity required to maintain a biotic community. By this we mean a group of plants that over a long period of time have maintained by climate, environment and association a group that is more or less foreign to those prevailing outside their boundaries. The first essential is high rainfall, (60" to 100" per year), the second is low evaporation rate and the third is a group of plants whose characteristics, large leaves and ribbed fronds, as carried by palms and treeferns, provide the medium for heavy condensation, and transpiration from their own leaf systems to add to the moisture already contained in the surrounding air masses. Many climbing ferns, (*Pyrrosia rupertis*, *Phymatodes diversifolium* and *P. scandens*, "Haresfoot"—*Davallia pyxidata* and "Elkorns"—*Platyserium bifuratum*), use the treeferns and Bangalow palms as a medium to obtain moisture and support in their race for light and position among the prolific rainforest growth. A container placed on the trunk of a Bangalow Palm at sundown will provide drinking water by morning.

Temperature falls approximately one degree Far. for every 300 feet increase in altitude so a drop of 3 degrees in temperature is sufficient to bring about dew point at the 900 feet level from the breezes blown in from the sea throughout the greater part of the day and for most of the year and provides rainfall far in excess of the 40" to 50" per annum of the coastal plain. Gravity conveys condensed moisture into the 1000' deep gorges and the low evaporation rate maintains high humidity.

The following hygrometer readings were taken at 500 feet altitude in the dense rain forests on the slopes of Mount Heaton, 1600':

Wet Bulb	Dry Bulb	Altitude	Rel. Hum.	Dew Point	Time	REMARKS
45°F.	52°F.	Zero	60%	38°F.	6.30 a.m.	Lat. 33° South. 17/6/61
47°F.	49°F.	500ft.	78%	43°F.	9 a.m.	Sea level. West shore. Lake Macquarie.
46°F.	52°F.	500ft.	60%	41°F.	12 noon	Readings taken in dense rain forest on Mt. Heaton
49°F.	51°F.	500ft.	81%	45°F.	3 p.m.	Clear sunny day. Gale force W to NW wind.
48°F.	55°F.	Zero	57%	41°F.	5 p.m.	6 mls separating sea level and rainforest readings
Sea level. West shore. Lake Macquarie.						
Relative humidity 51% at Williamstown R.A.A.F. Station						

It will be noted that the above readings were taken when the air mass moving over central and northern N.S.W. registered 51% relative humidity at Williamstown R.A.A.F. Station and shows the high humidity maintained in the protected rainforest gorges. This indicates that physical geographical features can cancel the dehydrating action of the dry air movements from the west during the winter months and maintain conditions suitable for a healthy biotic community of sub-tropical plants.

Plant humus and decayed basalt, which at one time covered the Hawkesbury Group of rocks and cappings of which still remain on Mt. Warrawolong, Mt. Yengo and Mt. Tomah, provides the rich soils that support the following plant growths: Sassafras; White Beech—*Gmelina leichhardtii*; White Cedar—*Melia axedarach*; Black Pencil Cedar—*Tieghemopanax elegans*; Red Cedar—*Cedrela australis*; Coachwood—*Ceratopetalum apetalum*; Flame Tree—*Brachychiton acerifolium*; Brush Fig—*Ficus eugenioides*; Tallow Wood—*Eucalyptus microcorys*; Rose Wood—*Dysoxylum fraserianum*; Turpentine—*Syncarpia laurifolia*; Stinging Tree—*Laportea gigas* and its antidote the Cunjevoi Lily—*Alocasia macrorrhiza*—whose blooms fill the jungle with sweet perfume in

is by no means a complete catalogue of rainforest trees indigenous to the area but will serve for the purpose of the article and may stimulate the interest of others to complete the list.

High in the treetops are huge Birdsnest Ferns, *Asplenium nidus*, and growing from their bases are the beautiful Willow Ferns, *Asplenium falcatum*, forming pendulous masses of fronds 2 to 3 feet long and drawing nourishment from the compact mass of fibre formed by the decaying leaf butts of the Birdsnest Ferns. Rarely is it seen growing in any other position.

At the 700' level a creek drops by cascades falling 200 ft. into a deep ravine, tree trunks and limbs are covered with lichens and mosses together with the climbing ferns listed previously, these in turn provide the necessary medium for orchid germination. Large clumps of *Bulbophyllum shepherdii*, *B. exiguum*, *Dendrobium gracilicaule*, *D. aemulum*, long stemmed variety, *D. pugioniforme*, *D. teretifolium* variety *fairfaxii*, form hanging curtains on tree boles and branches with occasional plants of *D. beckerii* on creekside trees, *D. striolatum* is represented on adjacent rocks and cliff faces. Large Birdsnest Ferns, that by their own weight, have fallen from aerial perches and occupy suitable positions on large boulders that stud the floor of the ravine. The Christmas Orchid, *Calanthe veratrifolia*, is well distributed on the slopes and leaf mould pockets. It was here that the giant *Den. tetragonum* mentioned in the previous article was found growing on trees overhanging the watercourse. *Sarcochilus olivaceus* is plentiful in many cases anchored by one or two roots to branches over the creek. Looking up through a break in the tree canopy we can see for the first time cliff faces covered with Rock Lillies, *Den. speciosum*, that in springtime display hundreds of flower sprays to the morning sun, many plants by seed or aerial growth have found their way onto rainforest trees but owing to lack of sunlight rarely flower.

Continuing down stream the valley floor widens and the trees of the open forest mingle with those of the rainforest, the short stemmed variety of *Den. aemulum* appear on the Ironbarks, *E. paniculata*. *Cymbidium suave* in its many forms now commands attention by the size and number of plants available for observation. In one place a plant of *Cym. canaliculatum* has crossed from the Hunter Valley into the Lake Macquarie watershed. There are probably more awaiting discovery.

Approaching estuary waters *Den. aemulum*, *Cym. suave* and *Den. linguiforme* are still plentiful, the last named being much attracted to the paperbark species and sheltered rock faces. Here in flat swampy places stands of swamp oak, *Casuarina glauca*, appear and what is probably the most spectacular of our native orchids the "Bridal Veil", *Den. teretifolium* occupies trees overhanging the water ways and Lake Shores. Fully matured plants would be 3 to 4 ft. in diameter and supporting 500 to 1000 flowers with a perfume that on a warm spring morning makes you aware of its presence long before it is seen.

This article depicts only some of the botanical life in a valley whose watercourse is more or less on latitude 33° south from source to mouth approximately six miles from the western shores of Lake Macquarie. It is a pocket size subtropical museum only 40 air miles from Sydney and similar parallels are reproduced only in Northern New South Wales and Southern Queensland.

EDITOR'S NOTE: The previous article "Native Orchid Ecology" in issue No. 9 on this unique area was used to persuade the Government Authority of the importance of holding this last flourishing ecosystem of subtropical plants as a perpetual reserve.

GROWING THE COOKTOWN ORCHID—continued from page 76

so that the principle of "little and often" should be adhered to for the best results. A dose of liquid manure once every one or two weeks during the growing season usually achieves a desirable result. Plants growing on trees of course cannot be treated as well in this regard as can plants in pots or baskets. In this case, however, the results which can be obtained from potted plants should not be expected either in growth or number and size of flowers. Spraying the plants on the trees with solutions of soluble fertilisers at weekly intervals gives good results in the growing season.

Situation

The Cooktown Orchid is a sun loving plant and can be grown well in full sunlight or in a well-lighted bush house or on or under a tree which will allow a fair amount of sun on to the plant. It should, in any circumstances, be given the advantage of the morning sun at least. In South Queensland, it should be placed so that it is sheltered from the south-westerly winds in winter and situated so that the position is one which is conducive to a high humidity.

It is frost sensitive and should, therefore, not be placed low down in frosty areas.

In the drier areas of the State such as the inland, more care is necessary in regard to situation than on the coast due to the low humidities. In the dry inland a protected corner or a bush house is even more essential than elsewhere. Growth on a citrus or other garden tree where protection from dry winds and where the surroundings are kept reasonably moist should be satisfactory. If frosts fall plants in pots or baskets which can be moved to suit the season would perhaps be better in these circumstances. They could be brought indoors on frosty nights.

Type of Plant

For the more discriminating grower, there are many improved strains of the orchid which have been produced by selection and breeding from choice wild plants. These have much larger flowers and the colours and shapes are much improved. There are also many hybrids between the Cooktown Orchid and other species which have very desirable characteristics. These good special varieties are obtained from nurserymen who deal in orchids and who often produce the plants themselves.

The best type of a plant to obtain for establishment is a young one. The old matured plants such as those obtained from the bush do not usually adapt themselves so well or so quick to new surroundings as do the young vigorous seedlings.

Aerial shoots often develop on the old stems. These when showing a good root system can be cut off and established as a new plant. They are a good source of young plants. When these appear on plants which are established on trees it is often a good idea to just tie the new aerial growth to the nearest bark surface with a piece of twine without removing it from the parent plant. Such aerial growths soon become established and the old stem from which they developed then dies.

Propagation

There are two methods of propagation of the Cooktown Orchid. These are by seed and by division. The growing of the plant from seed as in the case of other orchids is a complicated technical process and seedlings are therefore usually obtained from commercial growers or enthusiastic amateurs.

Much variation of type occurs in seedlings.

To propagate by division one can take the "aerial" shoots already mentioned or can divide the parent plant. This is done by carefully separating the rhizome or creeping stem of the plant with a sharp knife between two living pseudo bulbs (upright stems). The cut should be made leaving at least two good pseudo bulbs together for the leading growth. A dormant eye on one of the back pseudo bulbs usually develops into a new shoot thus producing another lead. The plant should be left in position until the new back shoot develops. It may then be left to form a large plant with more leads or carefully separated and repotted to form an extra plant.

When to Establish

It is preferable to obtain new plants or divide old plants just before summer growth commences in order to take advantage of the full summer growing season for establishment. That is, plants should preferably be obtained in early summer. In the case of plants bought in pots of course this does not apply as they are already established and may be obtained at any time.

Flowers

The Cooktown Orchid comes into bloom in South Queensland from the end of February and the season usually finishes in June. In North Queensland flowering commences somewhat earlier and in the far north flowers may be seen sometimes right through the year.

The flowers vary in size and colour and shape with the different forms of the plant, but all are long lasting and remain in full flush for up to six weeks. From three or four up to a dozen or more blooms are produced on a spray and in good conditions two or more sprays may occur on a pseudo bulb. The sprays appear on the current seasons growth as well as on that of the past year or two. Different varieties of the plant often flower at different times in the season. Some are early flowering and some are late.

When cut the flowers last 2 to 3 weeks in a vase either as sprays or single flowers.

In the early morning in full sunlight the flowers sometimes produce a strong geranium scented perfume.

Pests

The chief pest of the Cooktown Orchid in Queensland is the Orchid Beetle. This is an orange insect marked with black about 1/3 inch long with the general appearance of the pumpkin beetle. It is particularly a nuisance in the case of plants grown in the open where they are unprotected. It is a pest of most orchid flowers and new growths.

The insect is particularly partial to flowers and new leaves and lays its small, longish, yellow eggs in the flowers and on new shoots. The grub which hatches from the eggs also eats the flowers and new leaves and then tunnels into the new growths killing them. It forms a white cocoon, in the damaged stem and sometimes outside in the leaf axils.

The adult beetles, the eggs and the larvae should be watched for during summer and destroyed.

Another pest is a scale insect which develops on the leaves and pseudo bulbs. This may severely affect the growth of the plant but is easily controlled by spraying with white oil.

The common red spider also sometimes attacks the plants and is also fairly readily controlled by sulphur dust or one of the proprietary lines.

PRESERVATION BY CULTIVATION

FLORALANDS

KARLONG, via GOSFORD, N.S.W.

A large variety of the most popular native plants at nursery
PHONE: Gosford 21142 P. J. PARRY

AMAROO NURSERY — UU 7342

86 Lang St., Padstow, N.S.W.

160 varieties of native plants. Many displayed in a garden setting.
Eucalyptus, Banksia, Dryandra, Hakea, Acacia, Hibiscus, Leschenaultia, Paws.
Send stamped envelope for list.

WYALANDRA NURSERY

47 Jacana Grove, Heathcote

Wildflowers of the Heathcote area

In Stock:

Species of Boronia & Eriostemon

More than 300 Species . . .

Native and exotic trees and shrubs available from Forestry Commission nurseries at Pennant Hills, Dubbo, Forbes, and Narrandera, N.S.W.

For free catalogue giving complete details and prices of species contact:

**FORESTRY COMMISSION
OF N.S.W.**

44 Margaret Street, Sydney. Telephone: B 0236

For Effective Pest and Disease Control Use

Yates Garden-master

MULTI-PURPOSE SPRAY

YOUR GUIDE TO NATIVE PLANT NURSERYMEN

Abel, J. L.—P.O. Box 26, Nowra. Native plants from 2/6. Freight and pack. extra.
 Althofer, G. W.—Nindethana Nursery, Box 5, Dripstone, N.S.W. Very wide range.
 Amarooc Nursery—86 Lang Street Padstow. One of the widest ranges of natives.
 Belbra Nursery—Box 12, Hall's Gap, Vic. W. and R. I. Stanton. The home of the *Thryptomene*.
 Boddy's Eastern Park Nursery—32 Denman St., Geelong, Victoria. 3 000 varieties.
 Clearview Nursery, W. Cane, Box 19 Maffra, Victoria. Specialist in developed plants.
 Denovan's Nursery—188 Marco Ave., Panania, Sydney, N.S.W. At nursery only.
 Echberg's, G. A. & K. M., Nursery—Braeside, Highett & Moorabbin, Victoria.
 Ford R.—8 Boylen Street, Toowoomba, Queensland. At nursery only.
 McLeod, F. C. J. McLeod—Warrien Rd., Croydon Victoria—Quality Plants.
 Narrabeen Nursery, 1444 Pittwater Rd., Narrabeen Nth., N.S.W. Plants for coast.
 Perry, P. J.—'Floralands', Kariong via Gosford, N.S.W. A wide range. Postal orders taken.
 Tinderbox Nursery, Tinderbox Blackmans Bay, Tasmania.
 Tullamarine Plant Farm, 8 Sharp's Road, Tullamarine Vic.—Open weekends.
 Willunga Nursery—21 Nelson Street, Thornleigh, N.S.W. From 2/6. Mail orders accepted.
 Wyatt P.—33 Plummer Road, Mentone, S.11, Victoria—Hardy plants.
 Wyalandra Nursery—47 Jacana Grove, Heathcote. Wildflowers of Heathcote area. N.S.W.

YOUR GUIDE TO NATIVE PLANT SEEDSMEN

Nindethana Box 5, Dripstone, N.S.W. For all Native Seed. Packets, ounce or pound lots. Free list on application. Special supplies of West Australian Seed.
 Australian Seed Co. Robertson, N.S.W. Bulk or packet lots. Stamped envelope brings lists.
 Western Wildlife Supply, Gilgandra, N.S.W.—Bulk supplies of natives and exotic tree and shrub seed to the trade—Special collections to order.

BELBRA NURSERY

In the Heart of the Grampians
 LARGE RANGE OF
 AUSTRALIAN NATIVES
 Inquiries: Box 12, HALL'S GAP

NARRABEEN NURSERY 74 AUSTRALIAN NATIVES

1444 Pittwater Rd., Narrabeen
 Nth., N.S.W. — XX 2604
OPEN EVERY DAY
 Specialist in plants for sea coast.

NATIVE PLANTS —

USUAL & UNUSUAL

F. C. J. McLEOD

Wildflower Nursery

WARRIEN ROAD, CROYDON, VIC.

TULLAMARINE PLANT FARM

8 Sharps Road, Tullamarine
 Phone: 30-7893

1 mile north of Melbourne Airport
 Open Weekends, Closed Mondays
 — SHRUBS, TREES, PERENNIALS —
 Native & exotic, popular & rare

COLOCEPHALUS BROWNII
 ORANGE LESCHENAUTLIA
 EUALYPTUS NICHOLII

Send stamped envelope for list
 "Willunga", 21 Nelson Street,
 Thornleigh, WJ 3709

DENOVAN'S NURSERY

Good Range of Native Plants
 available at Nursery
 188 MARCO AVENUE, PANANIA, N.S.W.
 Specialist in plants for clay areas.

G. A. & K. M. ECHBERG'S NURSERY

Lower Dandenong Road
 Braeside. Tele.: 91-9438
 1/2 mile west of Springvale Road

THE HOME OF UNUSUAL
 PLANTS
 NATIVE AND EXOTIC

FLOWER POTS

Colourful Plastic Flower Pots
 and Bulb Bowls will Increase
 Your Sales of Plants. Write for
 List from Manufacturer or Ring
 LA 4089.

Alba Engineering

20 ROWLEY ST., CAMPERDOWN, N.S.W.
 BOX 32 P.O. LA 4089

NATIVE PLANTS

101 HARDY VARIETIES
P. WYATT, "KANANOOK"
 11 Plummer Rd., Mentone, S.11
 Victoria

AUSTRALIAN NATIVE PLANTS 3,000 varieties

Grown in the Open — Plants dispatched
 to all States
 Catalogue and Planting Guide 4/-
Boddy's Eastern Park Nursery
 32 Denman St., Geelong, Victoria
 Tel.: 2598

THE SOCIETY FOR GROWING AUSTRALIAN PLANTS

"AUSTRALIAN PLANTS" IS AUSTRALIA'S NATIONAL PRESERVATION JOURNAL

(A non-profit making venture, produced quarterly, dedicated to preservation by cultivation.)

This journal is published by The Publishing Section on behalf of:—

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

President: Mr. C. M. Taylor, 142 Ernest Street, Crows Nest, N.S.W.

Secretary: Mr. D. Sands, 39 Herbert Ave., Newport, N.S.W.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—QLD. REGION:

President: R. J. Peach, Bushland Nursery, Sunnybank, S.8, Q'land.

Secretary: Mr. P. Hamilton, Carnoolia Street, Bardon, Brisbane.

SOUTH AUSTRALIAN SOCIETY FOR GROWING AUSTRALIAN PLANTS:

President: Mr. A. Webster, 26 Avenue Parade, Frewville, South Australia.

Secretary: Mr. E. J. Thompson, 115 Wattle Street, Fullarton, South Australia.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—VICTORIA & TAS.:

President: Mr. G. Echberg, 22 Middleton Street, Highett, S.21, Victoria.

Secretary: (Sister) E. R. Bowman, 4 Homebush Cres., Hawthorn, E.3, Vic.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—CANBERRA REGION:

President: Mr. H. Jones, 5 Yallourn St., Fyshwick, Canberra, A.C.T.

Secretary: Mrs. T. A. Ovenstone, 20 Savage St., Campbell, A.C.T.

WEST AUSTRALIAN WILDFLOWER GROWERS' SOC. INCORPORATED:

President: Mrs. J. Hamersley, Great Eastern Hwy., East Guildford, West Australia.

Secretary: Miss M. Munro, 90 Basinghall St., East Victoria Park, West Australia.

Membership is open to any person who wishes to grow Australian native plants.

Contact the Secretary of the Society for your State for information without obligation.

PUBLISHING SECTION FOR SOCIETIES

Publishing Committee for this Issue: R. N. Dallimore, P. D. Leak.

Sec.: K. Coxhead Dispatch: V. Hopkins, assisted by J. Birles, N. Gane, C. Hubner, with families.

Illustrations: A. Spurway. Lettering: E. Ham.

Advertising and Sales Representatives in each State: N.S.W., P. D. Leak; Qld., W. W. Kilgour;

S.A., J. S. Birch; Tas., G. van Munster; W.A., F. Lullfitz; Vict., F. R. Jeffs.

MAIL—Address mail to the Editor, 250 Picnic Point Road, Picnic Point, N.S.W.

SUBSCRIPTION—Members: Your 1962 subscription is now due. Please send dues promptly.

NON-MEMBERS: You may receive the next 4 issues direct to your home by forwarding an annual subscription of 12/-. Overseas subscriptions are 12/- sterling or 1½ dollars.

NINDETHANA NURSERY

BOX 5, DRIPSTONE, N.S.W.

OVER 1000 SPECIES STOCKED

All Australian natives with special supplies of plants and seed of West Australian species

THE PIONEER NATIVE PLANT NURSERY

Catalogue — 4/- Posted

You don't need
MAGIC



ALL YOU NEED IS A PHONE CALL —
YOU'LL GET A HAT TRICK

Efficiency, dependability, reasonable pricing—this is the hat trick which makes our printing services stand out from the crowd. We guarantee complete satisfaction with all our work and suggest you give us the opportunity to prove it.

SURREY BEATTY & SONS, Rickard Road, Chipping Norton.
Phone: 72-7404 Phone 72-6522

Epacris Impressa Labii

By W. N. B. QUICK, Melbourne

1. Propagation—Vegetative Method

Consistently useful results can be obtained from any material less than one year old. Under trial, however, optimum results were obtained with stem cuttings seven to eight cms. in length taken from just below the soft tips in May, while the plants were in bloom, a decided advantage in selecting colour-forms for propagation. Foliage is cleanly stripped from the lower half of the stem in the normal manner, and any flowers or large buds removed. The location of cuts in relation to leaf nodes is not critical.

Preparation of Propagation Medium, etc., in Five-inch Pots: Coarse crock to a depth of 1 in. to 1½ ins. is covered with a layer of milled sphagnum moss to a depth of 1 in. A coarse (½ in. to ¼ in.) sharp, granite gravel and peat moss mixture (1:4) for half the remaining depth is followed by a similar medium or finer grade (1/16 in. to ½ in.) to within ¼ in. of the rim, and a final topping of fine sharp sand. Cuttings set in a well-shaded cold frame without bottom heat form good root system within nine to ten months. It is important when transferring to individual containers to thoroughly firm the soil around the roots.

The effect of the milled sphagnum is obscure, possibly serving only as a buffer to sudden changes in moisture content of the medium. Without it, and using the gravel-peat moss medium alone, results were certainly inferior.

This method of propagation has been used for some years now and while the time taken for cuttings to form roots may seem uneconomically great, a large number of cuttings can be fitted into a five-inch pot, and a good succession of propagations kept up. There does not seem to be any optimum season for taking cuttings.

The method has been used successful for: *Epacris longiflora*; *E. reclinata*, *E. impressa* var. *grandifolia*, *E. microphylla*, and other genera such as *Astroloma pinifolius*, *A. adscendens* (syn. *Styphelia adscendens*), *A. conostephioides* (only fair success to date), *A. ciliatum*, *Sprengelia incarnata*, *Melichrus urceolaris*, and *Monotoca scoparia*. The few species of *Leucopogon* have not been successful, possibly due to poor material, but these may be raised from seed easier.

2. Propagation From Seed

Seed must be after-ripened (by storing) for 12-16 weeks in a cool dry room. Seed should be surface sown in September, and in open shade. Containers, preferably metal, should have provision for only slow drainage, as the seed must be kept very moist at all time. Germination is very slow, and may take 12 weeks. Initial growth is slow, and seedlings grow only about half an inch during the following six months, after which their height increases more rapidly. Transplanting may be carried out at any time if care is taken, and hot, dry weather avoided. Plants will flower at 18 months and a height of 8 in. to 12 in.

Seed collected in areas of pure colours, such as near Labertouche (rich deep blood-red) and the Otway Ranges (deep carmine) comes true to colour, at least in the first generation.

EDITOR'S NOTE: We intend to have an issue on the Epacridaceae in the future. I hope this article will spur readers on to growing these plants and reporting results. We need colour slides of all species. We know nothing of the Queensland species of *Heaths*. Who in Queensland will heed our cry?

THE FLORAL EMBLEM OF VICTORIA



Colour Photography by Frank Hurley

Blocks by courtesy of John Sands Ltd.

EPACRIS IMPRESSA Labil.

This beautiful wildflower, the Common Heath—Victoria's Floral Emblem—has been proclaimed a protected wildflower as from 19th March, 1963. All of its forms, red, white and pink as shown above, are included. The Society is proud of the success achieved, in association with other societies local to Victoria, after such a long battle. Plants may be obtained for your garden from nurserymen listed on Page 101, or they may be propagated from seed obtained from a reputable supplier as clearly described on Page 103.

Wholly set up and printed by Surrey Beatty & Sons, Rickard Road, Chipping Norton, N.S.W.