

PUBLISHED BY THE SOCIETY FOR GROWING AUSTRALIAN PLANTS IN 15,000 COPIES

Australian Plants

Registered for posting as a periodical—
Category B

MARCH, 1974

Volume 7, No. 58

Volume 7 will comprise issues 53-60

Recommended Price: 50c



Photography by J. Maconochie

SENECIO GREGORII

WILDFLOWERS OF CENTRAL AUSTRALIA

Dry Area Gardening and Plants of the Centre

by Robert Dalby, Alice Springs

Gardening in a hot dry climate is not necessarily a heart breaking experience. There are a number of environmental factors which can make gardening difficult—climate is only one factor.

When moving from one part of Australia to another as I have done during the last six years—from Adelaide to Darwin and then to Alice Springs, one begins to realise the importance of not only rainfall but also the importance of soil acidity/alkalinity, salt content, humidity, day length and temperature variation between Summer and Winter.

Shortly after my arrival in Alice Springs four years ago, I wondered at the prospect of establishing a garden oasis in the semi arid centre where summers are hot and dry from October to March, and winters can be bitterly cold overnight, but warm during the day. Humidity varies between 10% and 20% for most of the year and the annual average rainfall is 25 cm.

At that time, the gardens in the "established suburbs" of East Side and the Racecourse area consisted mostly of Kikuyu or Couch grass lawns, *Eucalyptus camaldulensis* (River gums transplanted from the creek beds), *Melia azedarach* (White Cedar), Oleander, Tamarisk (Athol Pine) and Citrus. For those adventurous types these were supplemented by Hibiscus, Jacaranda, Tecoma, *Grevillea robusta*, Fiddlewood, Brachychiton species, and some exotic creepers. Whilst they all seemed quite healthy—in spite of frost risk to some—there didn't seem to be much scope for a garden of variety. Then I noticed the street trees—some had been supplied from Darwin, which were tropical species—but others looking much more at home in the local environment were eucalypts and acacias, mostly West Australian species from the 8"-12" rainfall area of that State. Also in the new area of Gillen other native plants were present in newly established gardens. Mrs. Calder, an inaugural member of the Alice Springs group of S.G.A.P. had established a garden nursery and was endeavouring to interest others.

During the last four years I have been amazed at the variety of flora which can be grown in the Centre and also the rate of growth. The growing season extends from September to the end of May, sometimes early June. The soil is generally neutral and is of sand/gravel composition, having excellent drainage and reasonable water retention characteristics. Some areas are troubled by salt and this has dampened the enthusiasm of some who have seen their hibiscus and jacarandahs struggling to survive.

In addition to those already mentioned the following is a general list of suitable genera for this area. Most have been described in previous issues so refer to index to "Australian Plants" vols. 1-6 for description, colour plates, etc.

Eucalyptus species from West Australia 8"-25" rainfall. Eucalyptus species from Central Australia as well as: *Eucalyptus leucoxylon rosea*, *E. cladocalyx nana*, *E. citriodora*.

Acacia saligna, *A. podalyriifolia*, *A. cardiophylla*, *A. iteaphylla*.

Melaleuca species from West Australia 10"-25" rainfall. Also *Melaleuca hypericifolia*, *M. armillaris*, *M. erubescens*.

Casuarina cunninghamiana, *C. cristata*, *C. glauca*, *C. stricta*.

Hakea—Central Australian species as well as: *Hakea commutata*, *H. suaveolens*, *H. nitida*, *H. bucculenta*, *H. francisiana*.

Grevillea species from Central Australia as well as: *Grevillea robusta*, *G. rosmarinifolia*, *G. banksii*.

Cassia species from Central Australia:

Callistemon viminalis, "Gawler hybrid", *C. "Captain Cook"*, *C. violaceus*, *C. phoeniceus*, *C. citrinus*.

Anigozanthos manglesii, *Calothamnus villosus*, *C. quadrifidus*, *Hardenbergia violacea*, *Kennedya rubicunda*, *Templetonia retusa*.

(Continued on page 278)

THE FLORA OF THE AUSTRALIAN ARID ZONE

by J. R. Maconochie, Alice Springs

The flora of the Australian Arid Zone like the floras of other arid zone areas has many similar characteristics in that each has had to develop adaptations by which they could survive in desert conditions. In terms of botanical composition the flora is unique as is the rest of the Australian flora. The dominant tree-shrub is usually a member of the genus *Acacia* i.e. Mulga (*A. aneura*); Gidyea (*A. cambagei* or *A. georginae*). The areas in which the hummock grasses (*Triodia* and *Plectrachne* spp.) or the tussock grasses (*Astrebla* spp.) dominate the scene often have *Acacia* spp. as a minor shrub component. See page 260 for "Acacia of the Centre" with colour.

In general the arid flora falls into three main groups:

- (1) The Drought Escapers
- (2) The Drought Evaders
- (3) The Drought Endurers or Resistors

The drought escapers are the fast growing annual plants which respond to small but effective falls of rain and complete their life cycle in a few weeks. Some common examples are the annual composites i.e. *Helipterum* and *Helichrysum* spp. and many of the annual grasses.

Following the heavy winter rains the desert literally "blooms" with the many and magnificently coloured wild flowers, such as the wild daisies, geraniums, peaflowers and pussytails.

Once the summer commences these annuals wither and die depositing their seed in the soil by different mechanisms.

The drought evaders are the trees or shrubs which are deciduous and rapidly lose their leaves during a drought period. This mechanism of shedding leaves and going into a dormant phase appears to be a means of conserving water during drought. Some examples are the "Desert Kurrajong" (*Brachychiton gregorii*), "Stuart Bean Tree" (*Erythrina vespertilio*) and "Old Man Saltbush" (*Atriplex nummularia*).

The third group, the drought endurers, are plants with some structural modification in their leaves or stems by which they reduce their water loss during dry periods. Visitors to the arid zone will find that many of the plants have a grey-green appearance and not the bright vivid greens of the tropical and temperate regions. This appearance may be due to a waxy bloom or surface structures such as hairs and vesicles which appear to be mechanisms to reduce water loss and also reflect light and heat at the leaf surface.

The seeds of many of the arid plants have structures which protect the embryo from the harsh arid environments. Many of the legumes have thick waxy cuticles which prevent water loss and also water penetration.

This is one of the reasons why people often have difficulty in germinating these seeds. The common gardening practices of nicking the seed or soaking in hot water can often remedy this situation.

When these species are being considered for home gardens it must be remembered that their natural habitat is an area of low rainfall and very poor soils. These plants respond vigorously to adequate water and careful fertilizing but when in excess can cause water logging or toxic effects. Judicious pruning can improve the appearance of many natives.

There are many devious mechanisms by which these plants are able to survive in the district but it must be remembered that it took many years for the flora to develop. With this thought in mind, it must be realised that these areas must be carefully utilised and conserved so that they are not destroyed but continue to provide the good beef that pleases our palate and the natural beauty which appeals to our aesthetic senses.

WILDFLOWERS AROUND ALICE SPRINGS

The series of articles up to page 277 are based upon a number of talks given by Mr. D. J. Nelson over the local radio station at Alice Springs. They were so well presented that readers here will be interested; certainly tourists to the area will be. I have tried to edit it to suit this publication but at the same time preserve his pleasant style that enthralled the people of Alice Springs—Editor.



EUCALYPTUS GAMOPHYLLA—"Blue Mallee"

A small mallee with blue-green juvenile foliage, flowers white, fruits small. Mostly seen in deep red sand with spinifex where it can form distinctive vegetation units. It is frequently associated with "Desert Oak", see page 259.

We see above a scene typical of almost 1/6th of the area of the centre: red sand with gravel deep below and a variable cover of spinifex grass, in this case *Triodia basedowii*. The trees in the background are *Eucalyptus camaldulensis* growing along a water course, usually dry. On page 324 of Volume No. 5, you may see a good colour plate of these trees growing in a flooded water course.

While the blue mallee shown here is *Eucalyptus gamophylla*, see page 258 for description, in a similar scene north of Alice Springs a very similar mallee clump would be *Eucalyptus pachyphylla*. South of Alice Springs the blue mallee clump will probably be *Eucalyptus oxymitra*.

A TYPICAL EUCALYPT

Even in the centre there are Australian Eucalypts, their typical flowers being shown below. The series of articles by Des Nelson commence first with a description of the common Eucalypts, other trees, shrubs and hence to small flowering plants. The plants described have found wide use in gardens and inland properties as described by succeeding articles.



***EUCALYPTUS TERMINALIS*—"Bloodwood"**

A small rough barked tree, flowers with yellow to white bold stamens, honey-scented and urn-shaped fruits. Mostly seen as an isolated tree on sandy or loamy plains in spinifex shrub vegetation. This tree was growing on Harts Range.

EUCALYPTS OF THE CENTRE

by D. J. Nelson, Alice Springs, Central Australia

All the world knows that the Jolly Swagman camped under the shade of a Coolibah tree, but most of the world doesn't know what a Coolibah tree is. Coolibah is *Eucalyptus microtheca*, one of the smaller Eucalypts (excluding the mallees). It is found in dry parts of Australia on clayey soils, subject to periodic floodings, often forming large stands. Coolibah is fairly variable, but in general it is a tree between 20 to 35 ft. in height, having two types of bark. The bark on the lower part of the trunk is of the box type which is flaky, but has a tight hold on the tree, it is called persistent bark. The upper parts of the tree have gum bark which means a smooth bark, usually white and peeling off in strips at certain times. Coolibah usually has a nice shady canopy of foliage, as the swagman appreciated, the flowers as usual with Eucalypts in the Centre are creamy white and are followed by tiny gum nuts from which the very small seed can be collected. Coolibah seeds germinate easily and although they are found naturally in clayey soils, the trees will grow in any type of soil. It is a moderately fast growing tree and is a most suitable species for growing. Coolibah timber makes good fence posts and is also very good firewood. In hard times cattle will eat the leaves. There are a lot of Coolibahs in the floodout of the Todd River, just east of Amoonguna and also on channels of the Temple Bar Creek, a short way down the Deep Well and Santa Teresa Roads.

Another attractive Eucalypt is the Central Australian Bloodwood, *Eucalyptus terminalis*. Bloodwood is an adaptable tree found widespread throughout the Centre, often as isolated trees, on almost every soil type. It is a moderately sized tree capable of reaching 40 ft. in height. Bloodwoods are so named because of the dark red thick sap which they exude from an injury such as an axe cut. The distinguishing feature of a bloodwood is its bark which may be light grey to pale orange brown. It is thick bark patterned in a fine flaky manner, known technically as tessellated bark, meaning tile like. Bloodwoods bear an abundance of large creamy flowers and are one of the more spectacular local Eucalypts flower-wise. After flowering, clusters of big woody gumnuts are formed. The seeds are winged and as is usual with Eucalypts are easily germinated. Although fairly slow growing Bloodwoods are a very attractive tree and are very drought resistant.

It was interesting during the big drought to observe the habits of the Bloodwoods. Branches died then dropped. The trees in effect pruned themselves until some were virtually a trunk with a few leaves left at the top, but after the drought broke they produced new top growth. The trunk of a Bloodwood is thick and straight and Bloodwoods have been used for the making of gate posts and corner and strainer posts. The dry timber is excellent firewood. Immediately south of Heavitree Gap look to the West and you will see a nice Bloodwood. There are also nice specimens at the foot of Mt. Blatherskite.

Incidentally, the habit of dropping branches is common to most large Eucalypts in the Centre, so don't camp under a big Eucalypt. Under cultivation branches are not usually dropped, probably because the extra moisture available to them under garden conditions keeps the branches healthy and strong.

Some plants are grown for flowers, some for their scent and some because of their attractive foliage. In this last category comes the Blue Mallee, botanically known as *Eucalyptus gamophylla*. Blue Mallee is a many stemmed large woody shrub averaging 8 ft. in height with a good wide spread. It is commonly found in red sandy desert areas, such as can be found 20 m south of town along the Deep Well road and on flat red soil just before Native Gap about 70 m north of the town on the Stuart Highway. It also grows high up on rocky hillsides such as the top of the range at Heavitree Gap. They are called Blue Mallees because of their bluish leaves

and it is the leaves which are the most attractive feature of this species. Pairs of leaves are usually fused together at the base with the sometimes square stem passing through the centre. The leaves are actually juvenile leaves. All Eucalypt seedlings have leaves directly opposite to each other, but as the trees mature, adult leaves become alternate or staggered. It is interesting to note that Blue Mallee retains the juvenile form of leaf and only occasionally are the mature form of leaves seen at the tops of an occasional specimen. Blue Mallee has fairly small creamy white flowers, but they are usually borne in large clusters and are followed by masses of small gumnuts in which are the dark small seeds. People with sandy soil should have little trouble in growing a Blue Mallee. The leaves have a strong Eucalyptus smell when bruised. Stems of Blue Mallee make good indoor decorations and last a long time in a vase.

Now a few words about the most widely known tree of the Centre, *Eucalyptus papuana*, widely known as "Ghost Gum" or to the oldtimers as "Cabbage Gum". The Ghost Gum has become a symbol of the Centre but it does grow in the Top End. However, the Top End trees don't have such an attractive vivid white trunk as do the Centre specimens. Ghost Gums may reach 80 ft. in height and can be seen in valleys of the Macdonnell Ranges to E. & W. of Alice Springs. The main attraction of Ghost Gum is its beautiful white trunk and limbs, but an added attraction is the creamy flowers. Flowers are followed by cup-shaped small gumnuts in which are small saucer shaped seeds. Ghost Gum is very easily raised from seed. It will grow in most soils and would be a very suitable tree for growing at a homestead. Just past the Honeymoon Gap turn-off are a pair of Ghost Gums known as the twin Gums. Here's the reason why they are known as twin gums. Drive along the road slowly and watch the trees and you will reach a point at which the two trees merge together perfectly and appear to be a single tree.

OTHER TREES OF THE CENTRE

If you would like to grow your own Christmas tree you could try the local native pine, known as White Cypress or *Callitris columellaris*. An interesting feature of this hill dwelling tree is that it usually grows on the southern sides of the ranges, ascending to the tops of the hills, but not many grow on the northern slopes. As the timber of these trees is resistant to white ant attacks a lot of them were felled in the 1870's to be used as poles on the overland telegraph. The trees grow to a nice shape and can grow over 20 ft. in height. They bear small globular cones which shed winged seeds which germinate readily and growth is about 2 ft. a year.

Another tidily shaped local bush tree is the Desert Kurrajong or *Brachychiton gregorii*. Although it occurs naturally in red sandy desert areas, Desert Kurrajong is adaptable to most soils. One of the best natural stands of Desert Kurrajong can be seen on the Lake Nash road on Amaroo Station. The trunk is greenish to light grey, the foliage is dense consisting of leaves with 3 long lobes, resembling an emu foot. Desert Kurrajong is used as a street tree in parts of Alice Springs. The flowers are small, creamy white, borne in clusters and are followed by inch long black pods in which are the black fat seeds. The seeds grow readily. Desert Kurrajong grows fairly quickly and will grow to about 18 ft. in height. Below ground level the Desert Kurrajong has a large swollen tuber like growth which accounts for its great drought resistance. The foliage is relished by stock.

Nineteen or twenty miles on the Deep Well road are the nearest Desert Oaks to town. *Casuarina decasneana* is their botanical name. Desert Oak grows to 45 ft. or so, and has a nice shady crown of hanging needle like foliage. The bark is dark, thick and deeply fissured. Timber of Desert Oak has been used in yard building. The flowers are insignificant, but the woody cones are quite noticeable. Openings in the cones release the winged seeds which will germinate easily. Desert Oak is also very drought resistant.

ACACIAS OF THE CENTRE

Between Heavitree Gap and the airport there are trees known as Ironwood or *Acacia estrophiolata*. If you have ever put an axe to its timber, more so if it is dry, you will know that the name "Ironwood" is pretty apt. Ironwood grows to about 50 ft. high and produces a nice shady canopy of slender hanging foliage giving the tree a somewhat willow-like appearance. "Ironwood" is useful as a fodder tree and it is common to see trees in the bush neatly trimmed by grazing. The bark is dark and furrowed. The flowers are pale yellow wattle balls, followed by brown pods from which the hard dark brown seeds can be collected. Probably the best way of treating these seeds is to drop them into boiling water for a minute or so. Seedlings grow very slowly for the first two years, but don't be discouraged for in the third season growth accelerates rapidly. Some other local Acacias behave in the same manner. "Ironwood" is very drought resistant.

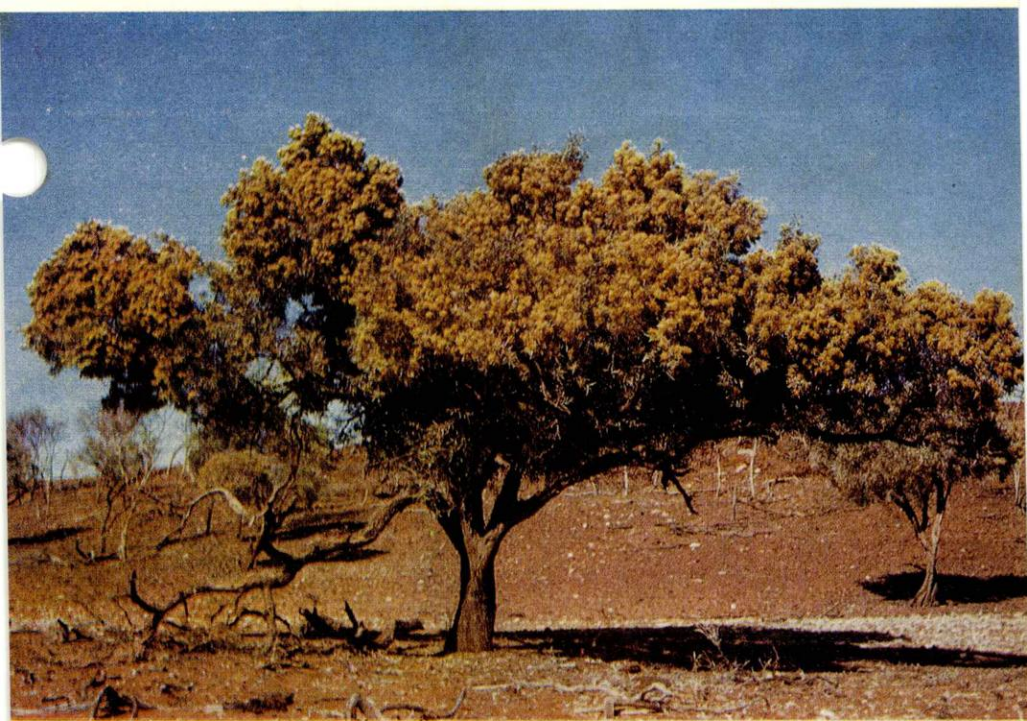


Photography by R. W. Burbury

ACACIA STRONGYLOPHYLLA

Bushy but open shrub sometimes forming a small tree. Restricted to hillsides and gorges of the ranges in Central Australia (S.A., N.T., W.A.). Flowers mostly during spring and is a very prickly but showy shrub. Other plants with spikes are described on page 263.

Acacia georginae is the greatest menace to the cattle of Central Australia, but not everywhere. *Acacia georginae* is the botanical name of the common Gidyea of the Eastern half of the Centre. It is a twisted, dark trunked small tree averaging 15 ft. high with grey green foliage, sporadically bearing golden wattle ball flowers which are followed by flat twisted pods. There is a similar tree, *Acacia cambagei* also known as Gidyea, but which differs from *Acacia georginae* in having a straight trunk and more or less straight pods. This sp. can be seen on parts of the Barkly Tableland and is not poisonous.



ACACIA GEORGINAE—Gidyea

A large spreading tree with golden blossoms which release a very unpleasant odour. Found mostly on the heavier soils. In some areas this species is toxic to cattle as it accumulates fluoro-acetate compounds.

Acacia georginae gets its name from the Georgina River, along which it grows in abundance, extending eastwards to within 30 m of Alice Springs along the Ringwood Road. Close to Alice Springs, Gidyea is grazed by cattle in dry times with no ill effect to them whatsoever. However, to the N.E. of Alice Springs from approximately 250 ml. away from town and beyond and over the Queensland border is the poisonous Gidyea area in which many cattle have been lost to poisoning over the years. It took many years of research before the poison was isolated from the tree, and it is a fluoro-acetate compound similar to 1080 which is in use for the poisoning of rabbits and dingoes and as far as I know there's no antidote for it. The best ways of dealing with the problem have proved to be the experiences of the pastoralists in knowing which areas on their stations may have toxic trees, and care in handling cattle which become affected. Affected cattle may die from heart failure if they are shifted along too quickly or sometimes after having

a big drink. By resting sick cattle, not allowing them to continue grazing Gidyea and preventing them from taking too big a drink at one time, they can often be saved.

The poisonous Gidyea problem remains mysterious despite years of research. Botanically, poisonous and safe trees are exactly similar. No one knows why the trees are toxic in one area and not in another. Even in the poisonous area not all trees are poisonous. It is possible to find 2 exactly similar trees within 20 ft. of each other, one being toxic and the other quite safe and never becoming toxic. A poisonous region may have 10% toxic trees or 50% or any other proportion. The toxicity of poisonous trees also varies from season to season. Toxicity levels apparently rise as seasons become drier and this condition encourages cattle to start grazing Gidyea foliage as ground feed dries off and becomes less nutritious and scarce. The pods of the Gidyea tree concentrate more of the toxin than do the leaves.

Gidyea is a very tough, slow growing and very drought resistant tree. The wood is heavy, dark and dense and exceptionally hard. As firewood it produces intense heat and there's nothing better in a winter time camp than a fire of Gidyea coals. Young Gidyeas can be seen in Telegraph Terrace beside the gaol.

One point about this tree may be noted. Most plants are identified by sight, that is you see the shape, size or colour, but with Gidyea it is also possible, at times, to use another sense in identifying it. It smells and pretty powerfully. During rainy weather or at flowering time, Gidyea emits a strong odour, put another way, it stinks. There are often swarms of flies in Gidyea country. One theory says that the smell of the Gidyea is used to attract flies which assist in pollination.

Acacia tetragonophylla—"Dead Finish"; described under "Plants with Spikes".

Acacia farnesiana—"Mimosa Bush" described under "Plants with Spikes".

Acacia kempeana—"Witchetty Bush" described with "Trees and Shrubs that are Grazed".

Acacia victoriae—"Acacia Bush" described with "Trees and Shrubs that are Grazed".

Acacia aneura is the official name of mulga, the most common tree in the Centre. Mulga is very widespread in arid Australia and over the years has been put to many uses. Aborigines used the wood for the making of spears, boomerangs, yam sticks and nulla nullas. Station people use it for fence posts and everybody uses it for firewood. Cattle eat the foliage. It bears round edible galls known as Mulga Apples and aborigines also roast and grind the seeds for tucker. The timber is also used in the manufacture of churungas and bull roarers and for polished white feller artefacts. Apart from these multitudinous uses, Mulga makes an attractive garden specimen. Easily grown from seed providing you treat it with hot water or fracture the seed coat. Mulga grows slowly for two years but can accelerate to 6 ft. in the third year and begin flowering, producing under cultivation, masses of spike type golden wattle flowers. Mulga is very variable in form, there being about eight different forms within 20 ml. of Alice Springs. Although common in the bush, Mulga is a hardy small tree worth growing, as it responds well to cultivation and needs little water.

The middle of the thick Mulga scrub can be a pretty featureless place, but there is an easy way of orientating yourself with direction there. On the trunks of many Mulgas, not all, but there'll be some around on which there grows pale grey to pale green primitive plant growth called a lichen. This growth occurs only on the southern side of the trunks, so finding the lichen can instantly give you a line up in direction.

Other *Acacia* described in this issue are *A. tetragonophylla* opposite, *A. farnesiana* page 264, *A. kempeana* page 266 and *A. victoriae* page 267.

SOME PLANTS WITH SPIKES

The development of spikes is a feature of many arid zone plants. Sometimes they take the form of thorns on stems, but more commonly in Australia it is the foliage which is itself spiny. No doubt this spininess is an attempt by plants to protect themselves from being grazed. Quite a remarkable attempt at self-protection is made by *Capparis mitchellii* a small tree known as "Wild Orange". The young plants are often nothing more than a jumbled mass of thorny stems, but the thorns gradually disappear as the tree develops into the mature form. This is a small tree 10 or 12 ft. high with dark flaky bark and a dense crown of leathery, broad, dark green leaves. The flowers are large, white and delicately perfumed. These flowers last only a day, in fact often only a matter of hours, but new buds are always ready in spring to keep a continuity of early morning flowers. The fruit is globular, about 2" in diameter and becomes hard and woody, but at the right stage can be eaten. Some old timers used to break the fruit up in water to make a pleasant tasting drink. It is the fruits which give rise to the popular name, but they resemble orange only in shape. Some nice Wild Oranges can be seen near Emily Gap and there are one or two near the turnoff to the Alice Springs rubbish dump. Stock like to graze the leaves of "Wild Orange" and will sometimes eat quite a large proportion of the crown of these trees. It is then that Wild Orange does its thing. It produces plenty of regrowth of grazed areas, but this regrowth has very much smaller leaves and the stems are covered thickly in thorns, so rendering itself much less attractive to animals.

A bush with spiny foliage is "Dead Finish", known botanically by a bit of a mouthful, *Acacia tetragonophylla*. The ordinary name, "Dead Finish" is a tribute to the toughness of this plant evidently meaning that when most other plant life has died off in drought time, "Dead Finish" still persists and it certainly is a tough customer. "Dead Finish" is a woody, twisted shrub usually about 8' high. It is sometimes seen along shallow watercourses or near gilgais in open Mulga scrub. The thin, 1½" long leaves are sometimes in clusters of four and it is from this fact that the name *tetragonophylla* is derived. The foliage is sharply tipped, but cattle will graze the younger softer foliage. The timber is very hard and elastic and prettily grained, like Mulga. Once, the timber was used for small items such as whip handles. In flower, "Dead Finish" is an attractive sight. The flowers are bright golden wattle balls and are borne in profusion. The pods are long, twisted and constricted between the seeds which are small, hard and shiny black. These seeds will germinate if the seed coat is chipped or if the seeds are treated with hot water. If you want a large shrub, needing very little attention yet capable of a good flower display, "Dead Finish" is one answer.

A widespread small tree in the Centre with shiny leaves and big yellow to orange bottle brush like flowers is "Corkwood" or *Hakea divaricata*. *Divaricata* refers to the thin leaves which are forked and tangled. Under good conditions "Corkwood" may grow over 20' in height, but is often much less. The bark is thick, deeply furrowed and of a coarse corky texture and it is this corklike bark which gives rise to the name "Corkwood". The timber is light and brittle and grainless in the manner of "Silky Oak", but "Corkwood" timber is not much use except perhaps for use in an open campfire. It leaves a large amount of white ash when burnt. The big flowers are full of sweet tasting nectar. Cattle will eat the flowers and young soft leaf growth. "Corkwood" fruits are clustered, each one being hard, woody and pointed. Each fruit contains 2 winged seeds which germinate easily. "Corkwood" grows in any soil and under cultivation is a nice looking small tree having a somewhat oriental appearance, being like some of the plants you see depicted in Japanese paintings. On part of Simpson's Gap reserve just S.W. of the homestead is a big stand of large "Corkwoods", but such large stands are infrequent as "Corkwood" is usually scattered, e.g. as

they are found with the Ironwoods between the Macdonnell Ranges and the airport.

Closely related to ordinary corkwood is *Hakea suberea* or "Long-leaved Corkwood". "Long-leaved Corkwood" is also widely distributed in the Centre, but is not quite so common as ordinary Corkwood. The trunk, timber and flowers of both Corkwoods are similar but "Long Leaved Corkwood" is distinguished by having usually larger fruits and seeds, but mainly by its very much longer leaves which are not forked, but are also needle-like and spine tipped. Sometimes the 2 Corkwoods are found together and may hybridise. There are good examples of Long-leaved Corkwood in the hills just north of Alice Springs. It, too, is easily grown from seed.

For those people with clayey soil who want a large shrub for a single specimen or a windbreak, try "Needlewood", or *Hakea leucoptera*. This sp. is woody stemmed having many trunks, in small Mallee fashion. Although plants seen in the bush may appear straggly, when given just a little extra care, Needlewood becomes bushy and dense and can bear a great display of white flowers, somewhat like extra large wattle blooms. Leaves are slender and sharply pointed. The fruits are hard and woody and split to release 2 winged seeds per fruit. These germinate readily. A good stand of Needlewoods can be seen at McGrath Flat about 30 m north of town. Needlewoods will also grow on lighter soils as well as clayey soils, so anyone can try them.

Mesquite fortunately does not grow wild in the Centre, but there is a woody spiny shrub here which has some resemblance to Mesquite. It is mostly referred to as "Mimosa Bush", but it is not a Mimosa either. It is *Acacia farnesiana*. It is quite different from most other Centre Acacias. For a start it is also found naturally in other countries. It occurs in warm parts of Asia and in tropical and sub-tropical America. It has long sharp, hard spines on the stems, but the most outstanding difference is that unlike the majority of Centre Acacias, "Mimosa Bush" has true leaves. You may not be aware of the fact that the foliage of Mulga, Witchetty Bush, Gidyea and other local Acacias is not composed of leaves. They are flattened stems, correctly termed phyllodes. When most Centre Acacias are small seedlings, they have fern-like true leaves, but as the bush grows, the stem behind these true leaves lengthens and flattens and forms a phyllode. "Mimosa Bush" always has the fern like true leaves. It is a small woody bush found often in shallow creeks, such as Harry Creek 33 m north of Alice Springs and some of the creeks on the Yuendumu Road. The flowers are large globular yellow wattle balls and the pod is thick and woody. In spite of the fierce thorns, in dry times cattle relish "Mimosa Bush" even to the extent of eating the woody stems. So unlike other local Acacias is "Mimosa Bush" that one theory is that it was introduced into Australia, along with the dingo, many centuries ago when the country was colonised by the Aborigines.

GREVILLEA

The plant family to which *Hakeas*, such as Corkwoods, belong is the *Proteaceae* family which also includes the South African *Proteas* and other Australian plants such as Waratahs and Grevilleas. There are quite a number of Grevilleas in the N.T. and most are rather difficult to grow from seed. The largest Grevillea in the Centre however has been grown fairly readily from seed. This one is *Grevillea striata*, known widely as "Beefwood". "Beefwood" can reach over 30 ft. in height. The bark is dark and deeply furrowed on a straight trunk. The timber is nicely grained like "Silky Oak" timber, which, incidentally, is also a Grevillea, *G. robusta* native to Queensland, but "Beefwood" timber is harder. Beefwood leaves are long and flat, like foot long narrow straps. The creamy white flowers occur in clusters making quite a good show. The fruits are like rounded papery pods and each contains 2 thin seeds surrounded by a pale papery wing. These grow fairly easily and "Beefwood" is worth growing. It occurs naturally as a scattered tree usually in sandy loam areas such as along the Todd River banks S.E. of Heavitree Gap where there are some good big specimens. In spite

of its name you cannot eat "Beefwood". This name refers to the reddish colour of the timber. Visitors to Ayers Rock can see some nice Beefwoods near Maggie Springs. Stock will lightly graze Beefwoods. Colour plate on page 293.



HAKEA SUBEREA—"Long-leaved Corkwood"

FUND FOR RESEARCH ON AUSTRALIAN PLANTS

Director, Botanic Garden and State Herbarium, Adelaide, South Australia

It was interesting to read in "Australian Plants" (Sept. 1973) notification by Dr. L. A. S. Johnson, Director, Royal Botanic Gardens, Sydney, of a new fund which it was hoped could be established to allow research to be undertaken on Australian plants.

The Adelaide Botanic Garden Research Fund has been in existence for some 3 years, for exactly the same purpose. Because of donations which have been received from the public (they are tax deductible), the Fund is growing but more is yet required before it would be possible to employ anyone on a continuing basis.

Dr. Johnson rightly points out that additional funds are required to expedite the progress of research on Australian plants. It is quite impossible for the Government to meet all the demands that are made on the public purse, no matter how important or valid is the project. It is hoped that the interested public will generously support these funds.

TREES AND SHRUBS GRAZED BY STOCK

Trees and shrub that are grazed by livestock are termed Topfeed and Central Australia is fortunate in having quite a number of useful Topfeed species in the area. The main diet of cattle is grass and although Topfeeds cannot take the place of grass, they are useful dietary supplements to have around, especially in drought times, as many contain good levels of protein and minerals. Some people maintain that good Topfeed country is good breeding country because of the mineral content of these plants.

A very palatable Topfeed is *Santalum lanceolatum*, or Plumbush. Plumbush is a small twiggy shrub usually 6 to 8 ft. high but occasionally, in protected areas, reaching 12 ft. The leaves are blue green, broad, thick and drooping. The flowers are clustered, creamy white and are followed by succulent blue black edible berries. Plumbush is scattered around the sandy areas often found in small stands, but occasionally may form a dense stand along shallow watercourses. It is always found growing near trees as it is semi-parasitic and gets part of its nourishment by attaching itself to tree roots, but it doesn't do any harm to the trees which it uses in this fashion. Plumbush is most palatable to all grazing animals which will eat small plants, wood and all down to the ground. Rabbits cut the stems to get to the leaves above. Luckily, Plumbush is capable of making rapid regrowth even after severe grazing. There is a thick patch of Plumbush under the Ironwoods and Mulgas in the little creek, upstream from Ooraminna rockhole.

Another of the most palatable Topfeeds is Supplejack, *Ventilago viminalis*. Supplejack is a dark barked tree growing to 20 ft. or more in height. It is extremely drought resistant, is slow growing and has very hard timber. The dark green leaves are long and hanging and form a good shady crown. The trees often have several trunks sometimes twining around each other. The flowers are small and greenish, being followed by large masses of pale green hanging, winged seeds. These seeds can be germinated fairly easily. Supplejack also regenerates by root suckers. In pastoral areas Supplejacks are usually trimmed neatly to as high as stock can reach. The trees are scattered over much of the area usually on alluvial loam areas. There is a nice Supplejack just off the E. edge of the airport road near St. Marys and some good specimens are to be seen in the Emily Gap area; along the Ross Highway.

More common than the previous two species is Whitewood, *Atalaya hemiglauc*. Whitewood usually grows 15 to 20 ft. high but old trees may grow to over 30 ft. high. As the name indicates the timber is white. It is light in weight and is not much used except by aborigines in the making of artefacts, such as carved snakes and goannas. The bark is pale grey and flaky and the leaves are long, grey green and become dense in good seasons. Flowers are creamy and often produced in masses making an attractive show. The seeds have a large wing and are borne in pairs usually, though sometimes 3 or 4 are fused together. Whitewood suckers freely from the roots and sometimes you can see very dense stands of small Whitewoods 3 to 5 ft. high. Strangely, even though native to the Centre, small Whitewoods are severely cut by frost often all their leaves dying off in Winter. Once the young plants reach about 8 ft. in height, they are relatively frost resistant. During drought Whitewoods become very ragged and die back a lot but when seasons become good again, regrowth is rapid and prolific. Whitewood is easily grown from seed and makes an attractive quick growing garden plant. It can be found in most parts of the Centre on a variety of soils. Stock graze Whitewood readily and although at some stages, probably when regrowth is fresh, Whitewood can be toxic and has killed horses and goats. The value of Whitewood as a Topfeed outweighs its disadvantages as a poisonous plant.

Witchetty bush, *Acacia kempeana* is another useful Topfeed and is also a useful plant to grow for ornament, hedge or windbreak. Mature Witchetty bushes grow 10 to 15 ft. high, but are often less, say 6-8 ft.

in height. It is widespread in Central Australia, often forming a thick scrub such as can be found on parts of Alcoota and Milton Park stations. Witchetty bush is a multiple stemmed shrub of tidy appearance with dense foliage and golden spike type wattle flowers which can be produced at any time of the year, but at best in spring. The pods are flat, brown and contain hard black small seeds. The seeds are eaten by Aborigines who also dig out edible grubs from the base of the bushes, this fact giving rise to the name Witchetty bush. The long straight roots, some of which run for a long distance just below the ground, are used in the making of spear shafts.

Often it is possible to see Witchetty bushes which have been turned into neat little trees by grazing. Grazing animals eat the branches from around the outside of the bush gradually working in until a single strong stem remains and providing its foliage is out of reach the result is a Witchetty tree instead of a bush. Witchetty bush is hardier than its near relative, Mulga, and if the seeds are chipped or treated with hot water they germinate easily. For a year or two the seedlings remain small then accelerate rapidly to 6 ft. in height, although 6 ft. in one year has been achieved with drip irrigation. Near to town a dense scrub of Witchetty bush can be seen between the airport and Amoonguna. There are good Witchetty bushes in the hills north of town also. It is a local bush well worth growing.

Finally in this Topfeed talk we come to *Acacia victoriae* known simply as "Acacia bush". Normally a straggly dark barked woody shrub to 15 ft. high, when young the bark is green, Acacia bush grows rapidly and usually, under natural conditions, is short lived and may die in less than ten years. The whole bush often collapses completely and the timber rots away in a short time. Under cultivation it will last considerably longer and is worth growing for its Spring display of great masses of pale yellow wattle balls. Cattle will pick at young growth of Acacia bush at most times but graze it more readily when the bushes are in bloom. The flowers are followed by a prolific crop of long flat papery pods in which are the hard, round, dark brown to black seeds. These seeds have been roasted and used by Old Timers as a substitute for coffee beans. Small seedlings of Acacia bush are easily transplanted. It is generally found in loamy areas and was once much more common around town than it is now. A thick scrub of Acacia bush in which drovers used to camp at the end of their trips once existed where the Racecourse housing area now is. There are still some big specimens near the Old Timers homes but the majority of the bushes have been removed from that vicinity. A good stand of young Acacia bushes can be seen 10 m west along the Hermannsberg road at Roe Creek crossing, near the turnoff to Honeymoon Gap.

Easily grown from seed are Verbines, which are known of as good cattle feed. These are the *Psoralea* spp. There are 2 common spp. one an annual *P. cinerea*, which grows to about 3 ft. and the other *P. patens*, is a perennial as long as water is kept up to it. Not an excess of water but more water than it gets out bush. Psoraleas are legumes, both have slender spikes of small pink pea flowers, which can be used as cut flowers. Flowers are followed by numerous single seeded pods. Seeds germinate easily, Verbines grow in cool weather and will grow in most soils. They grow very well in heavy soils, so these are plants to try for those with difficult soil. Verbines can be seen in the Harry Creek 33 m north of town.

Full information may be obtained from relevant government departments on plants that are poisonous to stock. There are many, most being legumes with pea flowers. Fortunately most are not very palatable and in good seasons do not do much damage. One palatable plant that has caused serious losses with horses is "Birdsville Indigo Plant", *Indigofera dominii*. They are distinctive with their tiny bright pink-red pea flowers dying to deep blue. The compact clusters of small seed pods resemble tiny erect bunches of grapes.

THE DESERT ROSE AND HIBISCUS

Let us consider the Sturt Desert Rose and its closely allied cousins. These are local *Gossypium* spp. and are related to the cotton plant which is also a *Gossypium*. The 3 local spp. have very similar flowers, but only one is the true Desert Rose. This one is *Gossypium sturtianum*. It is a shrub capable of growing to 6 ft. in height. It is quite bushy with spreading branches. The leaves are circular and smooth with fine spots and on the underside in the centre of the leaf vein, is a slit-like mark known as a nectary. The flower is 2-2½" diameter and is of a delicate lilac colour with a dark plum red throat. Seeds of Desert Rose are grey with short flattened hairs. The Desert Rose favours rocky creek beds near ranges. Some nice bushes can usually be seen on the way to Standley Chasm after Jay Creek. See rear cover for colour plate.



GOSSYPIUM AUSTRALE

The second tall local species is *Gossypium australe*. This is a slender shrub which immediately distinguishes it from the true Desert Rose which is distinctively bushy. Other distinguishing features of *G. australe* are the leaves, which are longer, pointed, not spotted, are grey green and are furry to touch. This sp. also grows 6 ft. high. *G. australe* has a prominent red slit like foliar nectary on the under side of the leaf. The seeds are brown with long silky white hairs. It can be seen on the road edges in the Jervois mine area and closer to town occasional plants may be seen along the Hermannsberg road just out of town or the Yuendumu Road a mile or two west of the bitumen.

The third species is *Gossypium bickii*, readily distinguishable from the others as it is a low spreading shrub about 18" high with a spread of about 2 ft. The leaves are spotted, pointed, and the foliar nectary underneath is

just a small spot. The seeds are similar to those of the true Desert Rose. *G. bickii* favours broad depressions, often on open plains. It can be seen south of the old airport.

All three *Gossypiums* make attractive colourful garden plants and all can be raised successfully from seed.



Photography by J. R. Maconochie

RADYERA FARRAGEI

There is also another bush which is sometimes mistakenly called Desert Rose. This is *Radyera farragei*. It differs from all the *Gossypiums* in having much larger leaves, which have wavy edges and all parts of the plant are furry. It has no foliar nectary. The flowers are about the same size as *Gossypium* flowers, but have a darker colour. This bushy Hibiscus like shrub grows to about 5 ft. It can be seen along the bank of the Todd River, just south of Heavitree Gap and also near the turnoff into Honeymoon Gap.

NATIVE PLANTS IN ARID ZONE GARDENS

by D. J. Nelson

The growing of Australian plants for horticultural purposes has received great impetus in recent years. Apart from such well known species as Sturt's Desert Pea, Geraldton Wax, various Acacias and Eucalypts, etc., much experimenting is being done in order to find more suitable subjects for garden use. There are quite a large number of plants native to Central Australia which are suitable for growing and for the development of cultivars. These plants may be grown with exotics or may be featured alone. Their great advantage lies with the fact that once established, the majority require little water. They are therefore, ideal for use in areas short of water. Contrary to a once popular opinion, it has been found that the seeds of many native plants are germinated easily. Very hard seeds, such as are produced by most Acacias need pre-treatment before sowing. Such seed may be dropped into near boiling water, remaining in the water until it has cooled. They will then germinate readily. Once treated, the seeds can be dried and kept until a convenient time for planting arises.

Species which are difficult to grow from seed, even with pretreatment, can often be propagated from cuttings. An example is the *Eremophila* or "Native Fuschia" genus. Cuttings kept in moist sand, strike fairly readily.

Some local species which have been grown in Centre gardens are:

TREES "River Red Gum", *Eucalyptus camaldulensis*. Reaching to 80 ft. high, this is the loftiest tree in the Centre. The local strain is easily grown from seed or transplanted seedlings. For quick growth and good shade, it is excellent. It is capable of growing 6 ft. per year in good soil. It will tolerate most soils. Lawn, or other plants may be grown up to the trunks of these trees. The bark is creamy white, patterned with brown and reddish patches. Flowers are small, white and clustered.

"Colony Wattle", *Acacia murrayana*. Notable for its spring show of abundant golden wattle balls, this Acacia grows to about 15 ft. high. The trunk is slender, with smooth pinkish white bark, adding to the attractiveness of the tree. Foliage becomes dense under cultivation. Light soils are best for this species. The common name is derived from the fact that trees are often found in a thick stand, or colony. Seeds need hot water treatment or light filing to assist their germination.

"Bean Tree", or "Batwing Coral Tree", *Erythrina vespertilio*. This is a deciduous native tree attaining to about 30 ft. in height. The large, bright red, bean like seeds germinate readily and young trees can reach to 12 ft. in 2 or 3 years. The flowers are showy, scarlet in colour. They are followed by large pods which split to reveal the red seeds. The unusual leaflets resemble spread wings, hence the second common name above. The bark is thick, corky and light in colour. Saplings bear many thorns on trunk and branches but these diminish as the tree matures. Aborigines use the very light wood in the manufacture of shields and coolamons.

SHRUBS "Sturt's Desert Rose", *Gossypium sturtianum*. The floral emblem of the Northern Territory, this shrub grows easily from seed and rapidly reaches its mature height of 6 to 8 ft. It has several slender woody stems and large rounded leaves. Flowers are large, delicate, Hibiscus-like, pink lilac in colour with plum red centres. The Desert Rose grows readily in most soils and is well worth cultivating.

"Witchetty Bush", *Acacia kempeana*. A neat shrub which may reach 10 ft. in height, "Witchetty Bush" is very suitable for use as a hedge or windbreak plant as well as making an attractive specimen plant. The erect foliage is dense and the flowers are bright yellow wattle spikes. Seeds need treatment for easy germination. Witchetty bush grows well in a wide range of soils. Growth in the first year is slow, about 6", but it accelerates rapidly in the 2nd to 3rd year. The name is derived from grubs found in the roots of the plant in the bush.

Now I'll describe a rapidly growing shrub. This is one of the Hop Bushes and I will admit its botanical name is pretty frightening—*Dodonaea viscosa* var. *spathulata*. The name Hop Bush shouldn't be confused with Wild Hops or Rosy Dock the succulent red flowered winter annual seen more and more commonly each year. This is *Rumex vesicarius*, an introduced plant from Central Asia. The *Dodonaea* or Hop Bush is a tall shrub to 8 ft. found in gaps and gorges in the ranges. It has shiny foliage and bears pink to red winged flowers which are actually bracts surrounding the small globular seed. The seed germinates fairly readily and Hop Bush will grow to its height of 8 ft. in 2 or 3 years. It is a tidily shaped shrub worth growing in the front yard.

Next on the list is "Cattlebush" or *Trichodesma zeylanicum*. This is a soft leaved perennial 2 ft. high with longish fairly broad leaves. The flowers vary from pale blue (almost white in fact), to a nice shade of sky blue. When flowers die, 4 seeds can be found in the centre of the calyx. Cattlebush will grow in most soils and under favourable conditions may flower all the year round, but severe frosts will knock it about fairly badly. Sometimes there are a few Cattlebush plants around in the Dipper, 4 m north of town.

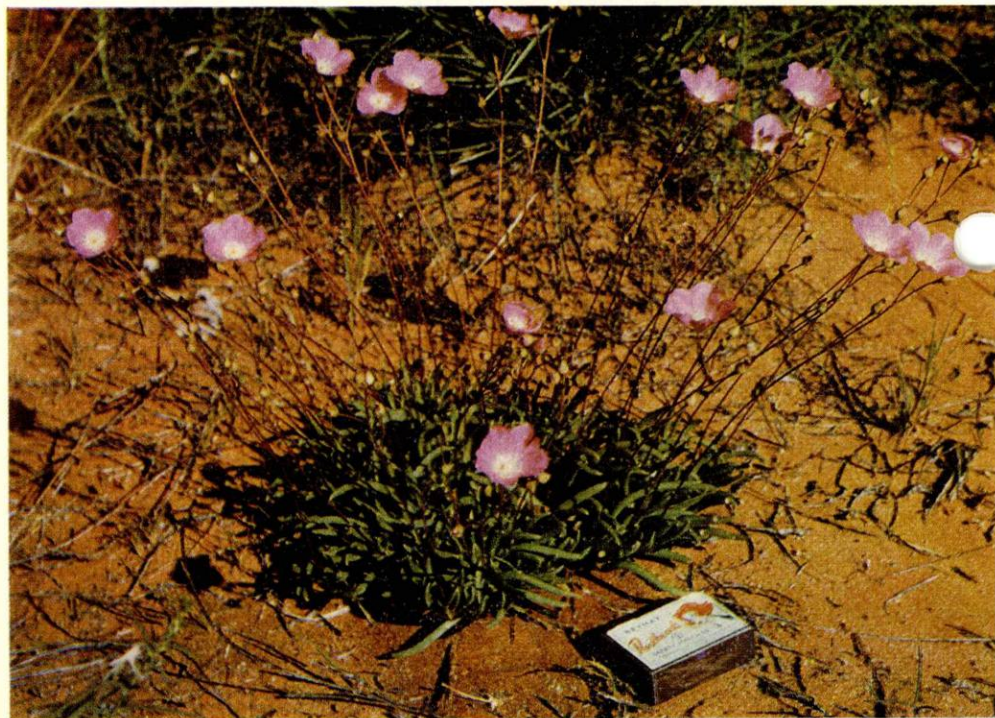
There are lots of Cassias around the district, nearly all of which are worthy garden plants. 19 or 20 m down the Deep Well Road in the red sand *Cassia pleurocarpa* occurs. This is a fairly dense bush averaging 4 ft. in height with a similar spread. It has quite large pinnate leaves (pinnate means that each leaf is made of several smaller leaflets. Leaves of pepper tree are pinnate), and the large spikes of bright yellow flowers are quite spectacular. Flowers are followed by flat brown pods from which you can collect the black seeds. Spring is the best time for growing *Cassia pleurocarpa*. It will grow rapidly in sandy to loam soils, but unless protected, frost will cut it back.

Crotalaria is the botanical name of plants known as Rattlepods. Rattlepods have large hollow pods in which the loose ripe seeds will rattle in the wind or when the bush is shaken, and this gives rise to the common name. In red sandy country, especially to the south, a Rattlepod called *Crotalaria novae-hollandiae* grows. This has 4" long spikes of yellow pea flowers making it a spectacular sight. Its flowers can also be used in a vase. The plant is a leafy shrub about 3 ft. high, the leaves being large and hairy. *C. novae-hollandiae* is very easily raised from seed and tolerates most soils. A word of warning about this plant—it has been known to make horses sick so don't grow it where stock can get to it. It is however probably less dangerous than some well known garden plants. Oleander for instance which is a very poisonous species. *C. novae-hollandiae* has a long flowering season. The bush dies back in winter but new growth rises from the roots when frosts have finished.

Sometimes on tops of the red sand ridges, say along the way to Ayers Rock, or down the Deep Well road, you will see a large straggly plant with large, furry, grey-green leaves and big pale green striped flowers. This is one of the rattlepods or *Crotalaria*s. This particular one is known as Bird Pea because of the bird like shape of the flowers, of *Crotalaria cunninghamii*. Bird Pea is a legume, that is its fruit is a pod. Its pods are large and hollow and the ripe seeds rattle about inside them when the bush is shaken. Bird Pea can be easily grown from seed in light soils and will quickly grow to 6 ft. Cultivated plants are much more attractive than the usual bush battlers. Bird Pea is a biennial so save seeds from your plants to resow.

"Annual Verbena", *Psoralea cinerea*. This is a warm weather growing legume which does best in heavy soils. Seeds usually germinate readily and growth is fairly rapid in the hot months. This species forms a tidy small shrub 3 ft. high. Leaves are three lobed with serrated edges. The individual pea type flowers are pink, and although small, they are borne on spikes 3" long, making a pleasing sight. The flowers last well in a vase.

Perhaps the easiest of all bush plants to grow are the Parakeelyas, the *Calandrinias*, much famed succulent plants of red desert areas. Cattle may wander miles out into the desert when Parakeelya is plentiful as it contains so much water that it can satisfy the animals moisture requirements.



CALANDRINIA REMOTA

The commonest Parakeelyas bear bright pink flowers about 1" across. The largest sp. is *Calandrinia balonensis* with large flat fleshy leaves. It is prostrate and an annual which has attained a diameter of over 3 ft. under cultivation. It is named after the Balonne River in Queensland. There is another sp. of Parakeelya, *C. remota* which although not as large as *C. balonensis* has the advantage of being biennial which means you can enjoy its flowers for two years. It has cylindrical leaves and longer flower stems. If you live in an area of hard clayey soil you can still grow Parakeelyas if you dig a hole or trench 18" to 2 ft. deep and fill it with red sand in which to put your plants. This method applies also to other red sandy desert area plants and of course the deeper the trench of red sand the better. You could also put a layer of old tins in the bottom to assist with drainage.

Editor's Note: There is a colour plate of *Calandrinia balonensis* on page 285. Previous Issues have mentioned this beautiful plant one describing its cultivation in a pot at Canberra. There is much scope and a lot of fun, in the study of the cultivation of our native succulents. They will carry quite well by mail. A study group seems very desirable so please advise the editor if you are interested in joining a group and corresponding with others.

CREEPERS AND CLIMBERS *Glycine canescens*. A climbing perennial legume, easily grown from seed, this species grows in any soil. The leaves are three lobed, with linear leaflets. Flowers are of the pea type, pale pink in colour. Not a very large climber, this species has been used to advantage to "re clothe" small dead bushes, making an interesting display.



IPOMOEA MUELLERI

Ipomoea muelleri, an annual "Morning Glory". Seed germinates well and growth can be rapid. This species grows in most soils, but probably does best in sandy types. It is a winter to spring grower and has broad leaves and most attractive pink flowers 1½" in diameter. It may be used as a temporary ground cover or can be encouraged to grow on a trellis.

In fairly open scrub country you will sometimes see a small creeper with longish opposite leaves (i.e. leaves in pairs on opposite sides of the stem). It has clusters of small creamy white flowers, followed by oval green

fruit. This is *Leichhardtia australis* known variously as "Bush Banana", "Wild Cucumber" or "Lungwa". The young fruit is edible and quite tasty, even though the plant has milky sap. When the fruit is ripe it splits in half releasing a mass of flat seeds which float about on a silky white parachute (or pappus). The seeds germinate well so Bush Banana is a useful creeper to try on a fence for instance. It is perennial and frost and drought resistant. In the bush this species is found climbing up trees and bushes.

TWO GARDENS THAT SURVIVE

The water supply on a small property near Alice Springs failed during a drought necessitating the cartage of water for household use. Soil type was an alluvial light sandy loam. Water saved from the washing machine, bathroom, etc. was utilized to grow a large number of native plants around the house. These flourished and flowered, making a notable display in an otherwise dry, dusty area.

During the same drought a house on a bare block was occupied and a garden consisting largely of local plants was established. The soil was clayey and in parts, saline. Severe watering restrictions were imposed during summers of the drought. In spite of these formidable barriers, garden growth was rapid and profuse, becoming an unintentional tourist attraction. At no time was the annual water allowance reached, but it was exceeded in some other gardens which had less growth in them than the one which used a large proportion of colourful Central Australian plants.

MORE SMALL SHRUBS OF THE CENTRE

A useful local daisy is *Helichrysum bracteatum* or Yellow Paper Daisy or Yellow Everlasting. Yellow Paper Daisy occurs most commonly in red sandy areas but is adaptable to most soils. It is a cool weather annual growing to 18" high, the leaves are erect and the plant is topped by bright yellow to orange yellow flowers, an inch wide, which have stiff papery petals. The flowers last a long time in the vase and are also very suitable for use in dried flower arrangements. The flowers are followed by masses of seeds borne on yellow silky "parachutes", the technical name of which is a Pappus.

While on the daisy theme, I will also mention the "Annual Yellowtop", *Senecio gregorii*. This is a plant which is widespread in the cooler months in the Centre, but more particularly in the red sandy areas. Annual yellowtop has fairly succulent erect long leaves and the flowers are bright yellow and more than 1" in diameter. The seeds of this sp. are also borne on a pappus, but a white one in this case. The plant grows to about 1 ft. in height and is readily grown from seed. The flowers of Annual Yellowtop always face into the sun in the same way as does the well known Sunflower. *Senecio gregorii* is shown in colour on our cover.

Senecio magnificus is the official name of "Perennial Yellowtop" which has flowers similar to the Annual Yellowtop. Perennial Yellowtop grows to over 3 ft. in height and has broad bluish leaves, broadly serrated on the edges. The top dies in summer, but new growth recurs in cool weather. Perennial Yellowtop usually prefers areas which receive plenty of run on in wet weather and often invades eroded areas. Its flowers are similar to those of "Annual Yellowtop" and it too grows readily from seed.

Should your travels take you out Jervois, Manners Creek or Argadargada way you may see large areas of the Desert or Sandover Lily, *Crinum flaccidum*. This has long smooth flat leaves and large white flowers. Some people dig around to get the bulb of this lily, but you need patience for this as the bulb may be anywhere between 18" and 6 ft. under the ground. A better scheme is to look around to find a lily which has finished flowering and you may find the large soft white seeds, looking a bit like a tiny potato. Desert Lily tolerates most soils but may take 2 or more years before flowering. However, if you have seen it either cultivated or in the bush you

will agree that it is worth waiting for. The leaves as with many exotic lilies die back to ground level but Desert Lily makes new growth with even a small shower of rain at any time.

Between Traeger Park and the railway line can be seen a lot of "Ruby Saltbush" or *Enchylaena tomentosa*. This is a small succulent leaved, woody stemmed shrub which can be trained or trimmed to a nice shape. Its main attraction lies in its pretty berries which change from green to yellow, orange and finally bright red. Usual height is 2 ft. The ripe berries are edible and have a sweet taste. The berries eventually shrivel and blacken and it is then that the single seed per berry can be used. Ruby Saltbush will grow in any soil. It is one of the hardiest plants of the Centre being very drought resistant, frost resistant and needs very little water.

Let me describe those attractive and varied plants found around the Centre, known as "Pussy Tails", or "Pussycat Tails" or "Mulla Mullas" to West Australians. These are the *Ptilotus* species botanically. The majority are winter growing annuals and make fine showy garden plants. They are difficult to grow from seed. It seems that the seed needs to age for about two years before they will germinate. Pusstail flowers make excellent cut flowers as they last a long time in the vase. As station people will know, some of the pusstails are good herbage food for stock.

One of the nicest pusstails is the small lilac pink one found commonly in mulga country, say in the scrub around the Bond Springs airstrip, just north of the hills north of town. Its name officially is *Ptilotus helipteroides*.

Also in the same area you can usually find one of the large green pusstails, *Ptilotus macrocephalus*. The name means large headed, so you see these Latin names sometimes do mean something. Colour, page 276.

Along the bitumen on the Burt Plain about 35 ml. north of town you may see *Ptilotus exaltatus* a large headed lilac pink pusstail. A similar sp. *P. nobilis* occurs in the Macdonnell Ranges, but this one has big pale green flowers. In the red sandy areas another green flowering sp. occasionally seen with red tinges can be found. This is *P. polystachyus*, which means many spikes, referring to the abundance of slender flower heads.

There are also a few perennial sp. of *Ptilotus* in the district. These are low bushes, or subshrubs with greyish leaves and pink tinged flowers. One of them *P. obovatus* bears masses of globular flowers while the other *P. atriplicifolius* has more sparse but larger flowers. These 2 spp. can be seen quite widely spread in open country and in the hills. They can be grown from cuttings as well as by transplanting.

Between Heavitree Gap and the airport can be seen clumps of pretty star-shaped blue flowers on slender leaved plants about 18" high. These are known as "Australian Bluebells" or *Wahlenbergia*. They are easily grown and have a long flowering period. They have permanent roots though the tops may die back in hot weather.

Some fine shrubs of the Centre are the "Native Fuschias" or *Eremophilas*. *Eremophila* means desert loving. These will often grow from cuttings. Native Fuschias vary greatly in size, leaf shape and flower colour and there are a large number of species in the Centre. The flowers are tubular with five terminal lobes.

In Mulga scrub you can find *Eremophila gilesii*, a tidy little shrub about 2½ ft. high with slender leaves and sky blue flowers. This grows easily and is adaptable to most soils. Colour plate on page 277.

Half a mile or so north of Temple Bar Creek on the Adelaide Road is a dense stand of *Eremophila longifolia*, also known as "Emu Bush". *Longifolia* means long-leaved. Usually a tall shrub to 8 ft. it is capable of growing into a small tree about 15 ft. high. The foliage is dense consisting of long flat soft pendulous leaves and the flowers, though sparse, are pink to brick red, sometimes spotted inside. Emu Bush tolerates any soil and grows in a nice regular shape needing no trimming. It too can be transplanted.

In the red sandy areas south of town *Eremophila macdonnellii* grows. It is usually found on the heavier soil flats between sandhills or on the undulating plains to the south. Unlike most of our *Eremophilas*, *Eremophila macdonnellii* is a prostrate plant and may have a 6 ft. spread. It bears masses of deep blue flowers and is a very suitable hardy ground cover plant.

The red flowering *Eremophila duttonii* can be seen in stony country just west of Amoonguna turn off on the Ross Highway and in similar soil at McGrath Flat 30 m north of town. It is a shrub attaining 6 ft. in height and has smooth shining leaves.



Photography by J. R. Maconochie

PTILOTUS MACROCEPHALUS

The "Pussycat Tails" or "Mulla Mullas" of the drier parts of Australia are fascinating plants. Previous issues have described their cultivation and use in rockeries and many species are shown in full colour. We need some keen types to work in a study group for the cultivation of these plants; contact the Editor if interested.

EMU BUSHES

Plants of the inland that struggle through the dry periods and in good periods are often prolific flowerers. Des Nelson finishes his series of articles with these notable plants. Many species have been described in previous issues with a good article on dry area plants in our No. 51 issue of Volume 6 with colourful illustrations.



EREMOPHILA GILESII

We could illustrate this species with a beautiful colour photograph showing the flowers close-up. However I feel that readers want a clearer picture of what the flowers look like on the bush and some sense of proportion. This I have done through the issue at the expense of "pretty picture" presentation as I feel this is more in line with the objectives of this publication—Editor.

DRY AREA GARDENING AND PLANTS FOR CENTRE GARDENS—continued from page 254

Water! Because of the low rainfall, water consumption in Alice Springs is high—about 250,000-400,000 gallons per year. Recently there has been an increasing interest in water conservation. Home gardeners are looking at ways to save water, and also reduce the cost and number of hours spent in maintaining the garden.

The following is a list of suggestions which have proved to be both practical, economic and aesthetically satisfying in Alice Springs.

1. Lawns require far more water, fertilizer and maintenance per square yard than any other plant form in the garden. However, because of its aesthetic quality it is hard to imagine a garden without it. By conscientious planning of the space surrounding the house it is possible to keep lawn areas to a sensible minimum. Kikuyu, in spite of its vigorous habit is probably the most suitable grass for this climate. "Kentucky blue grass", hybrid bent and strawberry clover will produce an attractive sward in the cooler months of the year but require constant watering and some overhead shade during the summer. A simple pop up sprinkler system is recommended for best results.

Before considering where trees, shrubs, etc. should be planted, it is important to start with a plan of the building site showing the position of the house, the driveway, clothes hoist and entrance path, i.e. land use which is dictated by the movement of people to and from the house.

Next decide where outdoor entertainment areas should be located in relation to the living and kitchen areas—the extent of a patio and position of the barbeque.

Climatic factors are a very important consideration, i.e. prevailing winds, hot winds, cold blustery winds, windows facing the hot western afternoon sun. Windbreaks, shade, privacy and a sense of enclosure are four important factors when considering the size and location of plants for the garden.

When placed in strategic parts of the garden the following trees and shrubs will prove useful in tempering the extremes of the climate. *Eucalyptus gardneri*, *E. cladocalyx nana*, *E. torquata*, *E. burdettiana*, *Acacia podalyriifolia*, *A. saligna*, *A. cardiophylla*, *Callistemon viminalis*, *C. "Gawler hybrid"*, *Casuarina cristata*, *C. stricta*, *Grevillea robusta*.

However, if one adopts the principle of keeping areas of lawn to a minimum—even after giving serious consideration to the above design factors there is little doubt that a substantial area of the site remains to be developed if it is not to become a dust bowl. There are three possibilities.

Cover the remaining area to a depth of 2"-3" with stone aggregate, pebbles or other similar material, add some large attractive pieces of stone/driftwood, or include a small ornamental pool surrounded by rockery type plants.

Alternatively cover the vacant space with ground cover plants. *Myoporum*, *Kennedia*, *Verbena*, *Lotus* and others (depending on the precise climatic conditions). These plants control weed growth and are attractive and easy to maintain.

The other alternative is to plant the area with an assortment of small, medium and large shrubs and trees to create an area of dense bush. If the area is large enough, say 80 feet square it is possible to create one's own "hideaway" of shade, privacy and intimacy and at the same time creating a haven for the birds.

Whatever scheme one uses to complete the garden design, remember that in addition to the functional needs of windbreaks and shade, two other factors, viz. privacy and a sense of enclosure are very desirable features in garden design. One only has to walk through the bush in some of the higher rainfall areas to realise how satisfying these factors can be.

The preparation of the garden bed prior to planting will depend on the requirements of the individual plants. In Alice Springs the soil generally has good drainage characteristics and does not need modifying. However, in areas where the soil has a high clay/silt content it will be wise to add river sand or humus and raise the level of the garden bed to allow surplus water to drain away—this is particularly important for "dune sand" genera.

Having determined how the site is to be used, and having indicated the areas to be planted with trees, shrubs, ground cover, creepers, it is important to realise that most of these plants will require regular watering at least for the first two years, depending on the selection of plants, and their adaptability to the local climatic conditions. The simplest and most economical form of applying water to young plants is by means of a trickle irrigation system. This consists of a long $\frac{1}{2}$ "- $\frac{3}{4}$ " dia. polyethylene pipe which is placed just below the surface of the soil, and directed in amongst the assortment of plants. Near the stem of each plant a dripper is inserted into the pipe and projects above the ground. These drippers are capable of delivering from $\frac{1}{2}$ gallon to 3 gallons of water per hour, depending on the type selected. Up to 150 drippers can be inserted in one length of pipe regardless of actual length. The pipe is fitted with a suitable attachment so as to screw onto a standard hose cock. The tap can be turned on for 24 hours, 48 hours or left on permanently depending on soil and climatic conditions. There is no wastage of water (providing it is used with care), and weed growth is kept to a minimum, as only a small surface patch of soil is wet by the dripper. Most householders in Alice Springs have experienced significant reductions in their water consumption after installing such a system.

Australian native plants are not gross feeders. Many of the most attractive genera in the centre of Australia grow in pure sand, e.g. *Casuarina decaisneana*, *crotonia* species, many of the *Eremophila* species, *Helichrysum bracteatum*, *Calandrinia* species, *Grevillea* species, *Cassia pleurocarpa*, *Thryptomene* species.

The most significant feature of the sand dune soil is its acid reaction. The soil in the Alice Springs area has a pH of about 7.0. However, the pH of the local water supply is considerably higher. Therefore if plants are to be watered regularly then iron chelates, sulphur or some other acidifying agent must be added from time to time to prevent chlorosis (yellowing) of the leaves.

So far not much is known about the effects of application of fertilizer or animal manure to the plants of the Centre. However, there is much to be gained by liberal application of cow manure and occasional light applications of fertiliser to *Callistemon*, *Melaleuca*, *Grevillea*, *Hakea*, *Pandorea*, *Kennedia* species from other parts of Australia.

When considering these suggestions in retrospect and apart from the matter of personal taste, the following comparisons can be made with the indiscriminate gardener who has planted large areas of grass with a few specimen trees in the lawn.

1. The physical effort and time involved in mowing the lawn on a hot Saturday or Sunday afternoon is reduced. There is a saving in the cost of water and fertilizer.
2. Trees in the lawn will grow at a slower rate than those in garden beds. It is essential where trees are growing in Kikuyu lawn, to maintain a basin (free of lawn) 5'-6' in diameter—to achieve this requires constant removal of runners from the basin.
3. By careful selection of plants and the judicious use of trellis and creeper it is possible to create areas of shade, a screen of foliage to provide windbreaks and a sense of privacy.
4. Compared with the use of sprinklers, the trickle irrigation system is economic and time saving.

Central Australian Species of *Nicotiana*

WILD TOBACCO OR PITURI by P. K. Latz

The genus *Nicotiana* is well represented in Central Australia as nearly half of the Australian species are found in the area. Although a little known and rarely encountered group it was, and in some areas still is, highly regarded by the aborigines. Certain species, locally known as "Pituri", were chewed by them for the narcotic effect.

The genus is endemic to the Americas, a few Pacific Islands and Australia. The most important member of the genus is the tobacco plant (hence the common name, wild or native tobacco). The genus is a member of the family *Solanaceae* of which the garden potato, tomato and egg-plant are members. Most species of *Nicotiana* are annual herbs with dark green, usually soft leaves and characteristic creamy-white trumpet shaped flowers ending in 5 short rounded lobes. The lobes close under a hot sun but open at about sunset when a perfume is usually emitted. The corolla, calyx and pedicels are always more or less hairy. The genus *Nicotiana* is distinguished from other members of the family by its trumpet shaped flowers and its non-fleshy, smooth two valved capsule.

The majority of the species are attractive plants in the garden and will usually last for more than one season if protected from severe frosts. Propagation is relatively simple, either as transplants or grown from seed; the seeds may need to be matured for a season.

Before the Europeans brought their tobacco to the area some species of these plants were much sought after by the aborigines; probably accounting for the sparse collections of some of the species. If Pituri was scarce the first words of greeting on meeting was "have you any Pituri?" Anyone with large amounts of this drug was a 'rich' man as Pituri was an important trading commodity and was probably the 'currency' used to obtain valued seashells and so forth from coastal tribes where *Nicotiana* is absent or very rare.

When preparing the narcotic, leaves, stems and roots were dried and then ground into about an equal amount of the ashes of twigs and barks of certain *Acacias*. The powder was then moistened in the mouth and made into a ball or quid. The quid was first sucked and then chewed and when not in use usually placed behind the ear. Chewing Pituri is said to produce sensations of well-being, to suppress hunger and thirst, etc., but probably has little more effect than tobacco as when Pituri was not available tobacco was used as a substitute and often preferred.

Separation of species is often difficult. Morphological characters can be variable. Individuals of a certain species growing in moist sheltered areas can appear quite different from individuals under moisture and heat stress. However the key provided should separate most Central Australian species.

KEY FOR C.A. NICOTIANA

- | | | |
|----|---|------------------------|
| 1a | Stems and leaves glabrous | 2 |
| 1b | Stems and leaves with fine hairs | 3 |
| 2a | Base of leaf blade attached to stem (decurrent), stems leafy | <i>N. excelsior</i> |
| 2b | Base of leaf blade not attached to stem, majority of leaves basal | <i>N. ingulba</i> |
| 3a | Lower stem leaves mostly as broad as long, abruptly narrowed into slender stalk (petiole), flower tube sparsely hairy | <i>N. benthamii</i> |
| 3b | Stem leaves not as broad as long, base tapering gradually, flower tubes hairy or sparsely hairy | 4 |
| 4a | Mature flower short, less than 2.5 cm long (including calyx) | <i>N. velutina</i> |
| 4b | Mature flower longer than 2.5 cm | 5 |
| 5a | Plants with broad leaves continuing up stem, calyx greater than 15 mm long, flower tube hairy | <i>N. gosseii</i> |
| 5b | Plants with narrower leaves sparse on stem, calyx less than 15 mm long, flower tube sparsely hairy | 6 |
| 6a | Very sticky plant, stem leaves sessile mostly broadest right at base, gradually narrowing upwards | <i>N. occidentalis</i> |
| 6b | Plants slightly sticky, stem leaves with narrow stalk (petiole) before broadening above | 7 |
| 7a | Corolla tube usually less than 30 mm long (rarely to 40 cm), 1-1.5 mm diameter at top of calyx | <i>N. simulans</i> |
| 7b | Corolla tube more than 40 mm long 1.5-2 mm diameter at top of calyx | <i>N. megalosiphon</i> |

Nicotiana excelsior J. M. Black

An attractive plant distinguished by its large glabrous, decurrent, somewhat fleshy leaves which continue up the stem. The flowers are large, up to 5 cm long, sometimes purplish below.

In C.A. it is a rare plant restricted to sheltered areas mainly in the mountain ranges of the south west although collected in the Macdonnells.

It was much valued by the aborigines in the Musgrave Ranges area.

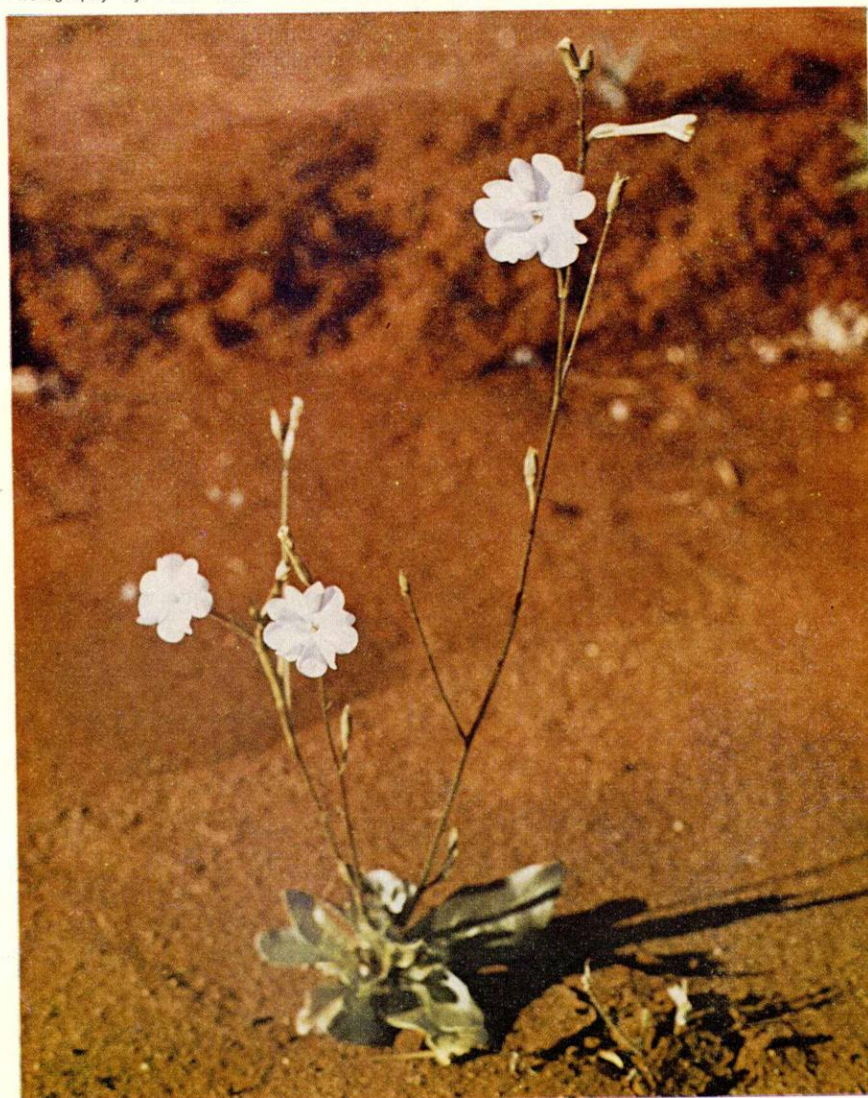
Nicotiana ingulba J. M. Black

A common species characterised by its long slender flowers and glabrous stems and leaves, the latter mostly concentrated at the base of the plant. An attractive plant which can be transplanted easily.

After good rains it is the most common species of the genus, found in most of the 'spinifex' areas of C.A. (common around Ayers Rock).

"Ingulba" is the Aranda tribe's word for Pituri but, in fact, this species was rarely utilized by Arandas, they preferred certain of the otherspecies.

Photography by Peter Latz

NICOTIANA INGULBA

Nicotiana benthamii Domin

A variable species but easily distinguished in the field by the large rounded lower leaves abruptly narrowed into the petiole. An attractive plant, under favourable conditions its lush, soft, dark green appearance seems out of place in the desert environment. Its height can exceed one metre.

Although this species has a widespread (if sporadic) distribution; occurring from the N.W. coast of Western Australia into Queensland, in C.A. it appears to be restricted to sheltered areas in the smaller, isolated range systems. It is absent in the Macdonnell and Musgrave Range systems.

This species was much prized by the aborigines.

Nicotiana velutina Wheeler

A rather unattractive species characterised by its relatively broad, short, often purplish, flower and its soft velvety leaves.

Often found in limestone and saline areas it is also common on creek banks and well watered sandy areas. The second most common species in C.A., it is generally regarded as a weed as it invades disturbed areas (e.g. overgrazed and rabbit infested areas) and is poisonous to stock.

This species was shunned by the aborigines; it is called 'ingulbaingulba' by the Arandas, the repetition indicating its unsuitability.

Nicotiana gossei Domin

A rare but attractive species which sometimes grows to 2 metres. Similar to *N. excelsior*, it differs by its softer hairy leaves and hairy stems and flowers. As in *N. excelsior* it has large flowers and calyx and large leaves continuing up the stem.

It is found in most of the major range systems of C.A. being restricted to sheltered, well watered areas such as caves.

This species was very highly prized by the Aborigines and they travelled great distances to acquire it. Plants were rarely uprooted and were harvested with great care. It is considered to be the most potent of the C.A. species and some say has opium like effects on the user.

Nicotiana occidentalis Wheeler subsp. *obliqua* N. T. Burbidge

A somewhat rare plant in C.A. distinguished by its stickiness and by the sessile stem leaves. The stickiness is due to microscopic ellipsoid-headed glandular hairs.

Restricted to Southern and Western C.A., this plant grows under trees and shrubs in spinifex sand plain areas, rarely in gullies in the hills. Widespread in W.A.

Rarely if at all utilised by aborigines.

Nicotiana simulans N. T. Burbidge

A rather common plant in C.A. similar to *N. megalosiphon* but separated from it by its shorter flower the lobes of which are twisted to one side in the closed flower, and its habitat preference. The hairy but only slightly sticky vestiture and the size and shape of the stem leaves separate these two species from the others of the genus.

Widespread in C.A. it appears to prefer shaded spots on hillsides and flats near watercourses.

This species was rarely used by aborigines.

Nicotiana megalosiphon Heurck & F. Muell.

An attractive rather bushy annual similar to *N. simulans* (see above). Widespread but restricted to watercourses.

Was utilised by aborigines but was rather low on the list of preferences.

Another plant also referred to as Pituri is *Duboisia hopwoodii* F. Muell. Although in the same family it has no resemblance to the native tobaccos as it is largely spreading shrub with leathery leaves. The flowers are white and bell-shaped, about 2 cms long with faint purple streaks inside. It is a known stock poison containing the alkaloid nor-nicotine.

Widespread but rarely common in the 'spinifex' areas of C.A. it is often encountered on the road to Ayers Rock.

In areas where *Nicotiana* was scarce *Duboisia* was utilised by the aborigines in the same manner as *Nicotiana*. However in areas where *Nicotiana* is common the aborigines shunned *Duboisia* for narcotic purposes and sneeringly referred to it as "only good for Emu poison". It was in fact used to capture emus; crushed leaves were thrown into small waterholes and any emus who drank the resulting brew were reduced to staggering, helpless birds which were easily speared.

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Burbidge, N. T. "The Australian Species of *Nicotiana* L. (Solanaceae) *Aust. J. Bot.* Vol. 8 No. 3 p. 342-380 (1960).

OTHER AUSTRALIAN SPECIES

W.A. SPECIES

* *N. cavicola* N. T. Burbidge—Occurs in the Ereman province. Similar to the *N. benthamii* but differs in having winged leaf stalks.

N. hesperis N. T. Burbidge—Restricted to mid-coastal regions of W.A. Differs from *N. occidentalis* by its shorter flower.

N. rosulata (S. Moore) Domin. Occurs in the Ereman province of W.A. Similar to *N. ingulba* but differs by having leafless stems.

N. rotundifolia Lindley. Restricted to the S.E. corner of W.A. Differs from *N. simulans* by its shorter flower.

N. umbratica N. T. Burbidge. Found in the Pilbara region of W.A. An attractive plant well worth growing. Similar to *N. benthamii* but is characterised by the presence of long leaf stalks.

EASTERN STATES SPECIES

N. amplexicaulis N. T. Burbidge. Found on the Carnarvon Range in Qld. Characterised by its broad short flower and cauline leaves.

N. debneyi Domin. Occurs in eastern Qld. and north-east N.S.W. Distinguished by having its stamens attached low in the flower tube.

N. exigua Wheeler—N.S.W. and central Qld. Similar to *N. goodspeedii* (see below) but differs by having an ovoid, not oblong, capsule.

N. suaveolens Lehmann. Occurs in Victoria and eastern N.S.W. Characterised by its broad flower tube and lack of hairs.

PREDOMINANTLY S.A. SPECIES

N. goodspeedii Wheeler. Common in southern S.A. extending to Vic. and W.A. Similar to *N. ingulba* but has a shorter flower.

N. maritima Wheeler. Occurs in the coastal areas of S.A. extending to Vic. Similar to *N. velutina* but has soft velvety leaves.

N. glauca Grah. 'Tobacco Tree'. An introduced species native to Argentina. Widespread in the winter rainfall zone of Arid Australia (including southern central Aust.). A tall woody species with leathery leaves.

* Recently found in the Petermann Ranges, N.T.

EDIBLE AUSTRALIAN PLANTS

We are collecting information for the preparation of a comprehensive issue of "Australian Plants" on the uses of native vegetation to sustain man. Much information has been published but often in a very sketchy manner. Will readers who know of uses that our flora has been put to, either by the aborigines or the settlers, please advise with details and the source of their information.

THE MAGIC OF WILDFLOWERS

A series for the young in spirit by Nuri Mass

PLANTS THAT DESERVE A MEDAL

People can do anything they really want to do, and so can plants—especially when it comes to living in “impossible” places. Of course, the more difficult things are, the cleverer you have to be to find a way around



A bunch of Central Australian wildflowers could look something like this, with mauve Native Fuschias at the top, pale green pussytails in the middle, and smaller white ones down below, amongst other pretty little bits and pieces (for botanical names, see Vol. 3, page 84).

them. So, plants that manage to live where there's scarcely any water, such as in the drought-lands of Central Australia, are very clever indeed. And they are clever in many different ways.

For instance, when the heat and dryness get really desperate, there are large gumtrees that simply drop their leafy branches—one after another of them. This is because a plant loses more moisture through its leaves than through any other part, so it seems like a good idea to drop them altogether for a while, until things get better again, even though a tall gumtree does look rather funny without branches all the way up and with only a small number of leaves on top.

Other plants, like Old Man Saltbush and the Desert Kurrajong, have the same idea only a little differently. They shed all of their leaves regularly, the way many trees do in winter, only instead of during winter, they shed them during the Centre's long hot droughts.



One of the little Parakeelyas, so clever at staying alive in deserts . . . its leaves full of stored-up moisture, its wide-awake pink flowers living for only a day each, but with plenty of new ones always ready to keep replacing them. There is another sort of Parakeelya shown on page 272.

Leaves are not always a nuisance to their plants by losing water, however. They can sometimes help a great deal by actually storing it—becoming quite swollen and “squashy” with it—so that their plants always have enough to drink. Gay little Parakeelyas have leaves like this—and their masses of bright flowers are a glad sight indeed, over the dry sandy ground.

Then, there are plants—like some of the wattles—that have no leaves at all, only green, flattened stems that *look* like leaves. And other plants again stop their leaves from losing too much moisture by folding them around into thin little rolls (like the spinifexes), or by having a furry or waxy “bloom” all over them.

The Wild Tomato, with its pretty purple flowers, is one of these furry ones. So are many of the pea plants, daisies, the Native Hibiscus, and so on.

But there are plenty of other little tricks as well, for plants that have to live in Australia's parched Centre. Paper Daisy plants, for instance, wait for a fall of rain, then quickly spring to life and in next-to-no-time are covering the “desert” with the gaiety of their pink, white and yellow flowers. In another little while, they go to seed and the plants die down. The whole thing, from start to finish, has taken only a few weeks, but meanwhile the desert has been covered with a glory of flowers, and millions of seeds have been scattered far and wide, ready to grow into new, bright masses of Paper Daisies the next time it rains.

Billy Buttons do the same kind of thing, their golden knobs of tiny clustered flowers beautifying large areas that might have been quite barren before. And so do those other pretty daisies the Poached Egg and Yellowtop, whose names exactly describe them.

The Daisy flower-family is well known for finding its way all over the Earth and into the oddest places, so it isn't surprising to find so many of its members in the mostly-parched Centre of Australia. However, they are by no means alone there. They have plenty of friends who, like themselves, have learnt to “manage”—amongst them, the Sandover Lily with its large clusters of glorious white flowers. During droughts, you wouldn't know that it was there at all, for its leaves wither away, and only its bulb, deep underground, remains quietly alive. But as soon as there's a fall of rain, up it comes again in great, beautiful numbers.

Then, all of the famous Pussetails. It's impossible to think of the Centre's flowers without also thinking of Pussetails—soft, fluffy, cuddly, and softly coloured too, except for the dark-red ones: pale green, pinkish, silvery, yellowish, mauve. Pussetails saying thank you for rain in the prettiest possible way, with great profusions of their lovely flowers.

Dainty Bluebells are able to find low-lying parts which hold a little extra moisture after rain—and the lovely Rock Isotome, with its delicate pale-blue flowers, can manage to hold on year after year in sheltered parts of rocky chasms.

Altogether, then—particularly after very good rains—there are any amount of plants which can spring up into such wonderful masses of flowers that the whole “desert” of Central Australia comes alive with them. Great reaches of dry sand, laced over with wiry Spinifex grass, become a fairyland of colour and fragrance, once seen never forgotten.

However, quickly-coming-and-going plants are not the only ones in the Centre. There are, as we have mentioned, gumtrees—many different kinds including the handsome Red River Gums that grow along watercourses (whether wet or dry), and here and there the tall, white-trunked Ghost Gums that Albert Namatjira loved to paint. Also, there are lots of Mallees—a different type of gum altogether, light and rather dainty, with many slender trunks instead of one stout one.

There are plenty of wattles, too, some with pale-yellow flowers, others with bright golden ones, but all alike creating beauty in a dry, thirsty land.

One of the commonest wattles in the Centre is the famous Mulga with its prettily-patterned wood so often used in ornaments. Another is the Witchetty Bush, so-named because of the witchetty grubs that get into its roots—until the Aborigines get *them*. Yet another is the mysterious Gidyea—

quite good food for cattle except that sometimes, for no apparent reason, it poisons them. The Dead Finish is a golden-ball wattle with needle-sharp leaves, which manages to keep alive during droughts that would be the "dead finish" of almost everything else. All kinds of strange and surprising things.

Among the vividly-coloured rocks of Standley Chasm and in some parts of the Macdonnell Ranges, there are even a few soft little ferns, reminding us of moist, shady gullies.

Up over rocky hills, along sandy ridges or among wattle scrub, lovely Native Fuchsias grow—lots of different kinds, with quaint flowers of all the colours: white, blue, purple, pink, yellow, red.

The Wild Orange starts out looking like a crazy jumble of thorns. Then its sturdy, oval-shaped leaves and delicate creamy-coloured flowers take over. But back come all of its thorns again after cattle have had a good feed from it.

This is one of the many plant-oddities in Central Australia—the oddest thing of all being, of course, that such a rich variety of them actually manage to live, grow and flower there, from the little low-lying Parakeelyas, gay Everlastings and cuddlesome Pussetails to tall gumtrees, Bean Trees and Desert Kurrajongs, from fragile Bluebells to rugged wattle shrubs, and from masses of small pea-flowers to the wide-open Desert Rose—a large pink flower blotched dark into the centre, which has been chosen as the floral emblem of the Northern Territory.

Just browse through among the photographs in this little book alone, and you will get some idea of all the colour and beauty of the Centre's flowers.

If medals were ever given to plants for Cleverness, Bravery and Endurance, surely the plants of Central Australia would be outright winners three times over.

CIVILISING THE WILD FLOWER OF THE CENTRE

by M. Simpson & S. Blakeman, A.I.M., Alice Springs, N.T.

The Lord forbid that such a thing could ever be possible, so let's try another title "Will the Central Australian Flora meet us half way if we are prepared to try them in our gardens".

My neighbour and I are keen gardeners and are prepared to spend time and effort to find out, by bringing back into the area the native flora which has been ousted by the growth of the town. Not all bush plants are welcome as with the limited space we must select those which please our sense of beauty and which fit into the general pattern being established.

In 1947 the A.I.M. took over an unfenced, uncleaned, unwatered block and during the next 25 years water was found and the land given to agriculture until finally need arose for more cottages. As this development was to house elderly people small walled private gardens were left in a sea of green lawns with the exception of a large corner on the edge of the scheme where my neighbour and I were allowed to garden as we wished.

Moving in just 12 months ago we selected an area for vegetables I planted my Lippia lawn and the fruit trees which are regarded as essentials in the district. The rest of the area began to lose its empty look as native plants were brought back from our excursions into the surrounding bush. At first we experimented with ways of doing this and found that to dig a plant from where there was an abundance, replant it immediately into a plastic planter bag and water usually gave complete success—an added benefit was that the bigger plant could be left in the shade until recovery was complete and then transplanted without shock. While we usually took small plants from where they had responded with overproduction to

the stimulus of a thunderstorm, there were times when the only choice was to dig an old plant out of a rocky hillside with the roots coming free from the soil altogether—to our surprise many of these showed no sign of shock.

There were times when we felt that the rarity of the plant made it wrong to remove it from its natural setting and this meant that we had to raise it from cuttings—no easy matter this, although our previous experience with other plants helped with general principles. A great amount of experimentation was needed before we had even a small amount of success in this field. Working with controlled conditions and with the aid of mist sprays would make this easier but with our changing climate we must adapt our methods; changing with the seasons as it is true that we get the extremes of temperatures in this semi-arid region. It is strange how some plants in a genus such as *Eremophila* can be easily rooted (*E. macdonnellii*) whereas others with the greatest difficulty and only after a long time in the medium (*E. freelingii*).

Seed growing has also given us a percentage of our garden plants and here again there can be a great amount of difficulty in germinating some types whereas others come up like weeds. Ants take their share of most seeds and we have found that very few pods or capsules of seeds are free from insect damage or destruction. Some, again like the *Eremophilas* we find very difficult to almost impossible. There seems to be no special seed germinating time in the centre as each individual has its own set clock which responds to a certain micro-climate composed of percentages of moisture, heat, cold, and perhaps mineral concentration.

One of our worries when beginning our planting was that we admired and would like to grow plants from the red sandhills, the flat clay areas and the rocky hillsides, from the black or rather grey soil and from both the drier and the moist areas of our bushland. This we thought could be difficult as it is obvious that the plants are naturally selective in their regions of growth, even to the extent of a different species occurring on each side of a sandhill.

Actually there have been very few failures, considering the number, the variety, and the differing habitats from which plants or plant parts have been brought—at the present time an alkaline tie-up of the iron in the soil is giving us some worry in one part of the garden and we have lost *Eremophilas*, grass trees and mint bushes. This can possibly be overcome by Iron Chelates and we hope to have the material for experiment soon. Our local plants seem to want space and seem to prefer the company of our native trees rather than large leaved imported types which throw more shade but this is only a generalisation as *Plectranthus* for instance loves the intense shade of a large orange tree.

Some of the native trees and shrubs which have been planted apart from the Eucalypts and Acacias are *Erythrina*, *Melaleuca*, *Hakea*, *Templetonia*, *Grevillea*, *Casuarina*, *Santalum*, *Atriplex*, with some 18 species of *Eremophila* and amongst these grow species of *Nicotiana*, *Helichrysum*, *Parakeelyas*, *Goodenia*, *Gossypium*, *Hibiscus* and *Crotalaria*, the loveliest being *C. strehlowii* with its yellow *Genista* like flowers and the most spectacular *C. cunninghamii* with the striking green birds beak heads of bloom. The *Solanums* of the Centre being such an interesting and showy flower—the almost perfect rockery plant—are well represented. *Wahlenbergia*, the most popular with visitors is always covered with bluebells and *Blennodia* which after a good rain shows a mass of scented white flowers for a few weeks continues to flower under cultivation constantly growing larger but never stopping its output of blooms; like *Crotalaria*, some of the *Cassias* and a number of others of the bush fraternity, it sends out underground shoots which form a large clump able to stand better the difficult conditions which are part

of the environment. The *Minuria*, *Brachycome*, *Helipterum*, *Senecio* and even *Myriocephalus stuartii* have either come from a top dressing of red sand or from seed brought in from the bush; throwing the seed in the bare soil is not very successful as it needs somewhere to lodge and soil which has been dug over seems to produce the right micro climate for germination.

The collecting excursions have been picnics, and propagation a perpetual interest, the actual work has been little and the enjoyment plentiful!

In other words we've found a fascinating hobby and added to the beauty of the surroundings. The native plants have met us more than half way!



CASSIA NEMOPHILA

This inland *Cassia*, formerly known as *Cassia eremophila* may grow to 2 metres high but much lower and denser in exposed situations. A good ornamental shrub very attractive in flower. It will flourish on heavy soils but requires good drainage. The typical *Cassia* flower is clearly shown above. The *Cassia* around Alice Springs mentioned on page 271 have similar flowers, some with leaves similar to above but *Cassia pleurocarpa* has much broader leaves to one cm across.

FLORA FOR THE INLAND

by B. V. Curtis

The inland of Australia with its great vagaries of climate and general dryness calls for a completely different approach for the establishment of native plants than in more favoured districts where most people live. Many techniques which are good practice in these districts would spell certain failure in the dry inland.

Contrary to quite common belief species of the arid lands do not grow without water, but are generally adapted to survive long dry periods with minimal growth, and then grow vigorously and set seed when conditions are more favourable.

Inland species often germinate in countless numbers in favourable seasons, but only a few ever reach maturity. All but the most hardy, if not in ideal sites are culled out in nature's relentless struggle for survival in the harsh environment which, beside the ever recurring dry periods, may experience temperatures in winter of up to 13 degrees of frost and ground temperatures in summer of 140 degrees plus. Seedlings may also be eaten up by grasshopper plagues.

The soil of the inland is generally heavy rather than light, but the range of conditions is so vast that I will not attempt to make recommendations for specific situations; rather I will set out my experiences and the individual can then assess these in the light of his own conditions.

This district is a marginal wheat area in North Victoria; the annual rainfall is 11½ inches varying from 3" to 22" with falls more regular in winter than summer.

The first area developed for the growing of native species was a light sand hill up to 15' deep and several acres in extent sloping down to shallow soil on one side. There were mallees on one section of it and scattered over the balance old specimens of *Hakea vittata*, *Callitris*, *Heterodendron oleifolium* and *Exocarpus aphyllus*. The area was first fenced from stock, and a deep ripper was run round the mallees and along the places where replanting was to take place. Local species were mostly planted in winter and after good rains. I planted for several years with about a 50% survival rate. Getting through the first summer was the severest test. I hand watered some species to get them through this time. It was very difficult to get any planted seedlings to survive in places where there was deep drift sand.

Good results were obtained with *Callitris preissii* "Murray Pine", many of which regenerated naturally and these were generally superior to the nursery specimens. This species will grow strong side branches and I made a practice of pinching these back to promote growth of the trunk. *Callitris columellaris* is probably a superior tree adapting to loamy soils and with less vigorous side branches. Both of these species grew to over 20' in 17 years as did *Casuarina cristata*, "Belah" and *Myoporum platycarpum*, "Sugarwood".

Other trees established were "Wilga", Kurrajong, Weeping Pittosporum and *Melaleuca acuminata* the "Mallee Honey Myrtle". Shrubs established and doing well include *Grevillea pterosperma*, *Casuarina muellerana*, *Acacia rigens*, *A. calamifolia*, *A. acanthoclada*, *A. ligulata*, *A. brachybotrya*, *A. wilhelmiana*, the "Mallee Bitter Bush", *Adriana hookerii*, *Leptospermum laevigatum*, "Green Tea Tree", and Bush Daisies, *Olearia pimelioides*, *O. teretifolia*, *O. lepidophylla* and *O. rudis*, *Baeckea behrii* and *B. crassifolia*, *Bertya mitchelli* and *Cassia eremophila* the "Desert Cassia" which regenerated.

On the shallower soils the following species, *Eremophila longifolia* "Berrigan Emu Bush", *E. maculata* "Spotted Emu Bush", *Myoporum desertii*, *Cassinia arcuata*, *Acacia acinacea* and *A. montana*, *Olearia magniflora*, (prefers limestone soil), and several saltbushes which are really tough. These included *Atriplex nummularia* "Old Man Salt Bush", *Kochia brevifolia*, *K. pyramidata*

and *K. sedifolia* the "Pearl Salt Bush" which prefers limey soils. *Kochia tomentosa*, *Rhagodia spinescens* and *R. nutans*, regenerated naturally under the trees and gave the site a natural effect.

Creepers introduced were *Clematis microphylla*, "Small Clematis" and *Billardiera cymosa*, "Appleberry".

The second area developed was adjoining the other in a hollow between sand rises and was of heavier sand overlying a clay hard pan area of about an acre most of which had been drifted over with sand up to one metre deep. This was all scooped away by an earth moving contractor who also excavated a big trench out of which a pond was later shaped. The area was ripped up and cultivated for six months. Several original mallees were retained to give a mature effect while the other specimens were small. The plan was for this area to feature the flora of the inland of Eastern Australia, particularly for those species which prefer substantial soils. Before some species were planted holes were dug down to the clay hard pan and these were filled with the rich self mulching clay loam from out of the "crabholes". An endeavour was made to make the area as informal as possible yet allow for cultivation of portion for several years. On one side of the pond, tall growing trees were planted, *Eucalyptus intertexta*, "Gum Coolabah", *E. ochrophloia* "Yapunyah", *E. melanophloia* "Silver Iron Bark", *Angophora melanoxylon* "Coolabah Apple", *Bauhinia carronii* "Bean Tree" and Kurrajong. Together with these were planted *Melaleuca halmaturorum* "Paper Bark", *M. glomerata* "Desert Paper Bark", *M. decussata* "Cross Honey Myrtle", *M. adnata* a Paroo River form and *M. pubescens* "Moonah". Also *Eremophila bignoniiflora* "Bignonia Emu Bush", *E. polyclada* "Twiggy Emu Bush" and *Myoporum montanum*. These species grow naturally in areas that receive run off and the soakage from the pond simulated this condition.

The other side of the pond was only planted with ground covers and represented an open side to a lagoon, species on this bank were *Myoporum parviflorum* (excellent in clay soils) *Myoporum debile*, a creeping form of *Eremophila glabra*, *Crinum flaccidum* "Darling Lillies", and *Calostemma luteum* and *C. purpureum* "Garland Lillies".

The balance of the area was planted in rows in two sections and in crossed directions. The rows were 12' and 15' apart, alternate rows being cultivated and the others served as paths. Plants were spaced 1-2 or 3 metres apart and periodic furrow watering applied to boost growth. The spacing may appear generous by usual standards, but in the drier parts of Australia there is competition for a limited amount of moisture and usually the more vigorous specimens are found growing apart from others. If they are too crowded there is every possibility that they will become scraggy or even die out in droughts.

No large trees were planted in these rows as they would eventually suppress the lesser shrubs and the small trees planted were staggered over several rows so that the lines of plants would become less obvious. These trees included *Hakea divaricata* and *H. suberea* "Cork Woods", *H. leucoptera* "Needlewood", *Alstonia constricta* "Quinine Tree", *Santalum acuminatum*, *S. spicatum* and *S. lanceolatum* "Quandong" family. *Acacia aneura*, "Mulga", *A. brachystachya* "Mulga", *Erythrina vespertilio* "Batswing Bean Tree" (frost tender), and *Flindersia maculata* "Leopard Wood" (slow growing).

Shrubs planted included 10 species of *Dodonaea* "Hop Bushes" and 6 species of *Cassia*. I recommend *C. oligophylla*, *C. phyllodinea* and selected forms of *C. artemisioides*. Grevilleas included *G. ilicifolia*, *G. lavandulacea*, *G. huegelii*, *G. glabella*, *G. juncifolia*, and a local form of *G. rosmarinifolia*. Bottle brushes included *Callistemon brachyandrus*, *C. macropunctatus* and *C. teretifolius*.

Other showy shrubs included *Hibiscus farragei* and *H. huegelii*, *Abutilon leucopetalum* "Lantern Bush", *Petalostylis labicheoides* "Butterfly Bush" (grew

to 6' in 18 months), *Indigophora australis* "Austral Indigo", *Cassinia laevis* "Curry Bush", *Gossypium sturtianum* "Desert Rose", *Bossiaea walkeri* "Cactus Pea". Wattles included *Acacia hakeoides*, *A. decora*, *A. deanei*, *A. leptopetala*, *A. triptera*, *A. continua*, *A. burkettii* and *A. stronglyphylla*. Over fifty Emu bushes have been planted and these include species from W.A. *Eremophila maculata* and *E. santalina* grew to 8' in 6 years. Other showy ones are *E. latrobei*, *E. gilesii*, *E. duttonii*, *E. scoparia* and *E. alternifolia*.

Showy smaller shrubs included *Calytrix tetragona*, *Prostanthera aspalathoides* and *P. striatiflora*, *Halgania lavandulacea*, *Micromyrtus ciliata*, *Phebalium bullatum*, *Lasiopetalum behrii*, *Spyridium subochreateum*, *Templetonia retusa* and *T. egena*, *Eutaxia microphylla* and var. *diffusa*, *Cryptandra propinqua* and the succulent *Sarcostemma australe* "Caustic Bush".

Small plants included *Dianella laevis* and *D. revoluta* "Flax Lillies", and the "Pussy Tails", *Ptilotus atriplicifolius*, *P. semilanatus*, *P. exaltatus* var. *semilanatus*, *P. exaltatus* and *P. nobilis*; the last two are very showy; they live about two years and have regenerated naturally since introduced to the garden.

Creepers established in this area were *Jasminum lineare* "Desert Jasmine", *Marsdenia australis* "Alunqua" or "Doubah", *Pandorea doratoxylon* "Wonga Vine", *Hardenbergia violacea* "Native Sarsparilla", *Parsonsia eucalyptophylla* "Woodbine", "Twining Glycine" and the "Small Clematis" which established naturally.

In this area much of the winter growth of grass is controlled by a small female kangaroo, rank growth is mowed and certain weeds are pulled out in spring to prevent seeding.

The last area developed was of several acres and received a different approach from the previous ones. It adjoined them but was old cereal land, sand about 3' deep of light fertility. In it were planted about 250 species of Mallee Eucalypt, small dry area gums and shrubs indigenous to the drier parts of W.A. The whole area was fallowed and species were planted in rows to allow cultivation.

The Eucalypts were planted in a separate section to the others in rows 25' apart and 20' between each tree. The other species were planted in rows 12' and 15' apart with distances of 8' or 16' between plants according to size.

It is something in the nature of an experiment, there are separate rows of Grevilleas, Hakeas, Melaleucas and Acacia beside mixed plantings of Banksia, Dryandra, Regelia, Kunzea, Beaufortia, Leptospermum, Calothamnus, Petrophile and others. They grow in spartan conditions in full sun and wind. Less than a gallon of water is applied at planting time and none is given after, the cultivation conserves soil moisture, initial losses were as high as 40% and this has been reduced to almost nil. Hazards in order of magnitude are as follows—galahs, rabbits, frost, heat and drying out of soil by adjacent trees; magpies also flew off with plastic identification tags.

The hazards were overcome as follows; guards were placed around new plants, these were made of 12" netting cut into lengths and made into cylinders 6" in diameter. These guards stabilised the plants in the wind and protected them from galahs, especially the outside rows and from the odd rabbit that invariably made for the area. Guards of stakes and bag were tried as this might have given shade, but beside extra work it only encouraged burrowing mice.

Some Grevilleas were lost in a sudden severe frost one winter; larger hardened plants and spring planting can prevent this.

Complete cultivation of the area before the plants were of sufficient size would invite disaster from sand blast. A compromise is made by leaving uncultivated strips, nevertheless the plants underwent a severe testing one spring with two weeks of gales. Finally a day of hurricane force winds blew

the cultivated strips down to firm ground and left windrows of sand on the uncultivated strips. Many small seedlings had to be dug out. These may have been more fortunate than others exposed to the full blast of the sand and some of these were killed. A ripper was pulled along to cut the roots of some nearby old Mallee Trees which had affected soil moisture and plant establishment as far as 16 metres.



Photography by M. Simpson

GREVILLEA STRICTA—Beefwood

Grevillea make fine garden shrubs. A hardy tree to 10 metres this Grevillea of the inland should be useful on station properties in drier areas. It will also make a good specimen tree under good conditions.

I now plant at all seasons except the months December, January and February. In the prepared soil the plants grow into a reservoir of moisture. The following method is used for planting.

A shovel is used to separate back the loose dry 2" or 3" of top soil, the specimen is then planted and watered in the usual way. I often use small tubed stock. A piece of clear plastic sheeting about 15" square (I cut them from fertilizer bags) is placed over the moist soil around the plant which is allowed to come through crossed slots cut in the centre of the plastic for this purpose. Dry soil is then placed over the plastic and the netting guard is pushed into the sand. The identification tag is buried on one side and also listed on a plan. The plant is not watered again.

I carried out this treatment with a wide selection of species on the 1st March that year when shade temperatures were 100 degrees and it only rained 180 points in the next 5 months and no plants died from dehydration.

The species in this area are not old enough to be fully evaluated yet. Some *Acacias* grew 2 metres in 12 months, some of the *Mallees* grew 2 metres in 15 months. *Melaleucas* 1 metre in 12 months, some of the *Grevilleas* 1 metre and flowering in 18 months. The *Hakeas* have all grown steadily and with least losses.

Other inland species that prefer clay loam soils such as many of the taller *Eucalypts* and *Acacia pendula* and *A. laderii* have been established alongside the driveway. They were established by the cultivation method and can grow to their full potential without crowding or unnecessary competition which is the most important thing to remember for successful establishment of plants in an inland environment.

While many of the species mentioned by Mr. B. V. Curtis in the above article and the two following have been described in past issues of "Australian Plants", many are not. A future issue will describe the plants in simple terms for your advice—Editor.

Notes on Forming and Planting of Pond

A tractor and scoop was used to shape the pond, the trench left by the earthmover was widened and the spoil used to fill in the ends, the porous upper layers of the banks were scooped off and back filled with clay from the bottom, one side was made steeper than the other, this is common in nature. Finally it was made kidney shaped with maximum dimensions of 120 feet by 40 feet by 5 feet deep. Later it was found to be not holding water sufficiently and heavy clay from an earth tank was carted in and spread on the upper slopes to form a seal.

Plants of the Nardoo water fern were put around the edges of the water and these later formed into a mat on the banks as well as floating out on the water.

Several different coloured specimens of the Lotus water lily (available from florists) were planted with rotted compost at different sites and in 12 inches of water. The Common Reed *Typha domingensis* established itself but was promptly pulled out. A fine red aquatic weed spread through the pond but has caused no problem. Clumps of the Tall Spike Rush have grown on the upper banks and below them the small blue flowered herb, called Blue Rod. Frogs and fish established themselves in the pond which also is visited by an egret and a pair of blue cranes. Apart from maintaining the water level, the only other maintenance required is pulling out plants of the Flax-leaf Fleabone, an introduced weed that grows in swampy soils.

RURAL LANDSCAPING

The landscaping and planting of the grounds around a homestead presents an exciting challenge and an opportunity that would be the envy of many suburban gardener with their limited space. However the problems are also considerable and there are many factors to be considered.

The planned arrangement of plantings around inland homesteads as well as giving a desirable aesthetic effect can also have many practical benefits, the more so if the other property installations have also been thoughtfully planned. One of the primary factors is for the moderation of the extremes of climate, that is, strong winds, dust, heat and to a lesser extent cold.

Prevailing winds here blow from the NW and W so it is wise to avoid siting driveways, yards and other dust prone areas on these sides of a house. These and also the southern side because of bleak winds, should be well protected by windbreaks of extensive plantations. Depending on the district these could be from 5 to 20 acres in area. This might appear to be large by town standards but in relation to the size of many inland properties it is small and inexpensive. A site with a natural hill on the west side is also an advantage as it gives further protection.

The NE sector produces only moderate winds and is also the best direction for an open view from a house. The landscape can be graced with large specimen trees well spaced to give a parkland effect. Depending on the soil type and district these could include pine (*Callitris* species), Wilga (*Geijera parviflora*), Belah (*Casuarina cristata*), Weeping Myall (*Acacia pendula*), Gum Coolabah (*Eucalyptus intertexta*), Kurrajong (*Brachychiton populneum*), or some of the well known Western Australian dry area Eucalypts such as *Eucalyptus torquata* and *E. stricklandii*.

Closer to the house careful selection and sighting of trees can allow maximum sunlight in winter and also provide for a minimum amount in summer which is an important advantage even in this age of air-conditioning. In mid-winter the sun shines at an angle from the north so that to receive maximum warmth, avoid tall trees close to the house on this side. In the summer the sun rises in the SE, travels in an arc and sets in the SW. Tall trees planted out from the house in these directions will shorten the hours of sunshine it receives. This is particularly important on the west side so as to reduce intense sunrays and allow the house to begin cooling early in the afternoon. Pines and some of the taller Eucalypts are suitable for this purpose but the latter give strong competition for soil moisture if there is a garden close by and are also prone to falling limbs.

There is a particular need in our hotter inland districts, to provide shade for the temporary parking of vehicles at a convenient location near the house. Perhaps the best arrangement for shade for this purpose would be three medium sized spreading trees planted in a triangle about 40 ft. apart. Some Eucalypts such as Coolabah, *E. intertexta* or the inland form of *E. camaldulensis* (red gum) would be suitable for this purpose.

All too often the view from a rural house resembles a factory yard because the property service area is close by. A tin fence is a very practical way of shutting this off but a line of large dense shrubs such as Melaleuca would have a similar effect.

Pleasant surroundings around inland homesteads can compensate for harsh climates and bare paddocks. All that is needed to establish shrubs and trees is imagination, application and patience. Our native flora provides an excellent selection of species suited for the purpose, the pleasure of the owner, joy for visitors and a boom for bird life. Each site has its own problems and the availability of suitable plants is often difficult. You will find descriptions of many suitable plants on this and other issues of "Australian Plants".

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YOUR PERIODICAL—"AUSTRALIAN PLANTS"

We have had a difficult time in 1973 but things look good for 1974 with this issue almost on time. Thank you for those who have been patient with the efforts of myself and the printer. We want to produce an issue of which you can be proud. You no doubt want many good quality colour plates (just watch the quality from now on) to illustrate our beautiful wildflowers but these should not be just pretty plates of close-up photography but should indicate how the plant looks with a view to its cultivation or identification in the bush. Your comments or criticism of the articles would be appreciated. There is no doubt I cannot fully satisfy all of you in even every second issue. After producing the No. 56 issue on ferns, the first time we have treated ferns in our 15 years of production. Two readers were critical.

"Australian Plants" is produced as a continuing series each issue adding to the information recorded over the past 57 issues. Some very good issues are in preparation over a wide range of subjects. The subjects are limited by the availability of competent writers and the subjects they want to write on but if you wish articles on any particular genus of plants or aspect of cultivation, please advise by letter—Editor.

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"AUSTRALIAN PLANTS" IS AUSTRALIA'S NATIONAL PRESERVATION JOURNAL

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

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

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MAIL—Address mail to the Editor, 860 Henry Lawson Drive, Picnic Point, N.S.W. 2213.

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THE COMPOSITAE FLOWERS

The flowerheads (capitula) of the plant family Compositae are almost always surrounded by a protective cluster of modified leaves or bracts. In the case of *Senecio* as shown below, the centre of the flowerhead comprises many small "true" yellow flowers surrounded by yellow bracts that resemble petals. After a wet season the plains around Alice become a mass of colour. A big proportion of the flowers belong to the Compositae family, either the *Senecio* shown on the front cover or an everlasting where the flowerheads are similar to *Senecio* but the bracts appear dry and papery. They may be a different colour to the flowers in the centre and the "poached egg" everlasting where the yellow centre is surrounded by white bracts is a lovely sight.



SENECIO MAGNIFICUS

A perennial rooted subshrub to 1 metre high with grey-green soft foliage. Commonly found along disturbed areas such as road sides, creek banks and flood plains where it can form dense clumps after heavy winter rains.

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WILDFLOWERS OF THE CENTRE

This issue features wildflowers of Central Australia, principally the Alice Springs area. It would not be complete without "The Desert Rose".



THE DESERT ROSE—*Gossypium sturtianum*

This shrub can grow to two metres high in nature or in the garden. It is quite hardy and easily grown in the garden and should be cut back quite hard after flowering to limit its whatever height you wish. The leaves are circular and smooth with fine spots and on the underside in the centre of the leaf vein, is a slit-like mark known as a nectary. The flower may be from 5 to 10 cm in diameter and its delicate lilac colour is lost in the reproduction above. It will flower abundantly in the garden.

Another species of *Gossypium* is shown in full colour on page 268.

Grow Wildflowers in Your Garden

It is surprising how many of the wildflowers from the centre will grow in the garden. We often look for a plant that will flourish in that hot sunny spot. It can be hot and dry on top but they need water deep down.