

Australian Plants

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

PRICE: THREE SHILLINGS
SEPTEMBER, 1962 Vol. 1, No. 12



Colour Photography By Frank Hurley

Blocks Courtesy of John Sands Pty. Ltd.

THE STURT DESERT PEA

READ HOW TO GROW THIS BEAUTIFUL PLANT IN YOUR GARDEN

CARE OF NATIVE PLANTS

Most native plants form some feeder roots near the soil surface and as it is in this region that most of the readily available plant foods are located some endeavour should be made to ensure a favourable environment for the roots either by mulching or shading of the surface. Conservation of soil moisture reduces the need for watering and consequently decreases the leaching out of nutrients. Weeding is minimised and tilling of the surface avoided.

COVER PLANTS from D. R. Ali, Klemzig, South Australia.

I consider cover plants to be very useful as:—

1. They take the "bare" look away from the garden between shrubs.
2. They serve as a useful mulch and control most weeds.
3. They provide a "bonus", flowering in poor or waste areas.

I have grown many of the plants recommended in the articles on Cover Plants on pages 13, 14, 15 and 16 and in addition recommend *Acacia aculeatissima*, *Hibbertia* species and *Isotoma axillaris*. *Isotoma* is semi-prostrate; 6" high. The flowering period is nine months, starting in early spring. The longer the season extended, the deeper the blue of the flowers became. This plant seems happy with a minimum of sun.

For Ground Covers for Coastal Planting, E. M. M. Boddy recommends the plants described by R. Hill on page 15 and describes plants very suitable for your garden on page 13. For areas where it is desired to keep weeds in check and yet allow reasonably light traffic in these areas, "*Lippia*, *Pultenaea*, *peduncularis*, *Pratia* white and blue forms, *Scaevola macrocarpa* and *Haloragis micrantha* could be used for this purpose. Where it is just desired to eliminate weed growth, close planting will give the desired effect. I call to mind one small area in a raised rockery 5' x 2' x 18" high—*Grev. alpina* 2'-3', *Grev. "stieglitziana"* semi prostrate, two *Grevillea* hybrids, *Grev. parviflora* 2', *Darwinia micropetala* 1', *Thomasia grandiflora* var., *Angustissima* 18", *Chorizema cordatum* 18" and *Epacris longiflora* 18"-2"—eleven plants in an area 5' x 2' intermingling and the healthiest spot in the nursery and no weeds."

SURFACE MULCHING—An introduction by E. M. M. Boddy.

Surface mulching is a practice that is neglected in too many gardens, private and municipal. Too much energy is expended in continual digging of the soil. Root systems suffer. The earthworm and natural soil bacteria are unduly disturbed and gardens often suffer as the result of too much zeal. Obtain the English publication "Gardening without Digging".

The surface of our garden was mulched with 6" of tan bark nine years ago and the soil has not been disturbed since. These garden beds were formed by encroaching on the original lawn. I must make special mention that no digging was performed prior to planting the native shrubs in the area that was previously lawn. An inch of soil was stripped off in order to remove the lawn grass, the surface was mulched with ordinary garden compost and light loam to a depth of 2in. After planting, the surface was mulched with tan bark in order to correct the high degree of alkalinity of the sub-soils.

Leaves and lawn grass cuttings are helpful but not permanent as a surface mulch. Articles on pages 18, 19, and 20 deal adequately with the use of gravel, stones, sawdust and shavings. Blue metal screening $\frac{1}{2}$ - $\frac{3}{4}$ " although alkaline, appear to possess properties that are beneficial to plant life and may be used to a depth of 2". Red Scoria, which is also volcanic, could have a better appearance if not too fine.

STURT PEAS—A Dramatic Native Flower For Your Garden

By FRANK BRIDGEMAN, B.Sc. (Agric.)—W.A. Tree Society

One of the most striking and brilliant of native flowers—indeed comparing favourably with the most beautiful flowers of the world—the Sturt Pea can be cultivated without any great trouble. Note the words, “without any great trouble”. It is, indeed, one of the best natives for a novice to start with—nearly as easy as zinnias—as it blooms within several months of sowing and results which your neighbours will envy can soon be seen.

I have cultivated Sturt Peas almost every year since 1943, first in the gravelly sandy loams of the Hills, then in the clay loams near Maddington; the rich loams of Harvey and on the contrasting poor Banksia sands of Perth suburbs. For every year of those 15 years, in one or other of the situations mentioned, I have secured flowering plants, usually many and excellent.

NAMES AND LEGENDS OF THE STURT PEA. The accepted correct botanical name of the Sturt Pea is *Clianthus formosus*—a name which can be freely translated as “Glorious flower of beautiful form”, appropriate and more descriptive of this truly glorious flower than its common name. The Sturt Pea has also been called botanically *C. speciosus* and *C. dampierii*.

Sturt Peas were one of the first Australian plants collected from these shores, taken to England and brought to the notice of the Western World; the voyager William Dampier noticing and collecting it from the north west coast of Western Australia in 1699. Dampier, pirate though he was, appreciated the distinction and beauty of our native plants, remarking favourably upon them in his journals, though he did not appreciate our country otherwise as seen by him from the north west coast.

It was much later that the inland explorer, Charles Sturt, brought the plant to the notice of the eastern states whence it was called the Sturt Desert Pea, Sturt discovering it near Cooper's Creek in 1844—some 145 years after Dampier's discovery.

Sturt Desert Pea is not really a particularly appropriate name because this “glorious flower of beautiful form” could, on its history and beauty, have a more romantic common name. Perhaps its relative in New Zealand, *Clianthus puniceus*—commonly called the Glory Pea—could indicate a better common name for our plant. Be that as it may, the New Zealand plant may be useful in future hybridization with the Sturt Pea to produce greater perenniality and versatility.

Aboriginal names of the Sturt Pea vary with the tribe and dialect, but in the Jigalong area in Western Australia, the name used was “Malukura”. There is believed to be some interesting aboriginal legends about the Sturt Peas, but I have not been able to trace authentic details of these from the W.A. University nor the W.A. Museum. Perhaps some reader could help in this direction.

TREATING STURT PEAS AS AN ANNUAL—The Key to Easy Cultivation:

The Sturt Pea occurs naturally after infrequent rains over a wide area of arid and semi-arid Australia—from the north west coast of Western Australia to the western plains of N.S.W.

Within this very wide area, there can be expected to be a wide variation in plant habit and other characteristics. In botanical records, Sturt Pea is usually described as a perennial, though this has been disputed by some observers; maybe it is a perennial in certain areas and an annual in others. Whatever its natural variation, I have found that most of the plants I have cultivated behaved as annuals, and as it flowers a few months after sowing the plant is best treated as such for garden purposes in wet climates, just as many exotics, e.g., violas, really perennials, are treated as annuals in our

gardens. For those who might desire to use Sturt Peas as perennials I would suggest, firstly, a search to get seed from a definitely perennial strain, secondly, investigation into methods of protecting the plants against root rot in winter. This would be a very desirable scientific project but the annual treatment approach is at present far simpler for home gardeners.

VARIETIES AND SEED AVAILABILITY. The typical idea of the Sturt Pea as a prostrate runner with its stems lying on the ground like pumpkins or melons and covering up to two square yards of ground from a single plant applies to a type common in the Kalgoorlie region, but commercial seed of this type is not easy to obtain.

The present commercial seed is mostly obtained from the Pt. Hedland area, and is a semi-erect type which grows more erect still when crowded together. For general garden purposes, it is more suitable than the prostrate type.

More erect shrubby types are believed to occur but these will not usually be found in ordinary commercial seed. This commercial seed is sold in small packets but, if a gardener requires any quantity, I can personally advise them of a more direct and cheaper source of seed.

Besides the flaming scarlet flowers with the familiar shining black centres or bosses, various gradations to light red, even pink, with claret bosses occur frequently in commercial seed. Rarer variations of Sturt Pea also occur naturally in the interior—including a pinkish white pink-and-white mottled and even white is found—but would seldom occur in commercial seed.

It can be seen from these remarks that more scientific investigation is needed on Sturt Peas, as well as on other natives generally. A thorough survey of naturally occurring ecotypes should be made and seed collected from as wide a range of variations as possible by scientifically trained personnel. It is strongly suggested that interested people living or travelling over the areas where Sturt Peas occur could help by sending seed of any types they see to The Society for Growing Australian Plants or to myself at "Clianthus", 4 Victoria Street, Dianella, W.A.

There is an important need also to develop the collection of seed from cultivated rather than wild plants as, by selection, this will eventually lead to more adaptable and improved strains for garden purposes.

Exotic flowers would never have been improved if gardeners had relied on seed from wild plants. Seed saving from cultivated plants is one of the major needs for improvement of our native flowers.

NITROGEN FIXING BACTERIA AND STURT PEA: Like all legumes, native and exotic, Sturt Peas have an association or symbiotic relationship with *Rhizobium* bacteria that form nodules on the roots and can supply the plant with nitrogen fixed from the air, thus improving the growth of the plant. This nitrogen fixing occurs under both natural and cultivated conditions with the legumes I have investigated—even in soils well supplied with nitrogen fertiliser, I have seen nodules well developed on native plants. *The bacteria can supply a steady and large source of nitrogen in a suitable form without it being leached out by excessive watering or rain, especially in light soils; whether nitrogen fertiliser is used or not I strongly consider it wise to encourage such nitrogen fixing bacteria for more sustained health of the plant. If nitrogen fertiliser only has to be relied upon, it has to be provided carefully in small quantities at frequent intervals or otherwise yellowing and severe checks to growth will occur.*

According to recent research, nitrogen fixing bacterial strains associated with some other native legumes belong to what is called the "tropical" group. This group is less specialised than the "temperate" group which includes the

strains occurring on clovers, medics and peas. The "tropical" type is less specific to different genera of plants than the "temperate" group.

The Sturt Pea bacteria have never been fully investigated in this way and it is not possible to say whether Sturt Pea bacteria belong to the "tropical" group as with other native legumes. It is quite possible, even speculatively probable, that they do, however. Once again, this is a subject needing scientific investigation and is an important matter because though the "temperate" group of *Rhizobium* bacteria are encouraged by alkaline conditions, the same is not true of the "tropical" group and lime near the seed may even be harmful to nitrogen fixing bacteria of the "tropical" group—including most native legumes.

Whether this is true for Sturt Peas is not known but it would seem better to be cautious in the use of lime or lime super near the seeds of Sturt Peas and to avoid their use—except on very acid soils.

HOW TO OBTAIN AND ENCOURAGE NITROGEN FIXING BACTERIA ON STURT PEAS. Unlike crop legumes, commercial cultures of bacteria suitable specifically for Sturt Peas cannot be purchased, though commercial peat cultures for the cowpea or lupin group ("tropical" origin nitrogen fixing bacteria) are obtainable and may be worth experimenting with on Sturt Peas.

No proved culture being available, reliance will have to be placed on any suitable bacteria happening to be adhering to the seed (this can occur, but any such will be destroyed by hot water, by most fungicides or by long keeping) or, more reliably, by scattering and working into the new bed, soil from where Sturt Peas have previously grown well.

CLIMATES AND DISTRICTS LIKELY TO BE SUITABLE FOR STURT PEAS—

Bearing the remarks about annual treatment in mind, the Sturt Pea though a native of the semi-arid interior, can be cultivated in many of the coastal areas of Australia. Taking firstly, the state of Western Australia that I know best, Sturt Peas can be grown in summer in and around Perth and the agricultural areas to the south of Perth. In the agricultural areas east and north of Perth, they will grow with water in the summer and there is a strong chance of growing them in the winter as well in some of the drier warmer parts of this zone, particularly Geraldton.

In other states, I have had no immediate personal knowledge of growing Sturt Peas, but I see no reason why they should not also do well in the warmer coastal areas of Australia—around Adelaide, Sydney and Brisbane in the summer. In parts of Queensland where the winter is relatively dry and warm, autumn sowing should also be worth a try. It should be well worth trying in cooler coastal areas such as Melbourne as a summer plant—some growers have been successful there. Away from the coast, the cold mountain tablelands and the Canberra region would be more doubtful—the same applies to Tasmania (perhaps the eastern states can supplement this.)

SOIL.—The main requirement is that the soil be deep without a sticky clay subsoil within about 15" of the surface; without rocks or hardpan or other obstructions anywhere close underneath, to give the plants a free root run. Drainage must be good. The situation should be sunny. Given these requisites, an ordinary garden bed is preferable, in my opinion, to rockeries (where I have had little success with Sturt Peas) pots or specially built up beds—unless these happen to be unavoidable to obtain the basic requirements.

As for texture of soil, this is of lesser importance—it can be sandy loam, gravelly sandy loam or even clay loam provided it is deep. Sticky clays found in parts of Sydney and Melbourne may be difficult, but unmodified, these

soils do not particularly suit many plants.

Acid soils with a pH below 6.0 to 6.5 need lime; above this lime is unnecessary. Where lime is necessary, be cautious. The soil pH can be checked with the Innoculo (C.S.I.R.II. type) colour pH meter or by an electronic pH meter

In our present state of knowledge, lime near the seed may hurt Sturt Pea nitrogen fixing bacteria—see remarks under Nitrogen Fixing Bacteria. **PREPARATION AND FERTILISER:** Digging and cultivation as for other annuals.

Sturt Peas definitely benefit from fertiliser, provided as with other plants, native or exotic, it does not come in contact with seeds or tender roots in concentrated form. It should be broadcast and mixed in thoroughly or placed 3" deep in bands about 3" from the intended rows. I would suggest 1oz. per square yard—no more—of a good proprietary mixed fertiliser, containing super, potash, blood and bone, some, but not much nitrogen and possibly mixed trace elements in strict moderation. Highly concentrated fertilisers, like Nitrophoska, should be used at half this quantity. Compost or a little fowl manure can also be worked into the soil.

The quantities of artificials should be adhered to carefully. It may not be essential to weigh them each time, but I would suggest that if you are not used to them, weigh them first and carefully distribute them on measured areas to appreciate that these quantities are very light sprinklings only.

I am even more positive of the benefit of fertiliser on native legumes following recent experiments, but this does not necessarily apply to Banksia and other genera of the Proteacea. A point that has caused a lot of confusion among local gardeners regarding artificial fertiliser for both exotics and natives is that most artificial fertiliser, unlike organic manures, has a considerable "salting" effect—some very considerably like sulphate of ammonia, some relatively less like urea. "Salting" effect means that in excess they act as does excess common salt—most artificials are in fact, salts of varying types. This does not matter very much, if artificial fertilisers are used as they are meant to be, at light fixed rates, watered well in afterwards and care taken to avoid local concentration near seeds or near young roots or the base of stems or from lumps, etc., where it will burn. But if artificial fertiliser is really "plastered" on, so the ground is white with it as some people do (just as one applies plaster on a wall or as is common with organic manures or lime)—and if there is insufficient watering or the water is already salty, artificials can cause damage.

SEED TREATMENT OR SCARIFICATION: This is very important with Sturt Peas. The seed purchased in packets or collected in its native haunts, usually contains a high percentage of so-called "hard" seeds which because of an impervious coating cannot absorb water necessary for germination. Among the methods that can be used to break this impervious coat and give a high percentage of germination, there is the scarification of the seed by rubbing it lightly between two sheets of medium sand or emery paper. This treatment should not be so drastic, however, as to cause disintegration of the seeds. Another rather more tedious but excellent method is to lightly file with one or two rasps (a nail file will do) each individual seed or to lightly nick them with a razor blade without penetration beyond the outside coat. Both these latter two operations should be done away from the scar on the seed where it was originally attached to the pod. If you desire to check on the effectiveness of these treatments—it is not strictly necessary—soak the seed afterwards in cold water overnight. Seed properly treated will swell but show no sign of damage.

Some other pretreatment measures can also be used, for instance soaking

the seed in hot water, though personally, I prefer the previously mentioned methods.

A point to be noticed against hot water treatment is that it is likely to kill any nitrogen fixing bacteria that may be adhering on dust on the seed. Also the hot water treatment by making the seed testa soft and spongy makes the seed more liable to damping off and other fungus troubles. All scarification treatments have the same effect, but to a lesser degree than the hot water treatment. To overcome this, a method has been evolved by the Americans for use on lucerne seed. Briefly, this consists of running seed down an inclined plane incorporated in which is a thermostatically controlled hot plate so arranged that the seed just bounces on it and during this momentary contact, a small penetration area is burnt in the hard coat. By manipulating the inclined plane and varying the temperature of the hot plate, all factors can be controlled and this method is claimed to reduce fungal trouble. Possibly, it could be adapted for large scale treatment of native legume seed.

If fungal attack is feared, the seed should be dusted with Tetroc or Thiram before sowing but remember these could injure nitrogen fixing bacteria (Tetroc is claimed to have little effect) and, in such cases, the said bacteria should be incorporated in the soil.

TIME OF PLANTING: In most coastal areas, sow as a summer annual like zinnias—the hotter the weather, the better for sowing and growing. In Western Australia, September to January are suitable months—November being one of the best. Similar times would apply in Sydney, Brisbane and related areas. In Melbourne, suitable times would be much shorter—mid November to mid December being the probable range. Remember not so early as to place the seed in cold soil where germination is likely to be slow and disease ridden; but not so late that the plants have only a limited flowering season before cold autumn weather retards them. In hot dry areas, autumn and early spring planting can be tried.

PLANTING: I prefer sowing Sturt Peas where they are to grow in open beds. More so than zinnias, they do better without transplanting. Make rows about $\frac{1}{4}$ " to $\frac{1}{2}$ " deep, about 15" apart and scatter the treated seed fairly thickly in the rows—an inch or so apart at the most. Water well and keep just moist until germination which in warm weather only takes a few days. When the plants are established, thin out to about 9" to 12" apart on the average. The thicker the final stand, the more the plants will tend to grow upward, the thinner they are, the more they will run along the ground (this also depends on strain of seed). Sowing can also be done in large deep pots—similar to the size of a kerosene drum or in wide pipes, but in these cases the soil may dry out badly and I would suggest some peat in the mixture. Sow up to 6 seeds per container and thin to 2 or 3 final plants.

Transplanting I do not prefer, but if necessary sow several seeds in paper cups or small plywood cylinder, thin out to one and move without disturbance when the first compound leaves develop.

WATERING AFTER GERMINATION: Though Sturt Peas are a desert plant, they often do better when suitably watered, and where grown during hot dry summer, some watering is essential. Less moisture is needed after germination than before, but a good watering can be given about once a week on light soils, and about once a fortnight on heavy soils in dry hot conditions. Watering can be done by sprinkler if desired.

Overwatering should be avoided. Where summer rains occur as in Sydney or cool summers as in Melbourne, watering may not be necessary.

WEEDS: Weeds of any sort should be carefully hoed out as like other natives, Sturt peas do not appreciate competition.

SUBSEQUENT FERTILISER TREATMENT: If desired, fertiliser can be given after the plants are germinated rather than before—as previously described. Keep the fertiliser about two inches away from the base of all plants and water after application. If the plants do not make fast growth, and the weather is warm, check on the colour of the leaves. They should be deep green and healthy. If not, check for red spider and, if not this, dig a few plants up to examine the roots—don't pull, dig up carefully and wash the soil away. If there are no nitrogen fixing bacterial nodules on the roots which are otherwise healthy, the trouble is probably lack of nitrogen because of the failure of the bacteria. To remedy the lack of nitrogen, apply sulphate of ammonia at no more than ½oz. per square yard or urea at ¼oz. per square yard at monthly intervals. A top dressing with a mixed fertiliser at no more than 1oz. per square yard at the beginning of flowering can also be made, but take care not to damage the base of the plants. Always wash fertiliser in by a moderate good watering.

PESTS AND DISEASES: Sometimes Sturt Peas can turn yellow or wither or wilt due to damping off or root rot. If examination of plant indicates rot at the base or further down in the roots, immediately drench with Thiram 1oz. per 4 gallons applied at 1 gallon per square yard. Do not water for several days afterwards. This will not save plants already damaged, but should stop the spread to others.

Fertiliser badly applied so that it burns the base may start the trouble by permitting the fungus to enter; so will bad use of the hoe and there are other predisposing factors to this fungus disease that need further investigation. In areas liable to damping off, treat the seed before sowing with Thiram or Tetroc. Insect damage can be mistaken for similar trouble, so diagnose carefully your complaint and if cutworms, wireworm or beetles are involved, drench the soil with Dieldrin or work in Lindane dust.

For red spider, use Metasystox—or if red spider is resistant to that in your area, Thimet granules or Tedium spray. A little grub (unidentified) gets inside the flowers and seed pods, stopping the seed setting—a major hindrance to saving your own seeds for selection of better adapted strains. This pest needs thorough treatment with insecticide. I would suggest Dipterex at weekly intervals. I have not yet found the perfect insecticide for this grub.

STURTS DESERT PEA IN N.S.W. from D. SANDS:

I germinated the seed by boiling in water for one minute, then allowing the lot to cool and stand for two days. By this time the roots had appeared, and they were then placed in two inch "Jiffy Pots" in a mixture of sand and vermiculite. After two weeks the seedlings were about 2½" high with their third leaf appearing.

In the meantime I had prepared an area of about two square feet with sandstone pebbles six inches deep. This is at the top of our block on a 1 in 2½ gradient in full sun most of the day. Two of these plants were then buried on 2nd November and by the end of January the plants were one foot high.

These central growths discontinued growing and six basal shoots appeared from each. Now the runners are eight feet long, are still branching and a healthy pale green. Flowering started in July—hundreds of buds forming.

FROM C. HIRNER REVESBY, SYDNEY, N.S.W.

Mine is a heavy clay area so I used a 4 gallon drum of river sand standing on a mound of sand in the garden. The Sturt Pea seed was first nicked with a knife then planted in the sand in October. There was 50 per cent germination but the seedlings did not prosper. Applications of aquasol produced good growth immediately with good flowering in February.



The Genus *Lyperanthus* in Australia

Red-Beak Orchid

By L. CADY, Kiama, N.S.W.

Reprinted from *Wildflowers of Australia*. Blocks by courtesy of Angus & Robertson.

"Why can't I flower my *Lyperanthus nigricans*?" How often has this question been asked by those who have tried to grow this unique plant? It certainly is difficult to flower. In its natural state this species is shy to flower, except after a bushfire, then the ground is literally carpeted with these beautiful plants. This, in the writer's opinion, brings forward the questions, was it the heat of the fire that caused the phenomenon or was it the extra amount of potash left by the fire. Both questions still remain unanswered but are offered as a thought for experiment with this species.

This genus is represented by four species, two endemic to West Australia, these being *L. serratus*, and *L. forrestii*. *L. nigricans* is found in all states except Queensland, while *L. suaveolens* is located in Queensland, N.S.W., Vict., and Tasmania.

Most of the species seem to favour sandy soil, but not entirely, so a compost with a leaning towards the sandy side should suffice, add a fair amount of black leaf mould, a small amount of old cow or fowl manure and crushed charcoal. A test pot with an added amount of potash would be of interest to note improvements in flowering, if any.

Two of the species are highly perfumed, and all are rather robust plants and present a fine sight when a pot full are seen.

A feature of interest is that one member of the genus, *L. nigricans*, turns jet black when pressed. This species when fresh is translucent-whitish, heavily marked and flushed with deep purplish-red, but on drying turns jet black. It was this particular character that decided the name for this genus *Lyperanthus* alluding to flower of sorrow or mourning.

KEY TO GENUS LYPERANTHUS IN AUSTRALIA

1. Plants with single lanceolate upright leaf.
 2. Midlobe of labellum entire, a few short scattered glands on its lamina, N.S.W., Vic., Tas. *L. suaveolens*. 1.
 2. *Midlobe of labellum densely covered with longish calli. West Aust. *L. serratus*. 2.
1. *Plants with one or more ovate or ovate-lanceolate basal leaves.
 3. Basal leaf one, coriaceous. Labellum midlobe fimbriate or dentate. All states except Qld. *L. nigricans*. 3.
 3. *Basal leaves 3, ascending. Labellum obovate, apex crenulate. West Aust. *L. forrestii*. 4.

DESCRIPTION OF AUSTRALIAN SPECIES

1. *L. suaveolens*. R.Br. "SAUVE-O-LENS", Scented.

Plant slender up to 45 cm. high. Leaf broad or linear lanceolate, erect, recurving at apex. Flowers 2-6, with largish bracts, deep red-brown or yellowish-green, scented in the warmer parts of the day. Dorsal sepal narrow lanceolate, cucullate, deflexed. Lateral sepal linear, spreading or recurved. Petals linear. Labellum trilobate the lamina almost orbicular when flattened, midlobe ovate-oblong its margins entire, two rows of calli on the lamina scattering at the apex. Column winged, anther acute.

This species is often found when rambling through the bush, the brownish, scented flowers with their long lanceolate leaf are usually in clusters in patches of short heathy land on the edge of swamps or creeks.

This species is easily distinguished from the other members of this genus, by its much extended, entire, midlobe of the labellum.

2. *L. serratus*. Lindl. "SER-RATUS" Referring to the labellum.

A robust plant up to 36 cm. high. Leaf similar in habit to the preceding plant, broad lanceolate. Flowers up to six, yellowish green with dark crimson striate. Dorsal sepal broad, cucullate; Lateral sepals and petals narrow lanceolate, spreading. Labellum oblong when flattened, midlobe short, densely ciliate, two rows of calli on the lamina. Column elongate, wings short, with calli at their apex.

This species is endemic to West Australia where it appears to be fairly widely distributed through the S.W. of the State. It is easily distinguished from the other species in W.A. as it is the only narrow leaved species.

3. *L. nigricans*. R.Br. "NIG-RI-CANS" becoming black

A robust species up to 30 cm. high. Leaf fleshy, variable in size ovate-cordate, often rather large, 12 to 14 cm. long, 6 cm. wide. Flowers up to eight fairly large, translucent-whitish with heavy deep purplish red striae. Dorsal sepal lanceolate, cucullate. Lateral sepals and petals linear spreading. Labellum sessile, obovate-lanceolate, trilobed; lateral lobes erect clasping the column, midlobe much fingered or dentate, recurved, lamina of labellum barren of calli except a few on the apex of the midlobe, column elongated, narrowly winged.

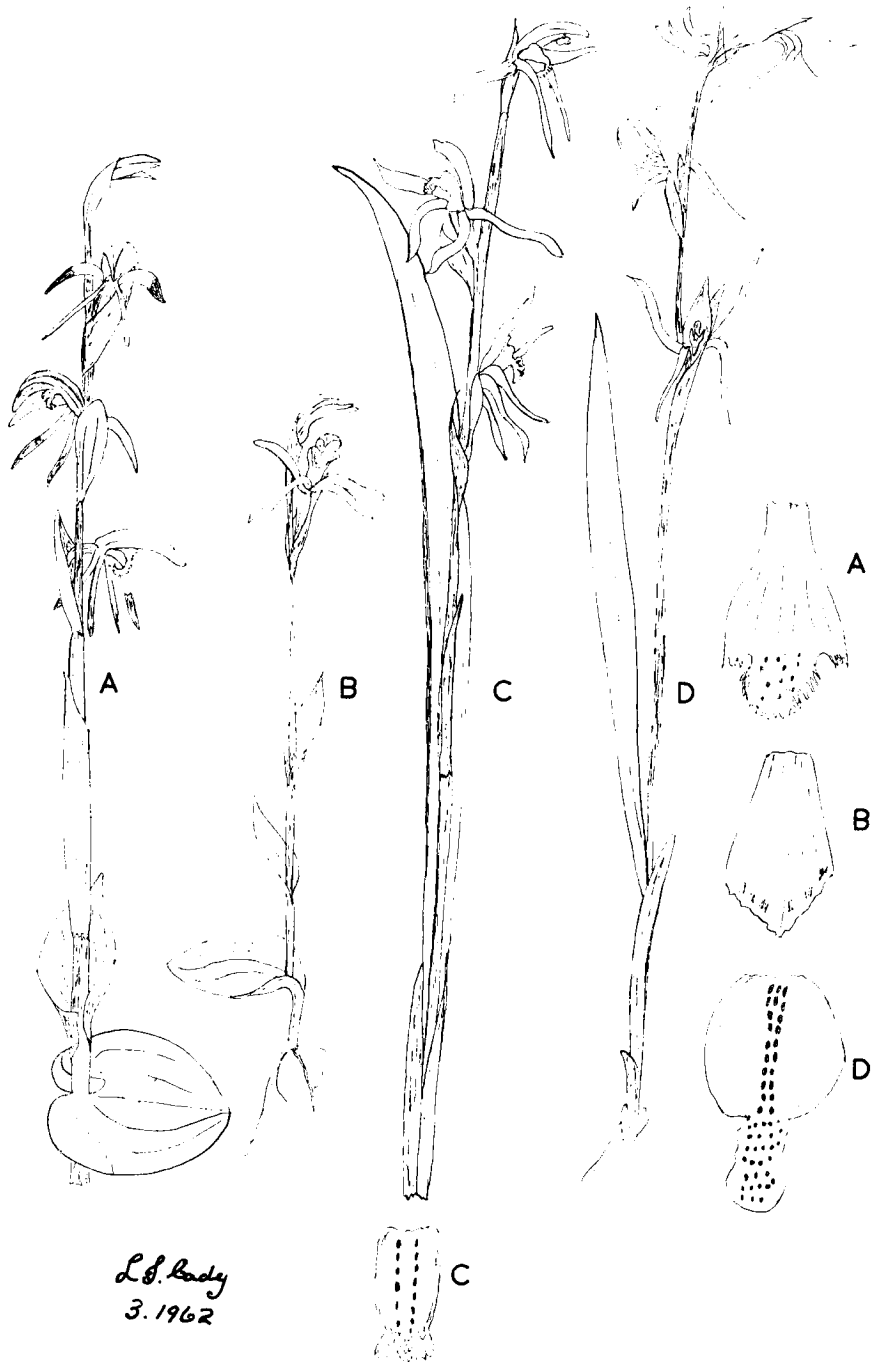
A cosmopolitan species found in all states of Australia except Queensland growing in densely packed colonies with unusually few flowers. It can be distinguished from other members, by its large fleshy leaf, and its trilobed labellum lacking laminal calli. Usually this species is found in damp sandy conditions on the edge of a swamp or such. Pure white forms of this plant are sometimes found but they too turn jet black on pressing.

4. *L. forrestii* F. Muell.

A slender plant resembling the last in habit, up to 23 cm. high. Leaves three ascending from the base, sessile, ovate-lanceolate about 5 cm. long 2.5 cm. wide, leaves reducing in size as they ascend. Flowers up to 4, white with pink shadings, marked and dotted with deep crimson. Dorsal sepal cucullate, elongate. Lateral sepals and petals linear, spreading. Labellum entire almost ovate, with longish basal claw, margins crenulate towards the apex, few scattered calli mainly towards the apex. Column erect, slightly winged.

This rare West Australian plant is closely related to *L. nigricans* differing by having three leaves and an entire unfingered labellum.

NATIVE ORCHID SPECIES AND HYBRIDS—First Release of Cool Growing Hybrids
D. Bardo Rose (*D. Kingianum* x *D. Falcocrostrum*) This outstanding hybrid retains the best features of both parents. 1½-2 inch seedlings, 10/- each. Other hybrids will be available shortly ask to be placed on my mailing list for new releases. Over 50 different species of Native Orchids always available to suit bush-house and glass-house culture.
WANTED: Plants of *D. profusion* and *D. Andrew Persson*.
Call and inspect any Sunday or by appointment: Roger Bedford, 13 Medusa St., Mosman, N.S.W. (Just at the top of Spit Hill) Phone XM 6075

THE GENUS *LYPERANTHUS* IN AUSTRALIAA. *L. nigricans* and labellum.B. *L. forrestii* and labellum.C. *L. serratus* and labellum.D. *L. suaveolens* and labellum.

All plants shown approx. half natural size, labella much enlarged.

AUSTRALIAN ORCHID REVIEW

Annual subscription 12/6 from Shepherd & Newman Pty. Ltd., Yurong St., Sydney, N.S.W. This beautifully presented periodical, 50 pages of art paper, is the journal of the affiliated Orchid Societies in every state of Australia. Receiving the active support of these societies its coverage is reflected in the wide range of articles for orchid growers of all interests and experience.

Each issue has articles for the beginner as well as information on new trends, introductions and technical developments for the more experienced.

The policy of the Orchid Societies, and their journal, to create as much interest as possible in the development and cultivation of orchids native to Australia, is obvious from the prominence they receive in each issue. For instance the June issue has *Dendrobium speciosum* on the front cover and an excellent and very complete article on this subject. Another article entitled "Growing our Common Pterostylis or Greenhood" is very well written. Of exceptional value also is the series of articles by the competent H. C. Slade, the one in the June issue being titled "Epiphytes", and general cultivation articles such as "Does Higher Temperatures Favour Growth".

The growing of orchids, whether Australian or beautiful horticultural exotics, is not difficult and certainly is rewarding. I grow a couple of Cymbidiums out under the trees and bring them into the house for long periods of flowering. The Australian Orchid Review can get you started, or better still, join one of the many local orchid societies in all parts of Australia. They are a friendly group of people. One of the reasons for the success of "Australian Plants" is the spontaneous support by the Orchid Societies in all states, with special thanks, if I may, to the N.S.W. Orchid Society.

WILDFLOWERS OF AUSTRALIA by Thistle Y. Harris

Price 42/-

This beautifully illustrated book was the first wildflower book I ever purchased 10 years ago and is still the best book available for colour plate presentation of a wide range of Australian wildflowers. There are 257 full colour plates of wildflowers two of which have been reproduced in this journal. There is a brief description of each flower illustrated giving the plant size, habitat, etc. The second part comprising one third of the book introduces the interested beginner to the common wildflower plant families and genera and with simple keys shows the difference in closely related genera and species illustrated in the first part of the book. The theme of the book is to assist beginners to determine the names of wildflowers from the colour plates and to encourage them to learn more about them. Aspects on their cultivation are not mentioned.

EASTERN AUSTRALIAN WILDFLOWERS by Thistle Y. Harris

Price 5/-

This is a booklet of special value containing full colour photographs of wildflowers common in the eastern states of Australia. The photographs have been carefully chosen by the author for your pleasure.

AUSTRALIAN PLANTS. Issues 1, 2 and 3 have now been reprinted. Copies of issues 5, 6, 7, 9, 10 and 11 are also available at 3/- each. Binders 12/-.

Books of Australian Plants, Etc.

WE SEARCH THE WORLD FOR RARE AND OUT-OF-PRINT BOOKS

ILLUSTRATIONS OF THE BUDS AND FRUITS OF EUCALYPTUS SPECIES, WITH AN ALPHABETICAL INDEX (Forestry & Timber Bureau) 8/6d. Post 1/-.

WILDFLOWERS (Clarice Morris) Aus. Outdoor Guides. Ills. 16/-, Post 9d.
WATTLES OF THE AUSTRALIAN CAPITAL TERRITORY. A booklet. 6/-d., pPst 5d.

ORCHIDS OF THE WEST (Rica Erickson) Col. plates. £1/5/0. Post 1/-.
EASTERN AUSTRALIAN WILDFLOWERS (Thistle Y. Harris) Col. plates. 5/-d. Post 5d.

THE EUCALYPTS (A. R. Penfold & J. L. Willis) Ills. £5/15/6. Post 3/-.

TREES AND SHRUBS FOR AUSTRALIAN GARDENS (E. E. Lord). Complete reference book, col. & b/w plates. £6/15/0. Post 3/-.

AUSTRALIAN PLANTS FOR THE GARDEN (Thistle Y. Harris) Ills. £3/3/0. Post 2/-.

Also new and secondhand 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

GROUND COVER PLANTS

By E. M. M. BODDY, *Eastern Park Nursery, East Geelong, Victoria.*

It is considered that ground cover plants should be divided into two groups when used in gardens and rockeries. The individual spreading and layering species should be separated from the suckering species because, from personal experience, I have found that the suckering species tend to overrun everything else and, once established, are difficult to eradicate, whereas the layering species are more easily kept under control. No great difficulty may be experienced if the layering and suckering species are used in different sections of the garden or on different rockeries.

INDIVIDUAL SPREADING PLANTS

P.—Prostrate, S.P.—Semi-Prostrate, L.—Low Ground Cover.

The following plants may be grown together with easy control.

Acacia aculeatissima (P) of the Anakie and Stieglitz form, makes an excellent carpet covering an area 4' x 4' quite easily. Difficult to raise from seed and raised occasionally from cuttings. The flower is very bright.

Frankenia pauciflora (P)—with its bright upturned bell flowers layers quite readily and is easily controlled.

Kunzea pomifera (P)—bright white flowers and sweet fruit, layers very well in light soil, grows naturally in the 90-mile desert. In the Canberra Botanic Gardens, very good results have been obtained in medium soil.

Micromyrtus ciliatus (P)—A prostrate form, which was obtained in the Wimmera is a jewel, and if assisted, will layer quite readily.

Myoporum Debile (P) with pink flowers and purple berries, has an extremely prostrate habit.

Myoporum humile (P)—White flowers, dark glossy foliage layers very readily, and is easily controlled.

Pultenaea penduncularis (P)—layers naturally and produces a very dense carpet of dark foliage with bright red and yellow pea flowers. Grows very well down hard slopes. Vide Box's Cutting, Western Highway, Victoria. In the Brisbane Ranges, Victoria, it will cover areas 20' x 20' without a break. Requires some moisture.

Rhagodia nutans (P)—with its small red fruit makes a thick carpet, but in the nursery there has not been any evidence of layering.

Baeckea ramosissima (P)—The Brisbane Range form has a very bright pink flower and is quite prostrate where its growth is not impeded by any other plants or obstructions. Requires some moisture and grows naturally in shale.

Hemigenia pungens (P)—(W.A. Snake bush) with its mauve prostanthera like flowers is extremely prostrate and of long flowering habit.

Leschenaultia formosa and the varieties "Golden Glow" and "Beaumaris Red" may suffer in the humid weather of late January and February if allowed to become too prostrate. They may be grown over rocks or cascaded over a low wall in order to increase air circulation. In the Canberra Botanic Gardens, they are giving good results growing over large sections of river gravel. Several varieties of *Lesch. formosa* collected by Mr. Ralph Boddy in October, 1961, are very interesting and the following names have been given to them, variety—*Lesch. formosa* var. "Cardinal" (L)—bright red, upright; var. "Wall-flower" (L)—red and orange upright; var. "Brilliance" (L)—bright red upright; var. "Scarlet O'Hara" (S.P.)—bright red; var. "Tango" (S.P.)—red and tangere; var. "Princess Pink" (S.P.)—Magenta Pink.

The main flowering would be late spring but they are also quite free flowering in mid winter.

In general terms, the idea of growing ground cover plants is one to save labour in the garden but I would prefer to see these good *Grevilleas* grown where they will cascade over rocks, raised beds, and walls.

Grevillea fascicularis (P)—Bright red.

G. ilicifolia var. *lobata* (S.P.) from the Wimmera, steel green foliage red and green tooth brush flower.

G. repens (P) with its bright red flowers.

G. thelemanniana (P) bright red flowers and mid green foliage, will spread over a large area.

G. tridentifera (P) the prostrate form with white flowers, slightly perfumed has much the same habit as *G. thelemanniana*.

G. juniperina var. *trinerva* (P) will make a very flat carpet and its flower is of very bright red.

G. laurifolia (P) makes a very dense carpet and one plant will cover an area 10' x 10' with ease.

G. rosmarinifolia (Desert Form) (S.P.)—originally obtained south of Horsham, Victoria, with steel grey foliage and red flowers; is semi-prostrate and is of special merit.

G. rosmarinifolia var. from the Little Desert near Dimboola, Victoria, collected by either Mr. Ken Stuckey or Mr. Keith Hateley is excellent, foliage is stiff and of steel green.

G. rankinsi (L) is to be used at Canberra to give the distant illusion of grass or lawn when planted en masse, foliage dark green, red flower.

G. trinervis (S.P.), red to bronze foliage and crimson flower, may also be used with effect.

Grevillea lavandulacea (S.P.) and (L) varies over a multiplicity of forms,

Caleocephalus brownii (L) With its mealy white foliage will cover a large area and is useful in a dry vase or in floral arrangements. Grows naturally to the ocean edge.

Hibbertia obtuneata (S.P.) and *procumbens* (P)—(spreading guinea flower) are very useful but require a cool position in the garden.

Darwinia micropetala (S.P.), the small scent myrtle with grey aromatic foliage and small pink flower heads abounds on the coastal area of S.A.

Brachysema latifolia (P) with a large bright red pea flower is quite prostrate and resembles *G. laurifolia* in foliage.

Correa minor (S.P.) has a spread of approx. 3' x 3' without attaining a height of more than 6".

SUCKERING PLANTS

The following plants generally appreciate moist conditions and some shade and are best planted away from plants of value in the garden. I find, at this moment, that *Scaevola macrocarpa* is smothering *Astralaria humilis* (P) in my own plantation. This plant, and other forms of prostrate *Astralaria* should have been mentioned previously.

Scaevola macrocarpa and *S. microcarpa* (P) make very dense coverage.

Viola hederacea (P) is a delight in a shady spot

Alpine ranunculas (P), *Lobelia anceps* (P), *Pratia* (P), *Veronica cracilis* (P), etc., are well enough known without enlarging on them.

Brachycome melanocarpa with its large daisy flower of mauve-pink makes a moderately dense coverage without becoming a menace.

Lippia is used extensively for lawns in the Wimmera and South Australia and is only cut to remove the flowers. Thrives in a hot climate but is also a useful rockery or ground cover plant in the cooler regions.

Lotus corniculatus of quick growth and bright masses of yellow flowers is extremely hardy.

Ground Covers For Coastal Planting

By R. HILL

How often when visiting coastal areas do we see homes and weekend cottages in need of some kind of ground cover planting? Far too often.

Most home owners like to have a lawn, but more often than not, these are rather difficult to establish particularly if the area is only visited periodically. There are plants, however, which can be just as attractive if not more so than the conventional lawn. Also these plants can be used in shrubberies, on banks, slopes and in bare open places to cover the ground which when established (and this usually takes only one season) lends a pleasing appearance to the property and also keeps down weeds and maintenance to a minimum. The following plants have been used this way.

Scaevola crassifolia

This is the "Thick-leaved Fan Flower" which inhabits many miles of Southern Australian coastline and forms spreading bushes several feet across and one to two feet in height. When planted in thick groups it forms a pleasing cover especially for large areas. As its name suggests the foliage is glossy green and thick in texture, flowers being pale blue and produced at odd times throughout the year. Seed or cuttings are the usual method of propagation.

Nitraria schoberi

The "Nitrate Bush" is a very useful plant in salty areas and can be useful for covering large banks or slopes facing the sea or in low lying areas near the coast. The grey foliage is always pleasing on the three to four foot high bushes which spread ornamental being like bunches of purplish-brown grapes. This is a very useful plant for sand dune planting for the prevention of wind erosion.

Myoporum parvifolium

The lovely prostrate form of this useful plant is known as "Creeping Boobialla" and is a most useful species which should be in every garden. It is found in southern coastal areas and can be used in place of a lawn in seaside gardens.

In habit it is completely prostrate, rooting into the ground as it spreads and soon forming a thick cover of small linear leaves which in early summer are smothered with attractive white *Eriostemon*-like flowers, which in turn are again followed by small greenish berries. At Port Augusta this plant has been used most successfully as a lawn and in Adelaide it is becoming more widely known and grown for its pleasing appearance and tolerance of dry conditions. It is easily propagated by cuttings or layers.

Acacia sophorae

The value of the "Coast Wattle" lies in the fact that it is able to grow in windswept areas along the coastline and is useful for covering large areas buffeted by salt winds. This wattle grows to about three feet high under these conditions, covering many square yards. In the South East of South Australia this plant often grows in association with *Boobialla* (*Myoporum insulare*) and is often wrongly called this by local residents, which it somewhat resembles in leaf appearance.

Rhagodia spinescens* var. *detophylla

As a foliage contrast in cover plants this "Climbing Saltbush" is excellent, being greyish green in colour with a low spreading habit. It is quick growing, sending out roots from the branchlets as they spread over the ground. It is easily grown from cuttings and comes from South Australia, eastern states and Tasmania.

Calocephalus brownii

The "Cushion Bush" is a very apt name for this beautiful plant which has been grown in England and the Continent for many years in bedding displays but is only in recent years being recognised here in Australia as a useful garden plant. As its name implies in habit it is like a large spreading cushion one to two feet high, a single plant often covering many square feet. It is silvery in appearance and when planted closely together makes a striking ground cover. Some good effects can be seen along the Coorong and South Coast districts of South Australia. It grows easily from cuttings.

These are some of the better known coastal ground cover plants but the following also warrant trials under similar conditions.

Acacia rotundifolia (A. *obliqua*), *Kennedya prostrata*, *Scaevola microcarpa*, *Westringia dampieri*, *Kunzea pomifera*, *Correa* species.

J. L. ABEL REPORTS FOR N.S.W.

Cover Plants for Coastal Areas—not vigorous plants.

Lobelia anceps—A native of West Australia that could become vigorous in damp positions but an excellent plant as a small creeper with its blue fan shaped flowers. The eastern species of *Lobelia* are also suitable.

Geranium pilosum—The dense mat of red and green foliage responds well to cutting back after flowering. Small pink flowers.

Mirbelia reticulata—Under its natural conditions this beautifully pink pea flowered plant covers large areas of ground becoming very matty. It grows well on sodden soils and even on dry areas up to a height of one foot.

Pelargonium australe generally grows on gravelly soils with outcrops of sandstone providing good drainage. It does best when growing near an old rotten log that produces some extra plant food.

Connelina cryanea will adapt itself to both heavy or light soils. It could become a pest in good soils or moist locations but never in medium to poor soils.

Isotoma axillaris—Set a few plants out in the open bed or rockery for a good but not vigorous cover with pale blue flowers over summer. Prune heavily after flowering.

Covering Plants for Coastal Areas—for covering patches.

Oxylobium scandens will grow both on heavy or sandy type soils, the vine producing a yellow pea shaped flower. It does best on sandy soils where it will cover a large area.

Clematis microphylla—This vine is not a strong climber like other species of *Clematis* and usually stays on the ground as a good cover plant.

Desmodium varians is usually found growing along well-drained heavy clay pans mainly under *Eucalyptus maculata*. This small pink pea shaped flowered plant, very similar to *Kennedya* is quite successful in a hanging basket. *Plectranthus parviflorus*, the cocksbur flower does best where there is some moisture although it will stand long dry spells. It is easily controlled by cutting back after summer flowering. It is also good for basket work.

Scaevola ramosissima. This is a very pretty plant with its large fan shaped flowers, mauve to purple in colour. On gravelly to heavy but well-drained soils it spreads over the ground as if it was a vine forming a mat of twining growth with flowers most months of the year. It will not stand wet feet and will die off very quickly if the water cannot get away from the roots. A perfect cover plant if you can grow it.

Dampiera. All species make good cover plants with pale to deep blue flowers.

THE COTTON WOOL SANDWICH

A METHOD OF GERMINATION OF SEED — By ROSS DOIG

A method used in the teaching of botany for the observation of plant growth, tried as a result of failures with the more usual methods (outlined below) of germinating Leguminosae, Acacia and other hard and/or waxy testa seed.

Method (a) Pouring near boiling water over seed, keeping immersed until swollen, and then sowing in the normal manner.

Method (b) Sowing at the usual depth and maintaining a fire on the surface for five minutes, then watering thoroughly from the bottom.

Method (c) Nicking (slicing a small piece off) the testa and sowing as normal.

Disadvantages became apparent as follows:—

Method (a) The type of soil is all important as drying out takes place if the mix is too sandy and damping off or rotting occurs with too loamy a mix or if a sandy mix is overwatered (particularly with Leguminosae from W.A.).

Method (b) Better results than (a) probably due to partial soil sterilisation, but too great a proportion of seed was destroyed by heat and some species damped off (others in the same seed bed did not).

Method (c) Disadvantages as for (a).

COTTON WOOL METHOD

Sterile cotton wool from the standard pharmaceutical roll is cut to selected length, moistened thoroughly, and placed in a shallow non-rusting container, e.g., plastic or aluminum trays. The seeds are placed in the folded cotton wool, but before doing so it is advisable to turn under the upper and lower edges and allow the lower edge to project a little (to make inspection easier).

All hard testa seed should be nicked by slicing a section of the seed case on the side furthest from the embryo, but fine seed, e.g., *Leptospermum* and *Melaleuca* may be sown direct.

REMARKS:

Germination is rapid, without the need for the radicle to penetrate the soil and the hypocotyl also thrusts upward with no hindrance.

Boiled water would doubtless be better than tap water but I have experienced no trouble with the latter. Seedlings may be transplanted when the cotyledons free themselves from the testa and I have found the following a suitable method:—

Saturate the soil in the tin or pot, allow it to drain, insert a knife blade with sideways pressure to the depth of the radicle and lower the seedling into the V groove. The medium is then pressed against the seedling and the container placed in shade and protected from wind for at least a week, after which time it can go into the open (depending upon the species).

Seven pound tins are most suitable as the roots are free to roam and in the process anchor the plant well. Having observed the rapid root growth relative to slower top growth with some Acacias and Legumes small tins seem unnecessary.

And finally the advantages of the method.

(1) Complete control at all stages.

(2) A single transplant at a stage when the seedling is strong and healthy.

(3) The sterile medium combined with controllable warmth, darkness and moisture.

(4) No damping off, radicle develops freely, the testa is shed easily and good growth is made before predators attack the seedlings.

MULCHING TECHNIQUES FOR AUSTRALIAN PLANTS

By T. R. N. LOTHIAN—*Director, Botanic Garden, Adelaide.*

Under natural conditions our Australian plants are mulched according to the habitat in which they grow. In high rainfall where vegetation is lush, deep rich forest soils develop because of the breakdown of organic matter. On the other hand, arid regions and to a certain extent in the high alpine regions mulching material is inorganic, either sand, pebbles or rocks.

In our gardens we grow all types of natives from various habitats under one environment. Mulching undoubtedly is beneficial. For those plants which are from a higher rainfall region the use of an organic mulch produces a deep rich top soil through which the roots ultimately penetrate. If ideal conditions can be found in the average home garden for plants from the arid regions (they need plenty of sky room) the use of organic mulch is satisfactory, but stones and pebbles or coarse sand can be used equally well.

Some years ago when some initial plantings of natives were carried out at Leigh Creek Coal Field (350 miles north of Adelaide in an eight inch rainfall on a gibber plain), excellent results were achieved with a four to six inch mulch of creek gravel or fine pebbles applied around the establishing plants. This method has continued. As a side line it is most interesting to see the wide variety of seedlings of native plants which germinated after the mulching had been applied.

In Adelaide gravel mulching can be used although normally organic material is preferred. Whilst there are areas of near neutral soils, or soils which lack clay marl, the majority of our soils in Adelaide have a comparatively high pH. Organic matter assists in reducing this and if enough is applied even reducing the leaf chlorosis.

The materials which have been used are many and varied in origin. Good grade garden compost is an excellent standby and applied up to two or three inches deep as often as possible assists in the conservation of moisture but, more important, the texture of the soil. Well decomposed animal manures have been used or these, together with compost, with satisfactory results.

Probably the greatest standby which we have used in the garden is sawdust, wood shavings and buzzer chips, in that order of preference. In some instances over twelve inches of sawdust have now been applied over a period of six to eight years. Termite populations have not increased, the quality of the soil appears to have improved and most certainly the growth of the plants is considerably better than where no mulching is carried out. The main drawback of sawdust is the formation of a surface tension which prevents water from readily entering it; but this can be overcome by spraying a weak solution of detergent onto it before watering.

Another material which we have used in quantity is crushed almond shells. This is ideal and very few weeds grow once the initial populations have been removed. This comment obtains also in the case of sawdust, wood shavings and buzzer chips as these materials are sterile.

Leather shavings and scrapings have also been used. Being acid in nature these appear to have an extremely beneficial effect on the soil and a layer of a couple of inches or so lasts a considerable length of time.

Some applications of fertilisers are given regardless of the type of mulching used and these should not be forgotten.

Our experience with these practices indicates that they are usually extremely beneficial to the soil, and therefore ultimately to the plant. It should be left on the surface and merely added to over the years rather than an attempt being made to "dig it in".

SAWDUST AS A MULCH

By BERNHARDT E. SCHUBERT

We have used only Australian hardwood sawdust mulch over a period of ten years and found it is unexcelled as a means of conserving moisture during long and dry summers.

When sawdust is used on an unplanted area, the whole area is first covered to a depth of one foot. For planting dig a hole in the sawdust about one foot square down to the original soil and fill the hole with garden loam. The plant is planted in this soil. When used to a depth of one foot the sawdust can be put straight over a fairly thick and strong growth of weeds, provided they are first pressed flat and the sawdust consolidated by stamping it down. Some strong and persistent weeds may protrude through but they are easily pulled out and weeds will soon be completely killed out.

If sawdust is put around existing plants it should be at least 4-6 weeks since it has been sawn. As a rule I do not use any fertiliser to counteract the effect of sawdust but if yellowing occurs in the plants some such fertiliser as blood and bone may be applied to the top of the soil around the plants with advantage. If planting is carried out during dry weather, regular watering is required until the plant is established. Thereafter watering can be more or less entirely discontinued with most types of plants.

Some people have complained that sawdust has a disadvantage in that the surface becomes loose and blows in dry weather. This can easily be overcome by spreading gravel to a depth of $\frac{1}{2}$ inch over the surface. The gravel never becomes lost in the sawdust and eventually settles down to a nice surface enhancing the appearance of the area treated. When sawdust is first put down, one is inclined to object to the raw, some might say, unpleasant colour but in only a few months it begins to mellow, eventually, to a nice brownish-tan colour which harmonises very well with a native garden.

MULCHING WITH SAWDUST AND SHAVINGS

By PAX LINDSAY

I think most people at some time or another have given thought, on various angles, how the vast heaps of sawdust and shavings may be put to some useful purpose. It has been utilised in the garden with varying results. The mode of application has been haphazard, and in most cases, guesswork, with the result that two schools of thought have cropped up—it is good or it is no good.

Because of the high cost of cow manure, tan bark and spent hops from breweries, all of which made perfect organic fertilizers, the stage had arrived when I was economically compelled to take a more scientific approach to the usages of sawdust and shavings. I have found them to be more uniform in their analysis (on an average) than any other form of organic matter. Animal manures, leaf moulds and compost are not uniform, and because of this it is difficult to assess the correct amount of chemical fertilizer required, and you must bear in mind that organic matter and fertilizer are very closely related, with each dependent on the other for best fertility. I would like to make it quite clear that wood shavings and sawdust are very low in fertility—but they are uniform.

The indiscriminate use of shavings and sawdust should be avoided. The amount of nitrogen in 100lbs. of shavings is 0.2lbs. That used by fungi to decompose the sawdust is 1.4 nitrogen. Therefore, 1.2lbs. nitrogen would have to be added to the soil. In most cases the micro-organisms in the mulch are more successful than the plants in obtaining the nitrogen required and this

explains the temporary nitrogen deficiency observed in plants after the incorporation of sawdust and wood shavings. This nitrogen may be replaced by adding Sulphate of Ammonia, Urea, Nitrate of Soda, Calcium Ammonium Nitrate and others. With warmer weather, the need for soil moisture retention is apparent. At the commencement of spring, when the soil is raked over between trees and shrubs and fertilized, I suggest that Bumpercrop A or Nitrophoska, Uni-Gro the modern soluble pelleted form of fertilizer, be broadcast on the soil surface and again on top of a 2" thick mulch of shavings, at the rate of 2oz. per square yard or approx. 1½ oz. sulphate of ammonia.

Sawdust and shavings are being used by nurserymen for potted plants. They are easily mixed into the soil and can be done so uniformly. They provide good aeration provided good granular size is retained by using the larger shavings with the sawdust or preferably shavings alone. They retain moisture, assist in retaining mineral nutrients and help prevent leaching of fertilizer.

An excellent orchid mixture can be made up by mixing three parts sawdust, one part fowl manure, turn over each week for three months and mix with equal quantities of wood shavings and pot the orchid plant in this mixture. No soil whatever is required. A potting mix for shrubs or indoor plants can be made by mixing 5 lbs. Dolomite with 1 cubic yard of sawdust and turn it over regularly and mix with either sand or soil. Gardening can never be an exact science, but a more scientific approach is desirable if you are to learn about and discover new ways of doing things well, such as I have found with the use of sawdust and shavings.

NATIVES IN HOT WEATHER

By L. BAKER, *Middle Swan, W.A.*

I thought perhaps my experience with small native plants during the hot weather (and W.A. had their quota of centuries last summer) might help other beginners. We live 12 miles N.E. of Perth and our soil is a clay. A white swampy clay.

Around about October I start putting mulch, such as grass without seeds, lawn clippings when they have dried out, thick pieces of bark from the trees that have shed it in the bush, and anything else I can find. Then I get fruit tins or jam tins, cut one end out, the other is usually half cut out, so cut it to bend back. Then I sink them into the ground near the small plant, bend the lid back it helps to shade the roots, and when the tin is filled at watering time you know it is taking the roots down away from the heat. Also I screw up a ball of paper, and drop in each tin, that stops evaporation also. When winter comes I take up the tins and fill in the hole with good soil and bend the top back again.

This Christmas I was away three weeks, and we had one century after another. I came back once a week to water, and my wee plants of about three inches high, right out in the open, just grew by inches from week to week. Where there are a group of bigger plants I stand a gallon paint tin with two nail holes punched in. I do not put it into the ground in case I disturb the roots, but it drips out and goes down instead of on the surface. Also if you have any rocks you can collect, place one near a group of plants, or one by each to make the garden look attractive, and natural looking, they keep the moisture in. I put a circle around my small Eucalypts to protect them, and with a tin for watering they just leaped ahead in all the hot weather.

I was so pleased after my holidays to see my plants looking so well, I felt I must write and tell someone else to give them my method of keeping plants alive.



Kennedyas

Running Postman or
Scarlet Corai Pea

By ALF GRAY, Albany, W.A.

Reprinted from *Wildflowers of Australia*. Blocks by courtesy of Angus & Robertson.

The genus comprises eleven species in the western and three in the eastern states of Australia. Only one has continental distribution, *Kennedyas prostrata*, "Running Postman", which is found on a great variety of soils. All *Kennedyas* are valuable as a ground cover and for fixation of light soils. Some are described as "woody climbers" while others are considered as "prostrate creepers". All species can be induced to climb on wire or trellises and if well treated make rapid growth, twining so closely as to completely cover an area of netting in a season or two.

KENNEDYAS FOR GROUND COVER AND SOIL IMPROVEMENT

There are problems of cultivation in native gardens which creeping legumes can assist in solving. To establish a wide range of trees, shrubs, perennials and herbaceous natives under conditions where ordinary hoeing and digging is out of the question, these plants come into their own. Instead of root disturbing cultivation, the same, if not superior benefit, may be obtained by dressing the surface with virgin loads of sands at regular intervals.

The addition of lime and fertilisers to this top dressing before application will stimulate without endangering the balance. The preference of *Kennedyas* for light soils with lime and other mineral contents indicates their suitability for this ground covering purpose. There are many other creeping legumes of course but few to equal the genus in hardiness and adaptability. The value of the nitrogen fixing propensity must also be of assistance in preserving the balance and health of your garden.

Kennedyas rubicunda

"Dusky *Kennedyas*"—this is the eastern representative of this group and is fairly common in cultivation. Its habitat is along the south-east coast in forest country where it climbs vigorously in the undergrowth. It is found as far north as Toowoomba where I have seen a very good form. I have found it very useful for quickly insulating a hot wall where the sun beats

all day, as in the mallee country. If given sufficient watering and occasional dressings of blood and bone, it will grow anywhere in temperate regions where the frost is not too severe, but it seems to revel in limey soils more especially. The flowers are longest and largest of the genus. Of a dark red colour and carried in short drooping pannicles, slightly within the foliage.

Kennedya nigricans

"Black Flowered *Kennedya*"—This is another strong flowerer with brownish black and yellow flowers. This one is found on the south coast of Western Australia from Cape Riche to Cape Arid. Always near the sea it favours slopes of gullies but for never more than a few miles inland. In its natural state it is a climber solely and as strong and quick as *K. rubicunda* where conditions suit it (limey soils in mild climates). Where the "Dusky *Kennedya*" grows, the "Black *Kennedya*" should be equally at home and the pair intertwined on 6in. wire netting will give good ornamental shelter indefinitely.

Kennedya becxiana

This is a very rare member of the woody climber type and its location is so remote (150 miles east of Esperance and north of Israelite Bay) that little is known about it except that its flowers are red and that it grows under semi arid conditions on rocks in elevated positions. C.A. Gardner reports it as the most handsome of all *Kennedya*s.

Kennedya macrophylla

This species is found on the south coast between Albany and Cape Leeuwin. It has rosy lilac and yellow flowers on 6-inch erect stems with many flowers in the head. The leaves are about the shape and size of the "Black *Kennedya*" but are covered with silky hairs especially on the reverse side and these have a grey appearance. This species is now confined to coastal dunes and limestones but evidently, formerly climbed trees which are no longer there. It rapidly forms a network of creeping leafy stems and should be extremely useful in the fixation of dunes.

Its flowers would be very attractive in cultivation as a climber, because of the manner in which they are borne, well out from the foliage. This is a very fine member of the genus as yet hardly known in culture.

CREeping KENNEDYAS

All the rest of the genus are more like "Running Postman" in growth having more slender stems, but they will all climb if planted against netting and some to an astonishing height.

Kennedya coccinea

"Coral Vine"—This is one of the best in this group and is widespread in south western Australia, mainly in the forest country. Its flowering is similar to *K. macrophylla* but on a much smaller scale and the leaves are glabrous and nicely reticulated. I have used this *Kennedya* in western Victoria with good results. It is a fine sight to see in full flower about October with all the flowers facing the same way on a wall as neatly as if artificially arranged. Here in Albany, *K. coccinea* seeds freely after clearing fires, and may cover the burnt over areas the following season with a carpet of glorious colour, not always appreciated by the owner after being tripped up.

Kennedya prostrata

"Running postman" is found from the west to the east coast of the continent and occurs alike on mountain ranges and coastal dunes. Considerable variation in the foliage is found, the leaves often being crimped or undulating. The pods are inflated, sausage like, and resemble those of *Hardenbergia comptoniana*.

Kennedyia stirlingii

Although it has pannicles of brownish red flower, and is more leafy, it is very similar to Coral Vine. It favours red gravelly soils north of Perth in the Darling Range, particularly around Bindoon Hill. The flowers are very attractive but the leafy growth gets a little untidy at times. I think this one should be confined to the prostrate creeper habit because of this latter factor making a good ground cover. *K. stirlingii* is a good foliage plant and nitrogen fixer.

Kennedyia eximia

This species is more like *K. prostrata* than any other but is more refined, covering not more than three feet diameter as a rule. It likes clays and loams inland from Ongerup to Ravensthorpe. The leaves and flowers are on a much smaller scale but what this plant lacks in size it makes up for in sweetness, neatness and tractability with its bright red flowers. It is a very good *Kennedyia* for the small garden with the ordinary heavy garden loams. It can be relied upon to remain modest, and resist the urge to take possession, no matter how good the conditions may be.

Kennedyia prorepens

"Western Purple *Kennedyia*"—this is a small leaved, small flowered, prostrate creeper as the name indicates. It likes the limey soils north of Norseman and ranges into the mulga country, north east of Kalgoorlie. The flowers, though small are numerous and of a rich purple colour. It would hardly be at home in acid mountain soils but can be expected to thrive on low rainfall inland and on coastal limestone no matter what the rainfall is. It is very hardy in culture and easy to raise from seed.

Kennedyia procurrens

"Eastern Purple *Kennedyia*"—true purple flowers as large as *K. coccinea*, make this one of the best ornamental species. The foliage is glabrous and neat making it an all round desirable plant. It is very uncommon and for many years following its original discovery in the early days was thought to be extinct or else a myth. Even eastern herbariums did not have specimens until it was rediscovered by D. N. Gordon and G. W. Althofer. It favours red sandy soils of the Pillaga Scrubs in north central N.S.W. and along the Moony Highway east of St. George in Queensland. Even if W.A. can claim more species it has nothing superior in *Kennedyas* to *K. procurrens*. Lime is not essential as it grows on neutral or acid soils.

Kennedyia carinata*, *K. glabrata* and *K. microphylla

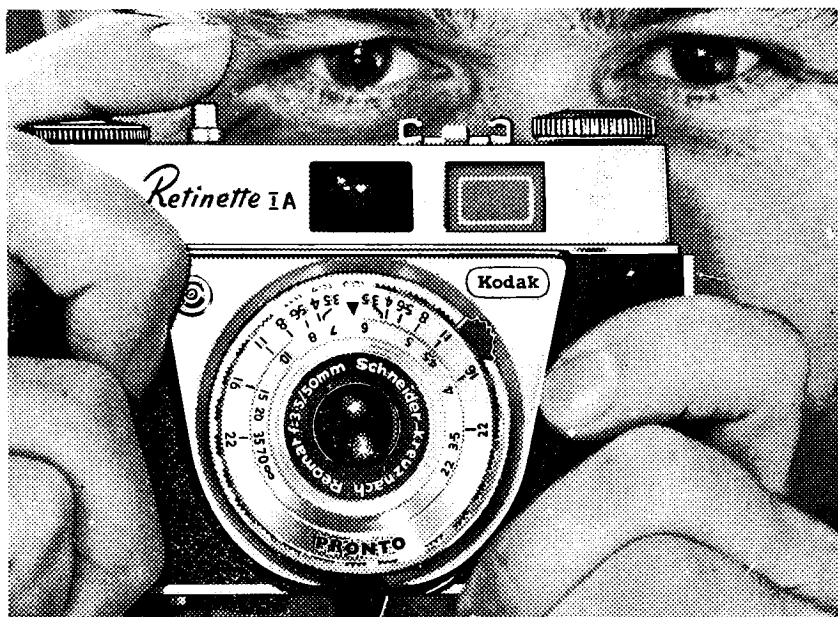
These three south western species hardly warrant detailed descriptions but they are the less interesting members of an important genus. The first two are similar to *K. coccinea* in flower colour and foliage. *K. microphylla* which ranges from Augusta to Kalgans Plain is closer to *K. eximia*.

COVER PLANTS FOR QUEENSLAND — D. Hockings, Springbrook

The best ground cover plant I have grown in *Kennedyia procurrens* from the Moonie Highway, S.W. of Dailey. There it grows 4-5ft. runners but in my garden it covered a bed about 40ft. by 5ft. in two (2) years. It has no tendency to climb and it did not root from the runners. It has very attractive veined or crinkly dark green trifoliate leaves and when well grown, about 10" spikes of dark purple to indigo blue flowers. It has a long flowering period and lasted for several years.

Calandrinia balonensis is another but needs a sunny position. I have a plant from the red sands of the Moonie with a 3ft. spread. In the family *Portulacaceae* it has a fine petalled pink to purple flower with 1-2 inch diameter, thick fleshy leaves mostly spatulate, up to 3" long. A perennial.

Photograph your plants with Australia's best value 35mm. camera



KODAK RETINETTE IA

When you start a pictorial record of your flora specimens you have something to look back on, to compare, to be proud of. The ideal camera for this is the Retinette IA. Being 35mm. it offers you the versatility you need; lets you take brilliant colour slides, colour prints and black and white snapshots. Simple to operate, the Retinette IA features a fast colour-corrected $f/2.8$ Schneider lens; shutter speeds to $1/250$ th sec.; modern bright-line viewfinder showing exactly the picture you'll get; rapid lever wind; built-in self-timer; synchronized for flash. Complete with imported, always-ready leather case, the Retinette IA is the best value 35mm. camera at just **£19.17.6**

This mighty camera is also available as a complete colour photography outfit, including flash equipment and Kodachrome Film. Beautifully boxed in a presentation gift pack. Price **£26.12.6**

Kodak

KODAK DEALERS EVERYWHERE
KODAK (Australasia) PTY. LTD.

PHOTOGRAPHIC SECTION

The interest in the colour photography of native flowers has increased enormously and the creation of a photographic section is necessary, in fact it has been demanded. Mr. Edward R. Rotherham, Lot 1, Tills Drive, Warrandyte, Victoria, a lecturer in photography, has agreed to lead this section. Aspects of this section are:

1. Each state shall form its own photographic group, engage in activities as they wish and maintain contact, list colour slides for exchange, etc., through their state newsletters.

2. Exchange of colour slides—There are experienced photographers in West Australia, Victoria and N.S.W. who have already requested a colour slide exchange to diversify their collection of slides of plants growing in their own areas. It is hoped that competent photographers in all areas of Australia will join them. Where are those photographers in Nth. Qld., Tasmania and South Australia?

3. Photographic competition—The state groups will run their own competitions and probably exhibit at the Society meetings. One of the limiting factors in the production of the journal has been good suitable colour slides. Let us have a competition, the most suitable slide being produced in full colour in the journal.

Based on the high standard set by the late Frank Hurley in the many plates reproduced in this journal, in all aspects such as presentation of a group of flowers in a natural-like arrangement, showing leaf, etc., detail, colour harmony, etc., the first competition will be a colour slide of *Hovea* species. There is no limit to the number of entries submitted. This contest closes on October, 1963. Slides of numerous other genera are also needed. For the S.E. I need a slide of the Victorian Christmas Bush, *Prostanthera lasiantha* and from the west, *Verticordia* species and from the north native orchids. The contest for these four competitions will close in July, 1963.

4. Photography for the amateur—You will note that this section has been started in association with Kodak (Australasia) Pty. Ltd. Competent officers are at your service in all the main stores, to advise you personally, or by mail, on photographic problems. They are there to advise you how to start on this fascinating hobby or to help you to take better photographs so take advantage of this service without obligation. Mr. Rotherham will also assist all those who write to him and comment on aspects of colour slides sent to him for advice on how your technique can be improved.

To assist the street tree project another competition will be for the best black and white exposure coupled with a colour slide from the same position, of a good street tree (native) showing desirable features of a street tree with a measure of relative size such as a pedestrian or vehicle nearby.

YOUR JOURNAL AUSTRALIAN PLANTS

THIS ISSUE—The factors affecting the growing of native plants may be grouped (a) Below soil surface conditions—soil, its treatment, drainage and the sub soil region, (b) Soil surface—its cover by mulching and ground cover plants, (c) The plant—its choice, care, pruning, protection and environment, (d) The external elements—sun, aspect, fertilisation and watering.

The southern and western states suffered extremely hot and dry weather conditions during the last summer. The summer care of natives is easy and rewarding and this issue correlates the experiences of the experts throughout Australia on aspect (b) above with reference to water conservation. Future issues will deal with the other aspects and readers are invited to submit their experiences on all the aspects involved.

The article on Kennedya is very good but lacks sketches. Please forward flowering specimens and advise your experiences with them. Who wants to grow these, I do for one (editor) so please forward seed.

Success

We are proud to have established "Australian Plants" as the national preservation journal for Australia. Having the membership and resources the societies listed on page 30 took this ambitious step in 1959 and after much hard work have completed Volume 1 with this issue. The policy has been not to deal with internal society affairs or to seek members. It has been to encourage and publicise the preservation, cultivation and development of the native flora of Australia, our national heritage. Our success has been due to the enthusiastic support received from over 100 other societies throughout Australia, the public libraries, Local Government authorities and the professional botanist. Special mention should be made of the publishers of Australia and John Sands Pty. Ltd.

The next issue Vol. 2 Issue No. 13 will contain a comprehensive index and a glossary of botanical terms for Volume 1. Have you got your binder for Volume 1 yet. With its strong plastic covered green cover and pins it is exceptional value at 12/- incl. postage (cost price). You will now need another binder for Volume 2.

Copies of past issues of "Australian Plants", issues 1, 2, 3, 7, 9, 10 and 11 are available at 3/- each.

BETTER CUT FLOWERS from N.S.W. President

In a recent survey of a number of garden plants to ascertain their keeping qualities as cut flowers, one very interesting reaction has been recorded. It was first noted that cuts from the ginger plant, *Hedychium coccineum* and the alpine ginger, *Alpinia speciosa*, stayed reasonably fresh when put in water for a period of four (4) weeks and that the water remained clean.

In a test conducted over two weeks, No. 1 bowl containing a ginger plant retained a fresh plant and clear water, No. 2 bowl with a ginger plant and a *Crinum* Lily finished with murky water and faded plants and No. 3 bowl containing a lily only, finished with slimy dirty water and a partly decomposed lily stem.

Cut flowers need to take up clean water through their stems and maintain their freshness but bacterial fungus building up in the stagnant water attacks the flower stalks blocking the water channels. The presence of the ginger plant appears to retard this build up of fungus.

Some members may wish to continue this investigation, particularly country members as, although the native ginger is not procurable in Sydney, it can be found growing naturally on the edge of rain forests.

Nourish Native Plants with *AQUASOL*!!

Your native plants need Aquasol NOW! Aquasol provides all the nourishment native plants need for strong, healthy lovelier growth—even in the poorest soils.

Easy to use: no digging-in needed. Just add water to get gallons of liquid manure in seconds.

Instant action: Growth is stimulated and sustained because roots absorb Aquasol immediately.

Get a handy 1/4lb. package of Aquasol from your garden supplier today. Also available in 2lb. jars, 4lb. packs and larger economy sizes.

Aquasol is another proven plant food from Hortico.



TELEPHONE: 72-7404

Surrey Beatty & Sons

PRINTERS, TOOLMAKERS AND GENERAL ENGINEERS

For all business or social printing requirements you would be well advised to contact us. Our quotations are given prompt consideration. We are never further than your nearest telephone.

RICKARD RD., CHIPPING NORTON, N.S.W.

(AT MILPERRA BRIDGE)

STREET TREE STUDY SECTION SURVEY

Report by E. J. THOMPSON

It is evident that some councils have gone to a great deal of trouble to give the Society as much information as possible whilst others have ignored our request. However, as a result of the information available at present it is possible that the following will be of interest to all.

The small number of Acacias being grown seems to indicate that they are not being recognised as being suitable, of if they are, the powers that be are very reluctant to grow them. The number recorded is 7. Euc. species being grown is 30. The species recorded number 106, but this includes some trees that are obviously not really street tree size as they are more suited to parks.

It is encouraging to note that 49 councils of the many who replied have agreed to continue the work on this survey by joining an experimental group. By the time this journal is published all interested parties should have received their lists, etc. If not will they get in touch with me and I will be pleased to send one along. If any person who is interested in this further survey work I shall be pleased to hear from them as soon as possible.

I wish to obtain some extra information on Melaleucas as street trees and would like to hear from any reader on this subject. Also I would like to have some information on *Geijera parviflora*.

Most grown species No. Councils Rainfall in.

<i>Tristania conferta</i>	16	15-50	Limestone to clay soils. Good grower. Heavy maintenance where overhead wires are present.
<i>Grevillea robusta</i>	13	10-55	Sandy loam to clay. Mainly good slow grower. Require lopping under wires.
<i>Brachychiton populneum</i>	12	10-50	Mostly mixed to heavy soils. Fairly good to good.
<i>Euc. ficifolia</i>	9	10-45	Quick grower—useless where overhead wires present as shape is spoiled.
<i>Melaleuca styphelioides</i>	9	12-27	Mixed soils. Mixed success. Not particularly good for streets.
<i>Callistemon viminalis</i>	7	15-45	Loam to clay. Care needed for first three years, then good.
<i>Euc. torquata</i>	7	10-31	Clay to mixed soils. Satisfactory to good as a tree.
<i>Eugenia smithii</i>	6	15-25	Mixed soils. Not very favourable as a street tree.
<i>Lagunaria patersonii</i>	6	15-25	Light to heavy soils. Good results.
<i>Ficus hillii</i>	5	31-55	Mixed soils. Mixed results from good to not very good.
<i>Melia azedarach</i>	5	10-31	Good for wide streets.
<i>Callistemon saligna</i>	5	15-45	Damages kerbing and water table. Good where none. Good reports after early difficulties.
<i>Brachychiton acerifolia</i>	5	10-45	Mixed report. Seems to be doing better at seaside.

EDITOR'S NOTE—For the series in this journal to be of real assistance to Local Government authorities we realise that more precise and detailed facts are needed. The aim is to present in each issue a tree suitable for street planting with a photograph, preferably in colour showing an adult tree on a sidewalk with a pedestrian or vehicle as a size comparison, illustrating shape, shade area, colour, etc., with details of care, rainfall, frost, growth rate, etc. We will need the support of everyone interested in this attempt to beautify our streets to report on such trees that exist and photograph them in black and white, and in colour (transparency), from the same spot, or report to me and I will arrange it.

AMAROO NURSERY FOR AUSTRALIAN PLANTS

Over 125 Varieties

Range includes Eucalypts, Melaleucas, Acacia, Agonis, Brachychiton, Banksias, W.A. Boronias etc. Also Kangaroo Paws, Blue eschenaultias. Some varieties available Semi-advanced

Send stamped envelope for list.

86 LANG STREET, PADSTOW, N.S.W.

UU 7342

Closed Sunday morning 10.00 a.m. till 1.00 p.m.

For Effective Pest and Disease Control Use

Yates Garden-master

MULTI-PURPOSE SPRAY

OVER 300 SPECIES

of indigenous and exotic trees and shrubs

AVAILABLE FROM NURSERIES

AT

PENNANT HILLS
NARRANDERA

FORBES
DUBBO

Species of *Brachychiton* available are *B. acerifolium*
B. discolor with its hybrid, *B. populneum* with a special
pink variety and *B. rupestre*

Complete descriptive price list free and post free from:

SECRETARY, FORESTRY COMMISSION OF N.S.W.
BOX 2667, G.P.O., SYDNEY

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

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.
Yates, Arthur & Co. Pty. Ltd., 90-100 Sussex Street, Sydney.

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

"WILLUNGA" NURSERY

Native trees and shrubs, from 2/6
List on receipt of stamped envelope.

21 Nelson St., Thornleigh, N.S.W.

Closed most Saturdays, Phone 84-3709

DENOVAN'S NURSERY

Good Range of Native Plants
available at Nursery

188 MARCO AVENUE, PANANIA, N.S.W.

Specialist in plants for clay areas.

HAVE YOU GOT YOUR BINDER AVAILABLE AT 12/- inc. POST.

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.
 Amaroo Nursery—86 Lang Street Padstow. One of the widest ranges of natives.
 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.
 Lullfitz, Fred, Yilgarnia Wildflower Nursery, 1439 Albany Highway, Cannington W.A.
 McLeod, F. C. J. McLeod—Warrien Rd., Croydon Victoria—Quality Plants.
 Narrabeen Nursery, 1444 Pittwater Rd., Narrabeen Nth., N.S.W. Plants for coast.
 Parry, 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.
 W. N. B. & G. M. Quick, Dargan Hill Nursery Alimar Road (off Wilson Rd), Glen Waverley, Vic.
 Willunga Nursery—21 Nelson Street, Thornleigh, N.S.W. From 2/6. Specialist in trees.
 Wyatt P.—33 Plummer Road, Mentone, S.11, Victoria—Hardy plants.

PRESERVATION BY CULTIVATION

FLORALANDS

KARIONG, via GOSFORD, N.S.W.

A large variety of the most popular native plants available at nursery

PHONE: Gosford 21142

P. J. PARRY

When on a visit to Perth see —

FRED LULLFITZ

at

YILGARNIA WILDFLOWER NURSERY

1439 Albany Highway, Cannington, WA
Ph. 68-2622—No Interstate Plant OrdersNATIVE PLANTS
101 HARDY VARIETIES

P. WYATT, "KANANOOK"

33 Plummer Rd., Mentone, S.11
VictoriaNARRABEEN NURSERY
74 AUSTRALIAN NATIVES1444 Pittwater Rd., Narrabeen
Nth., N.S.W. — XX 2604

OPEN EVERY DAY

Specialist in plants for sea coast.

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.: 2598ECHBERG'S
DRIVE-IN NURSERYCnr. Nepean H'way &
Centre Rd., East Brighton, Vic.

XB 3967

*Native and South African
Plants*Indoor Plants, Lilioms,
Perennials, Geraniums,
Fuchsias, etc.

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

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

BUSINESSMEN—ORDERING CALENDERS? WHY NOT GET WILDFLOWER
CALENDERS

Contact John Sands Pty. Ltd., Druitt St., Sydney. You will be helping us.

AUSTRALIA'S NATIONAL PRESERVATION JOURNAL

(A non-profit making venture 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. M. Sands, 39 Herbert Ave., Newport, N.S.W.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—QLD. REGION:

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

Secretary: Mr. P. Hamilton, Carnoola Street, Barden, Brisbane.

SOUTH AUSTRALIAN SOCIETY FOR GROWING AUSTRALIAN PLANTS:

President: Mr. F. Hall, Box 34 Tea Tree Gully, South Australia.

Secretary: Mr. I. G. Holliday, 29 Tennyson Ave., Tranmere, S.A.

SOCIETY FOR GROWING AUSTRALIAN PLANTS—VICTORIA & TAS.:

President: Mr. G. Echberg, 22 Middlelton Street, Highett, S21, Victoria.

Secretary: (Sister) E. R. Bowman, 4 H-mebush Cres., Hawthorn, E.3, Vic.

WEST AUSTRALIAN WILDFLOWER GROWERS' SOC. INCORPORATED:

President: Mrs. J. Hamersley.

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

Managing Editor: Mr. W. H. Payne.

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

Sec.: K. Coxhead, Despatch: V. Hopkins, Illustrations: A. Spurway, Photography: R. N. Dallimore.

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. L. 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: Be sure of receiving your copies in future without inconvenience. Forward 12/- and the next four issues will be forwarded post free. All past issues 3/- plus 5d. postage.

1. Study Sections—These comprise readers who, receiving the benefit of free advice, seed, and sometimes plants, agree to grow plants of known beauty and value, in their gardens and report results once a year. No experience is necessary to contribute to this national effort. Sections already exist for *Acacia*, *Dryandra*, *Eremophila*, *Orchids* (terrestrial), *Orchids* (epiphytal), *Telopea*, *Verticordia*, *Eucalyptus*, *Stylidium*, *Melaleuca*, *Leptospermum*, *Correa*, *Boronia*, and *Street Trees*. All enquiries c/- Editor.

2. Assist in preparation of articles by forwarding small flowering specimens which grow in your district in a jam tin by parcel post (cost 5d.) as below:

Species of *Orchids* (terrestrial) to Mr. L. Cady, "Milford" Saddleback Rd., Kiama, N.S.W.All species of *Prostanthera* to Mr. G. W. Allhouse, Nindethana Nursery, Dripstone, N.S.W.All species of *Melaleuca*, Mr. A. L. Hargrave, 13 Brynmawr Rd., Camberwell, Victoria.All species of *Hovea* to Mrs. H. Sourway, 11 Stellmack Street, Everton Park, Queensland.

BANKSIA COLLINA

By C. PETER HAMILTON

This species is one of many *Banksias* found in the coastal lowlands and border highlands of South East Queensland. A comparatively low woody spp. (3-8 feet) it spreads quite considerably (4-8 feet). It appears to favour a sandstone type of country (e.g. the Rhyolite rock of the Lamington Plateau) with considerable surface or sub-surface moisture. These are not swampy areas, merely poorly drained areas with considerable surface moisture. However, *B. collina* appears to persist under cultivation in a wide range of soils where adequate moisture is supplied.

Interest in this particular species arose when it was noticed that there was considerable variation in style coloration, from greeny-yellow through red to black. It would appear that the red colours, the most variable, are a gradation between two parents, one with yellow style colouring, the other having black styles.

It was noted also that very distinct habitats exist for this spp.; open hillsides adjacent to the rain forests in the border uplands of Queensland, and on the coastal lowlands; e.g., Springbrook and Lamington Plateaux. The survey was extended further to determine whether variation in other vegetative characters was consistent with variation in style colouring as follows:

Style Colour	Leaf Length in cms.	Stem Length in cms.	Style Length in cms.
Yellow	8.09 plus/minus .76	14.29 plus/minus 1.03	3.97 plus/minus .10
Red	8.09 plus/minus .43	14.61 plus/minus .49	3.87 plus/minus .06
Black	7.28 plus/minus .18	13.48 plus/minus .73	4.12 plus/minus .18
Yellow (Coastal)	7.99 plus/minus .56	11.97 plus/minus .64	3.62 plus/minus .20

The results shown indicate not statistical variation to indicate that the plants are from parents of distinctly different characters. All three colours were present in the hill specimens but the explanation of this phenomenon was beyond the scope of this survey.

The figures obtained did show tendencies towards possible statistically significant variations which with larger numbers of specimens may have become evident. The need for care in measuring plant parts of comparable age and development is stressed, such precautions not being fully realised at the time of the survey. Had they been more closely observed there may have been less deviation about the means and the significance of variation more apparent.

It is safe to say that within the limits of this survey, all the specimens examined were of the one species, *B. collina*. Using seeds gathered from a number of specimens it is hoped to investigate the variation in style colour more closely over a wider range of soils.

GROW BANKSIA FROM SEED By H. BOYD

Mrs. Beatons advice "first catch the hare" is most apt if applied to the seed collection from plants of the genus *Banksia*. The hard woody follicles remain closed for years if the seed bearing spike or "cone" is taken before they begin to open on the tree. The seed dehisces spasmodically over a period of months and it is impossible to collect this winged seed as it is cast. Specimens in my herbarium collected five years ago still retain some seed.

Now to catch the hare. First see the spike of seed follicles is mature. Perhaps some might be open, all the inflorescence obviously dead and the closed follicles a good size. Place it in an oven and hold it at a temperature of 300°F. Constant inspection is required the process taking about an hour or longer. When the follicle begins to open, the seed can be raked out with a bent piece of wire (a bike spoke). The seed can be stored in very dry paper envelopes in an airtight container away from light but if possible, it is better to propagate the seed immediately. Better results are had in the spring or summer.

Botanically *Banksia* is allied to *Telopea* (Waratah) and the propagating methods are about the same. Black bush sand containing a lot of humus to which has been added spent leaves from a *Banksia* is prepared by mixing well.

The writer uses leaves collected under old plants of *Banksia ericifolia* and partly decayed leaf material from under *Banksia serrata* after passing through a ¼ inch sieve, the leaf material being about one quarter of the mass of sand by volume. A large terracotta pot or a flat bushel box are the best containers. Keep the container well off the ground, say on two house bricks.

The seed box or pot must be well crocked with the sand and leaf mixture consolidated level about 2 inches below the rim. The seed is now placed on the surface and lightly covered with fine bush sand free of loose leaf material. Give a gentle but thorough watering and then press flat on the surface of the soil a piece of newspaper. The paper has the effect of keeping the medium damp. When germination begins the paper can be removed. Alternatively make a few holes in the paper and after consistent watering, the paper softens and the plants come through it.

The Native Plant Propagation and Research Society germinate all species of *Banksias* by this method of outdoor propagation in full sunlight. It amounts to a biological control of damp off. It is important that the surface does not dry out as the germinating seed will also dry out and die. Plants can be potted on when about three inches high. A light dressing of blood and bone is used after about a month from germination when second leaves are produced, and again when established in a pot.

FROM N. DENOVAN, Panania, Sydney, N.S.W.

Banksia ericifolia is doing very well as a large pot subject in half cask. As a healthy three-year-old plant of pleasing form, it flowered well last season in a position of full sun.

A DWARF BANKSIA FOR YOUR GARDEN

Colour Photography By Frank Hurley

Blocks Courtesy of John Sands Pty. Ltd.

BANKSIA ERICIFOLIA By P. J. PARRY

This attractive fine leaved species, with large golden brushes up to twelve inches long, grows prolifically in its wild state over a large area in the mountain country around Gosford. It usually grows naturally in moist, peaty situations, flowers during autumn and winter and is the main source of nectar for honey eating birds during that period.

The tree will adapt itself to most situations and is easily cultivated in home gardens. It will stand pruning each year after flowering thus being kept a reasonable height and attractive shape.